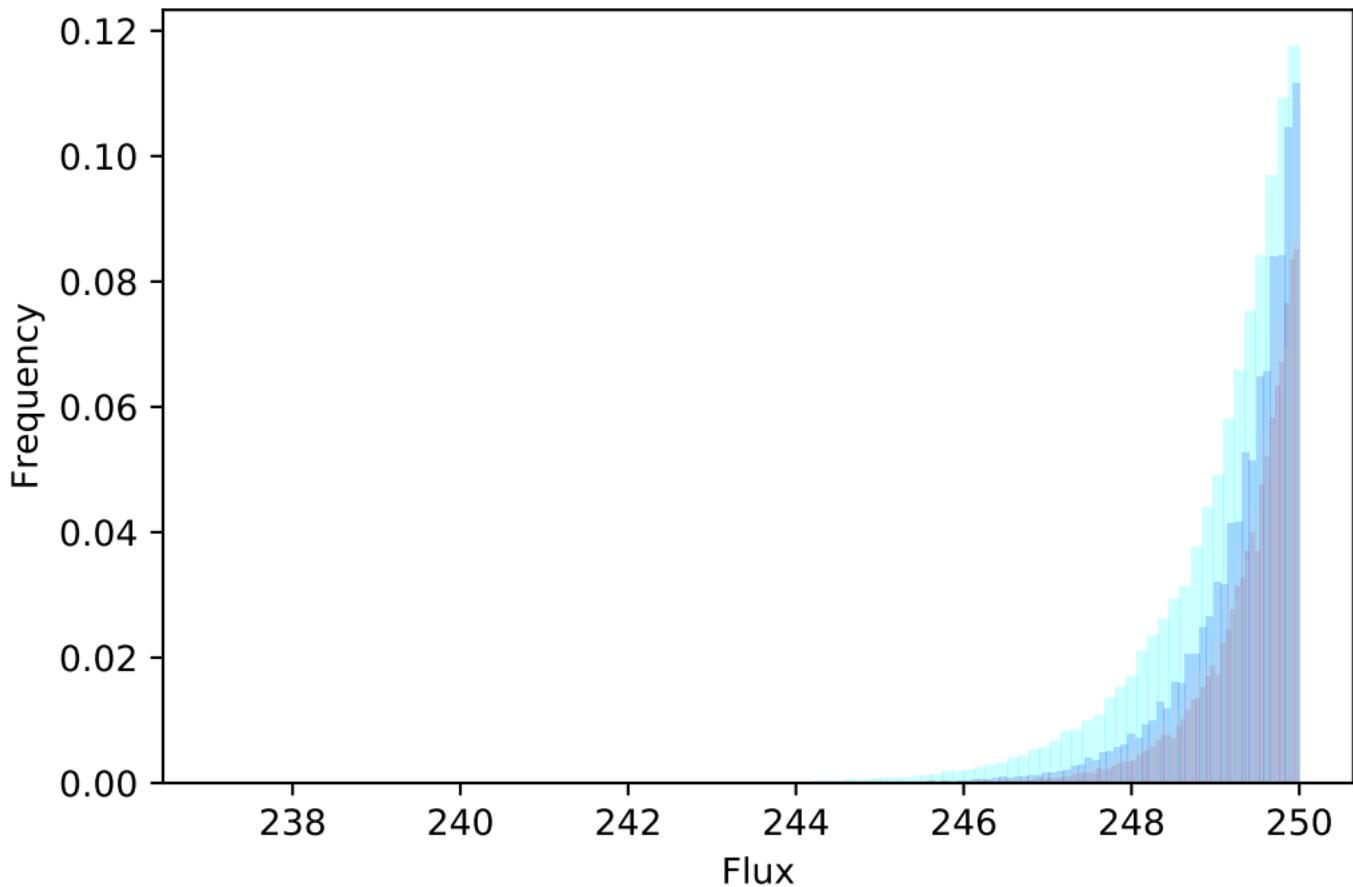
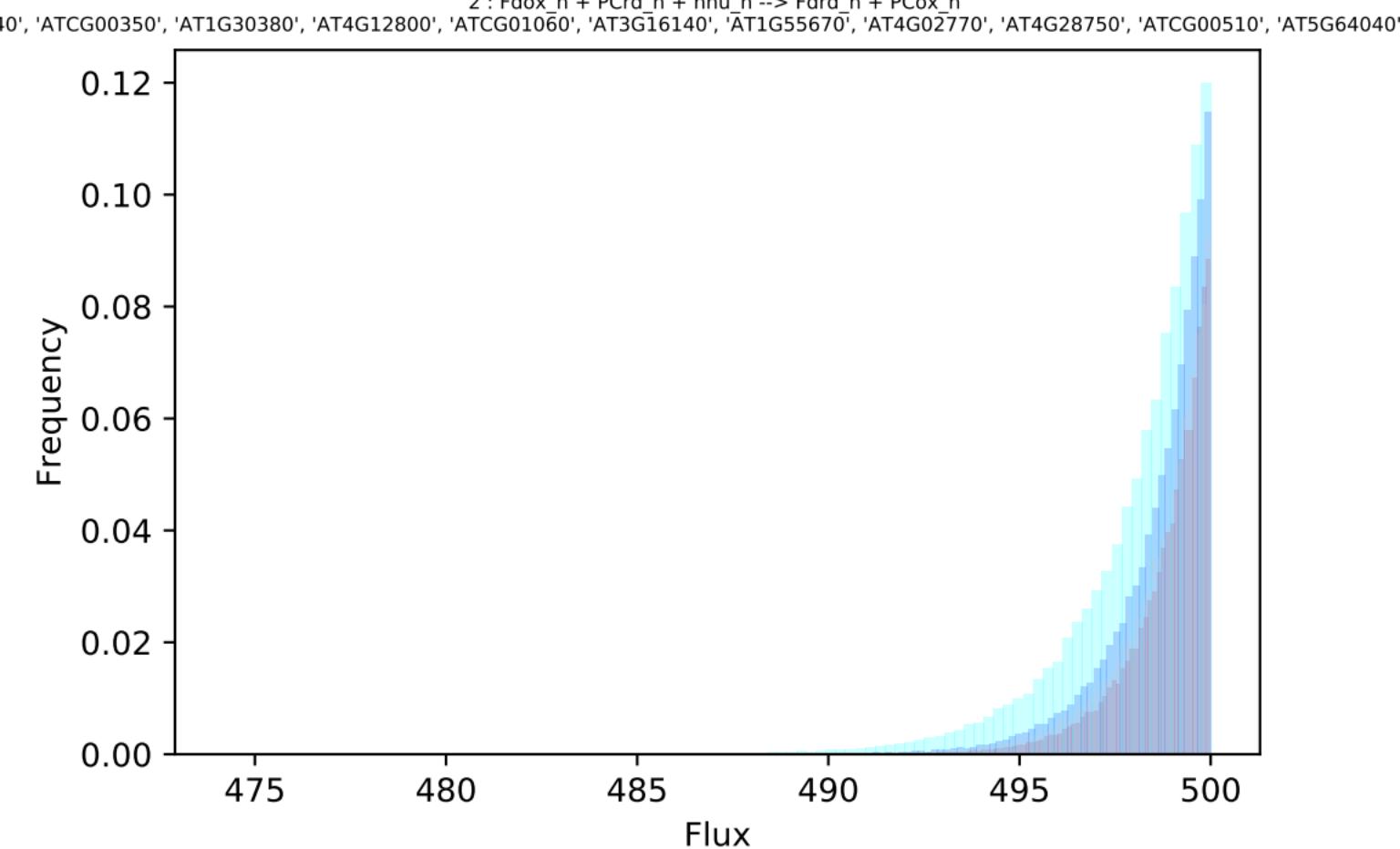
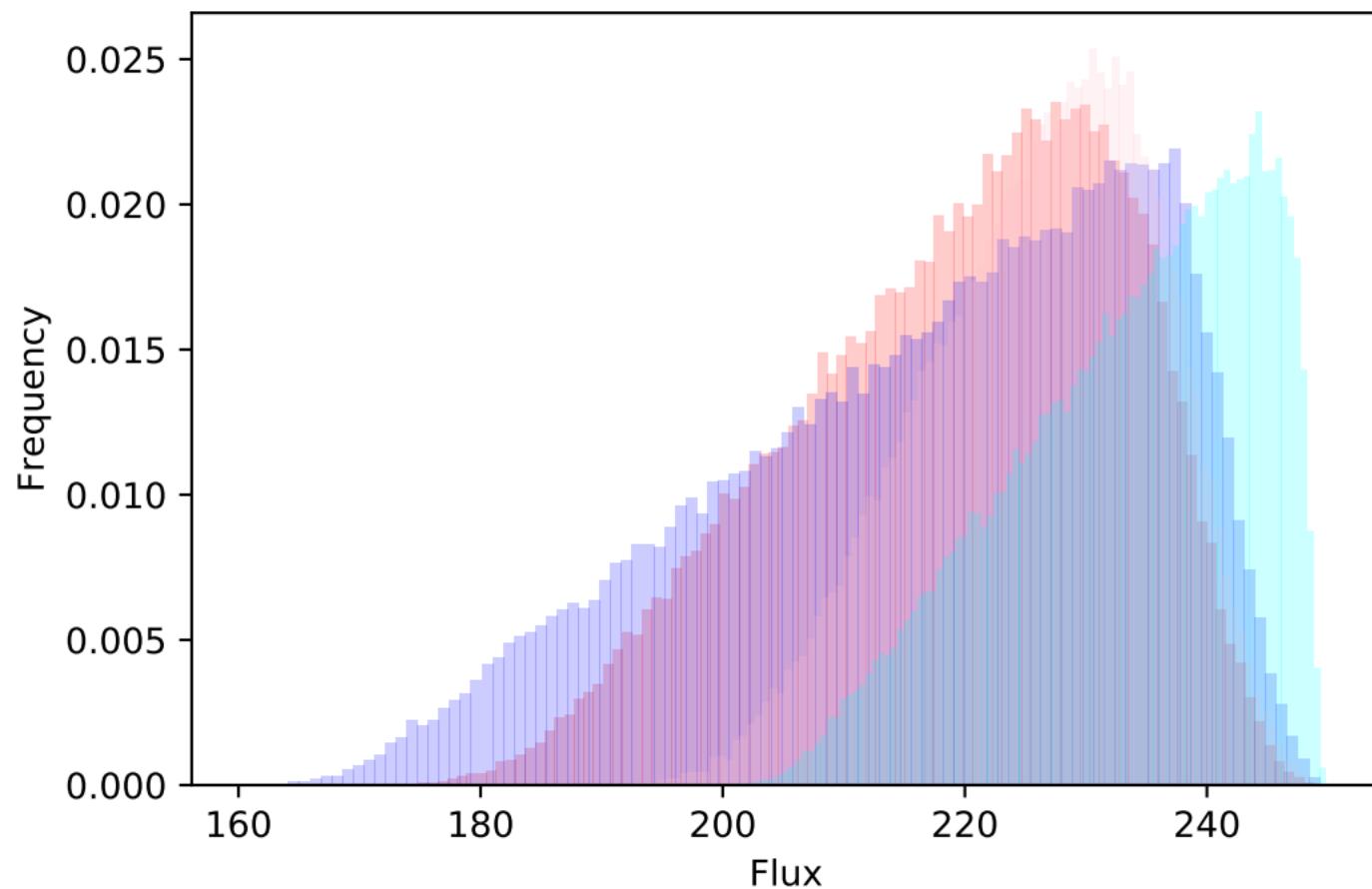


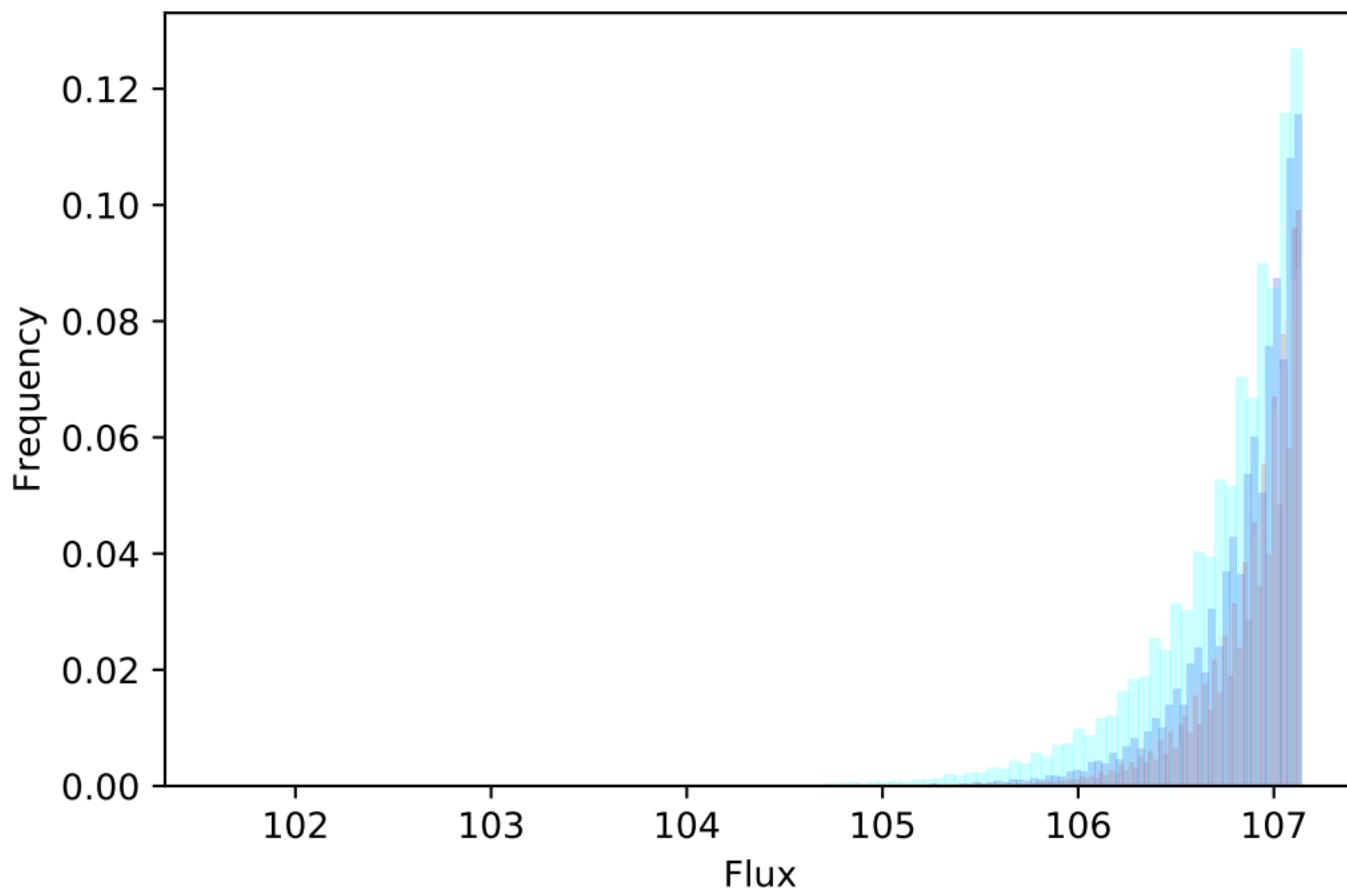
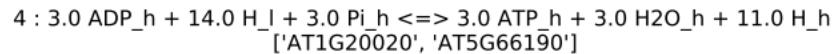
['AT2G26500', 'AT4G03280', 'ATCG00720', 'ATCG00600', 'ATCG00730', '2*ATCG00540', 'ATCG00210', 'ATCG00590']



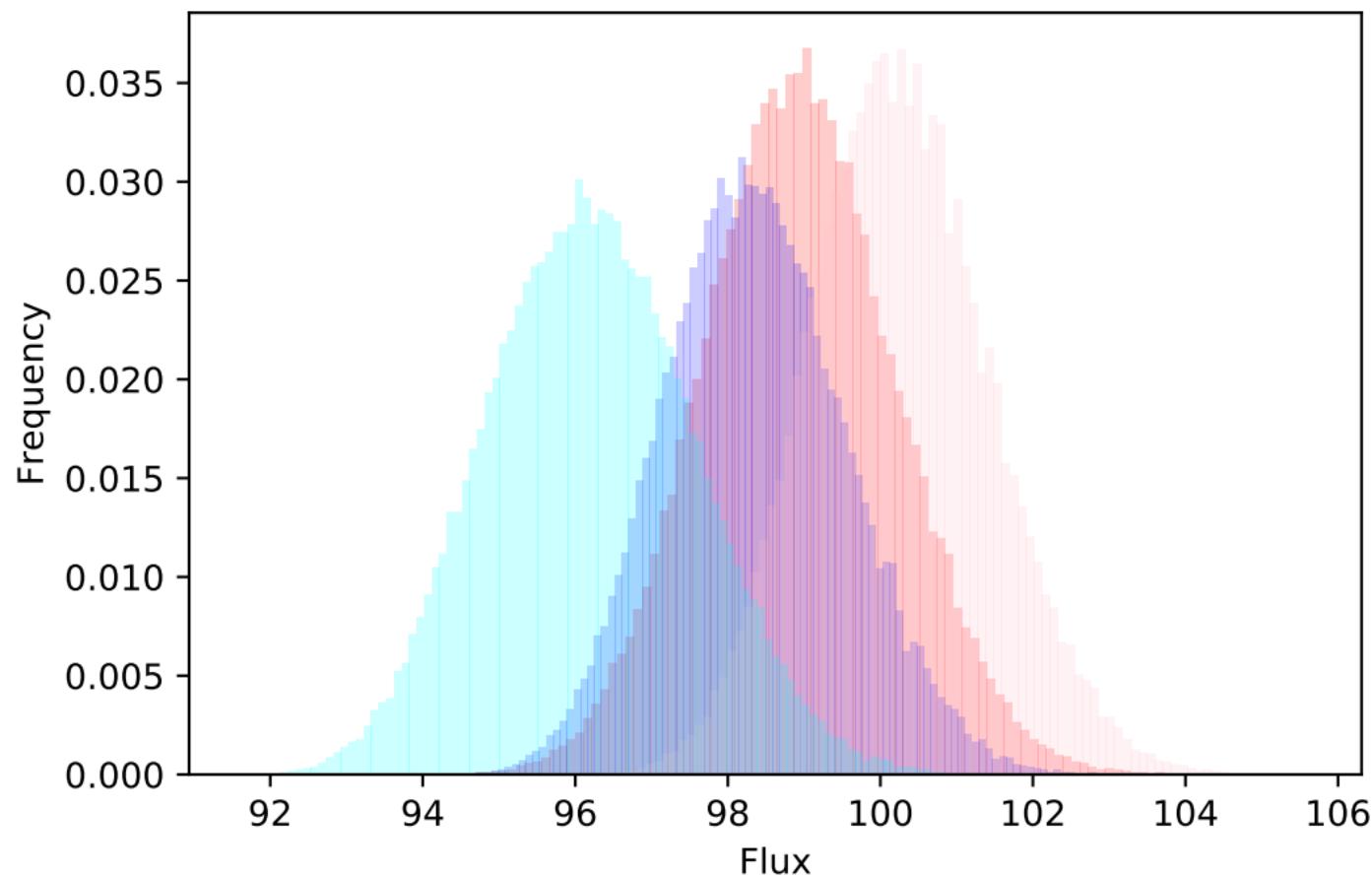


3 : 2.0 Fdrd_h + H_h + NADP_h --> 2.0 Fdox_h + NADPH_h
['AT1G20020', 'AT5G66190']

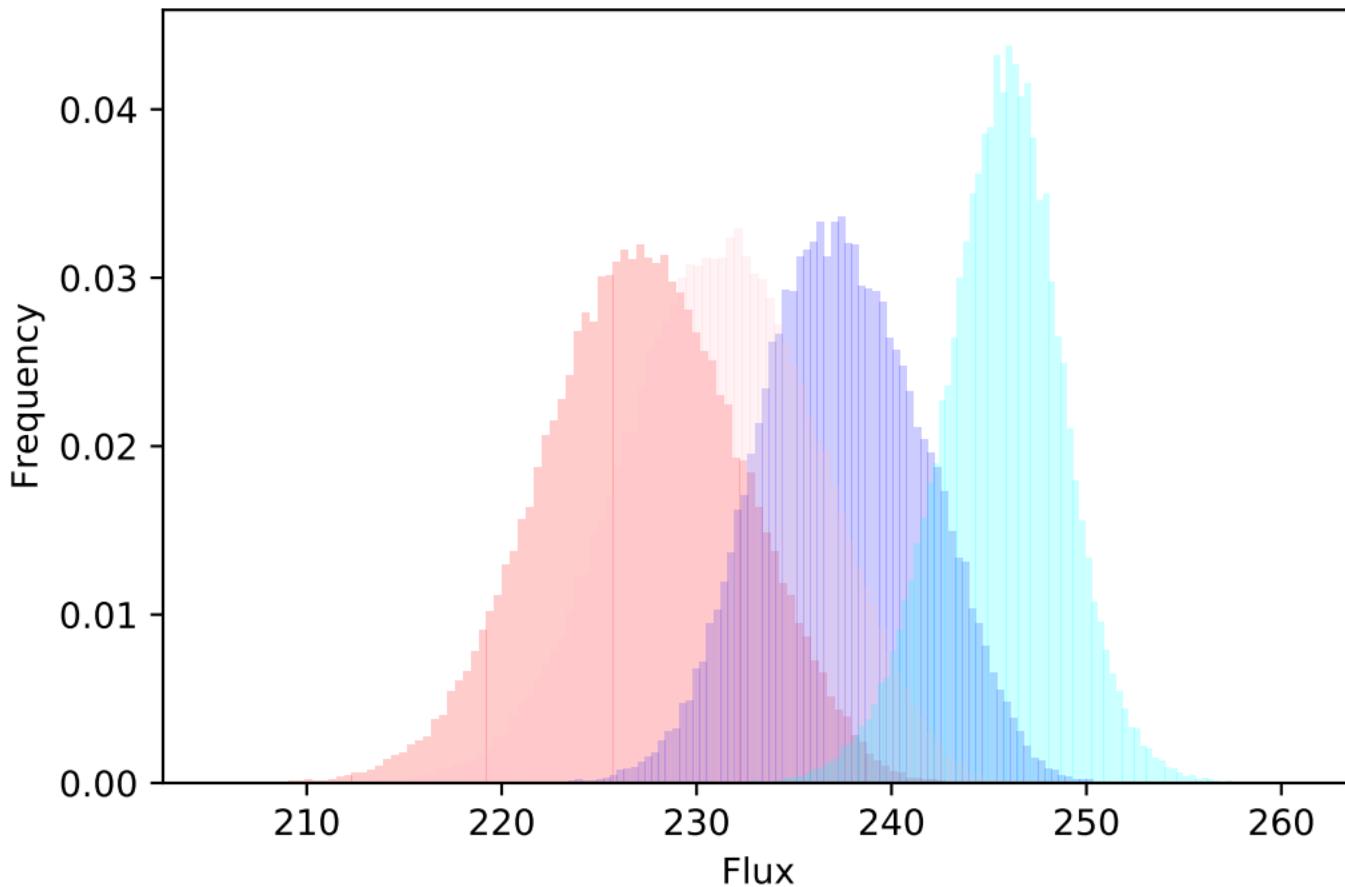




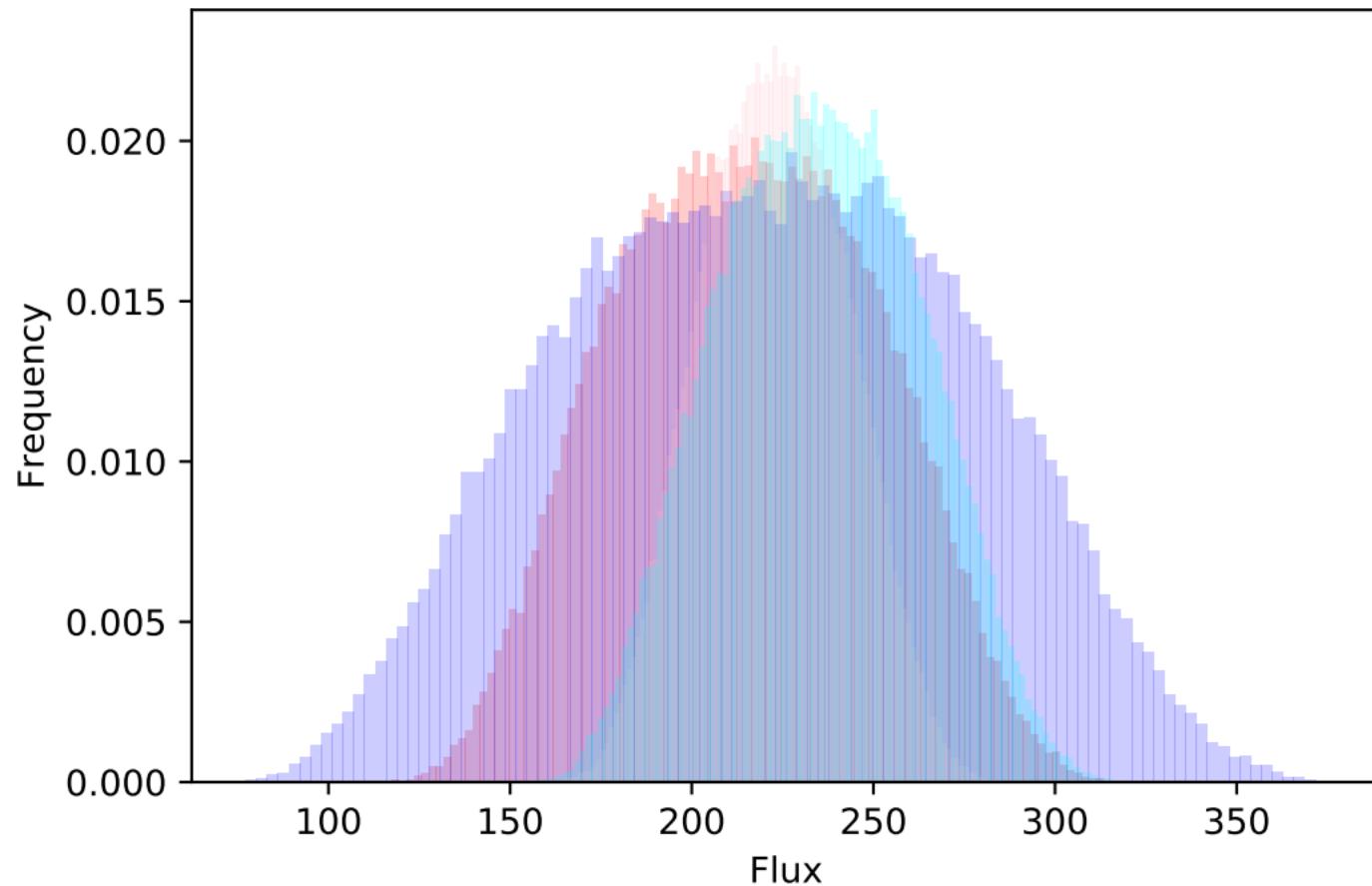
5 : CO₂ h + H₂O h + RuBP h --> 2.0 H h + 2.0 PGA h
['AT1G67090', 'AT5G38420', '8*ATCG00490', 'AT5G38410', '8*AT5G38430']



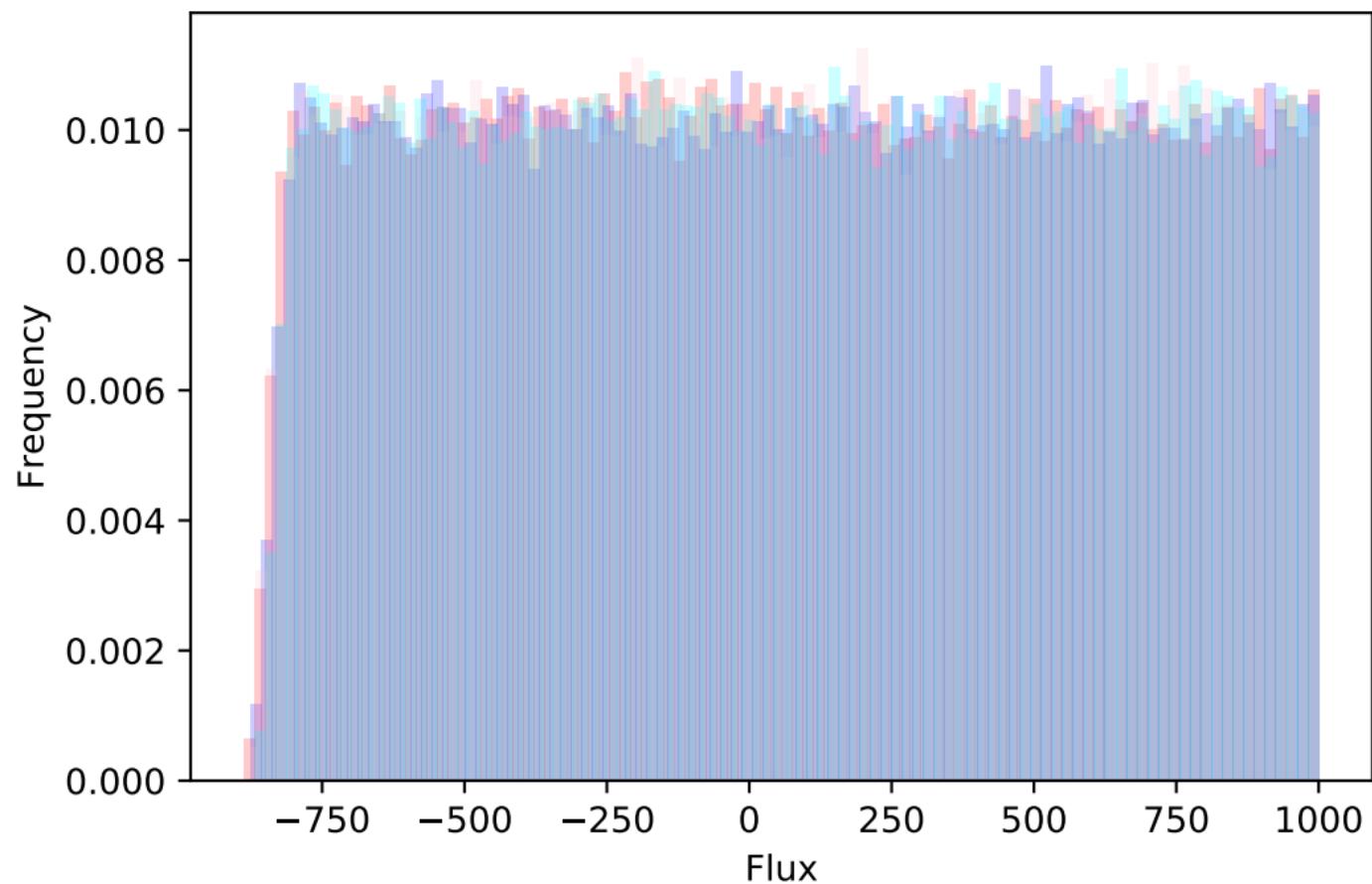
6 : ATP_h + PGA_h <=> ADP_h + DPGA_h
['AT1G56190', 'AT3G12780']



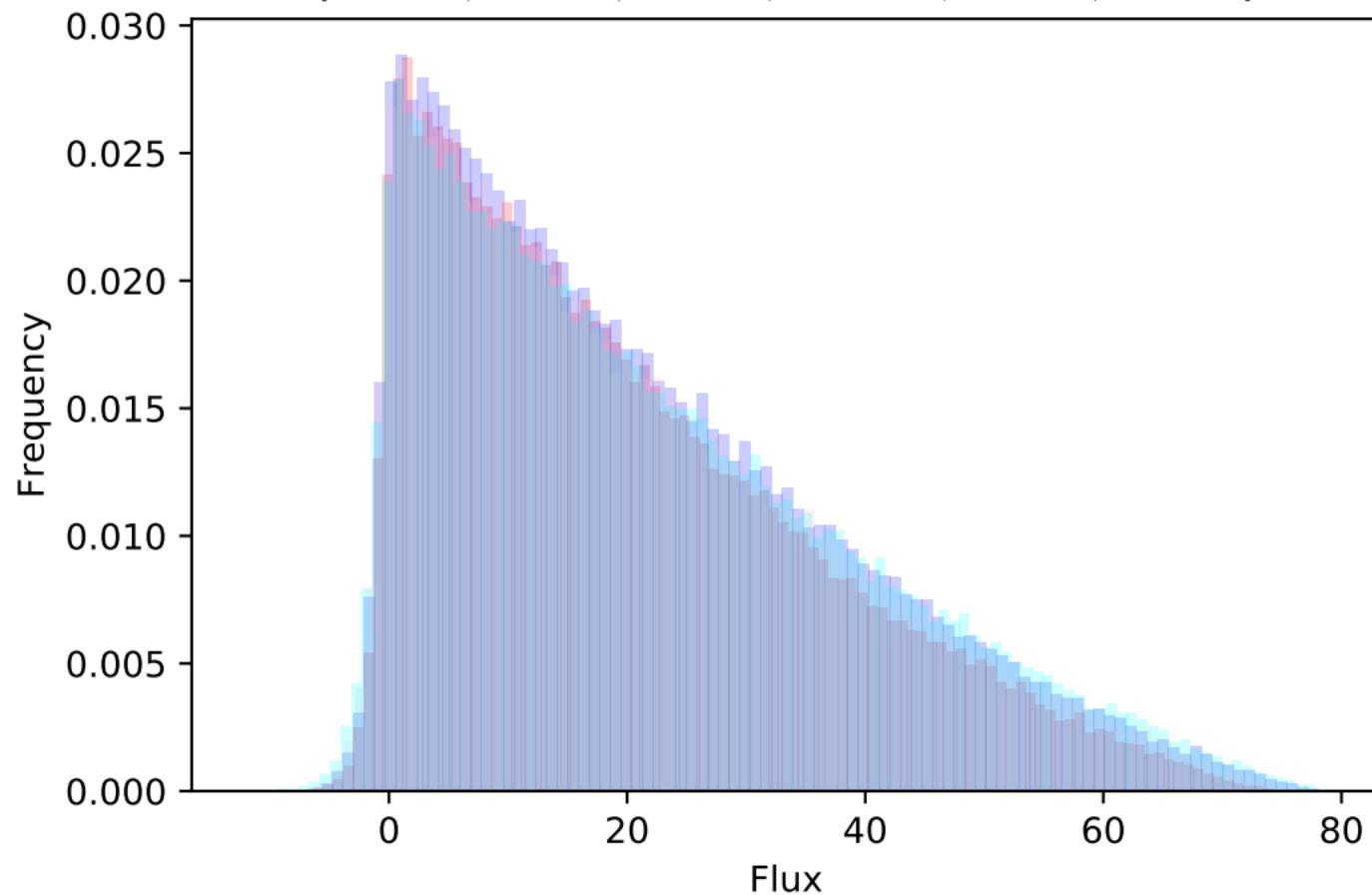
7 : DPGA_h + H_h + NADPH_h --> GAP_h + NADP_h + Pi_h
['2*AT1G42970', 'AT1G12900', '4*AT3G26650', '2*AT3G26650']



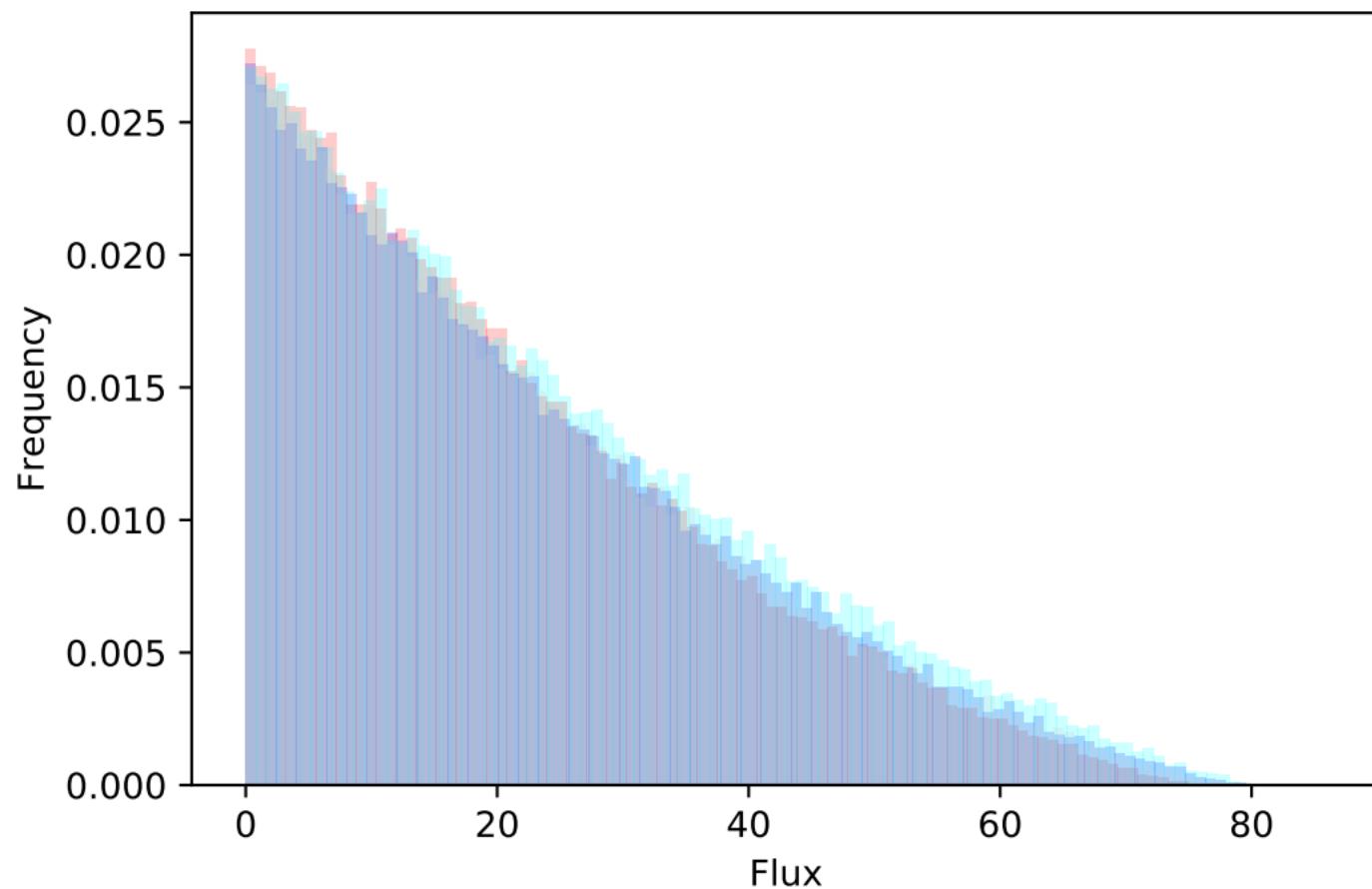
8 : GAP_h <=> DHAP_h
['AT2G21170', '2*AT3G55440']



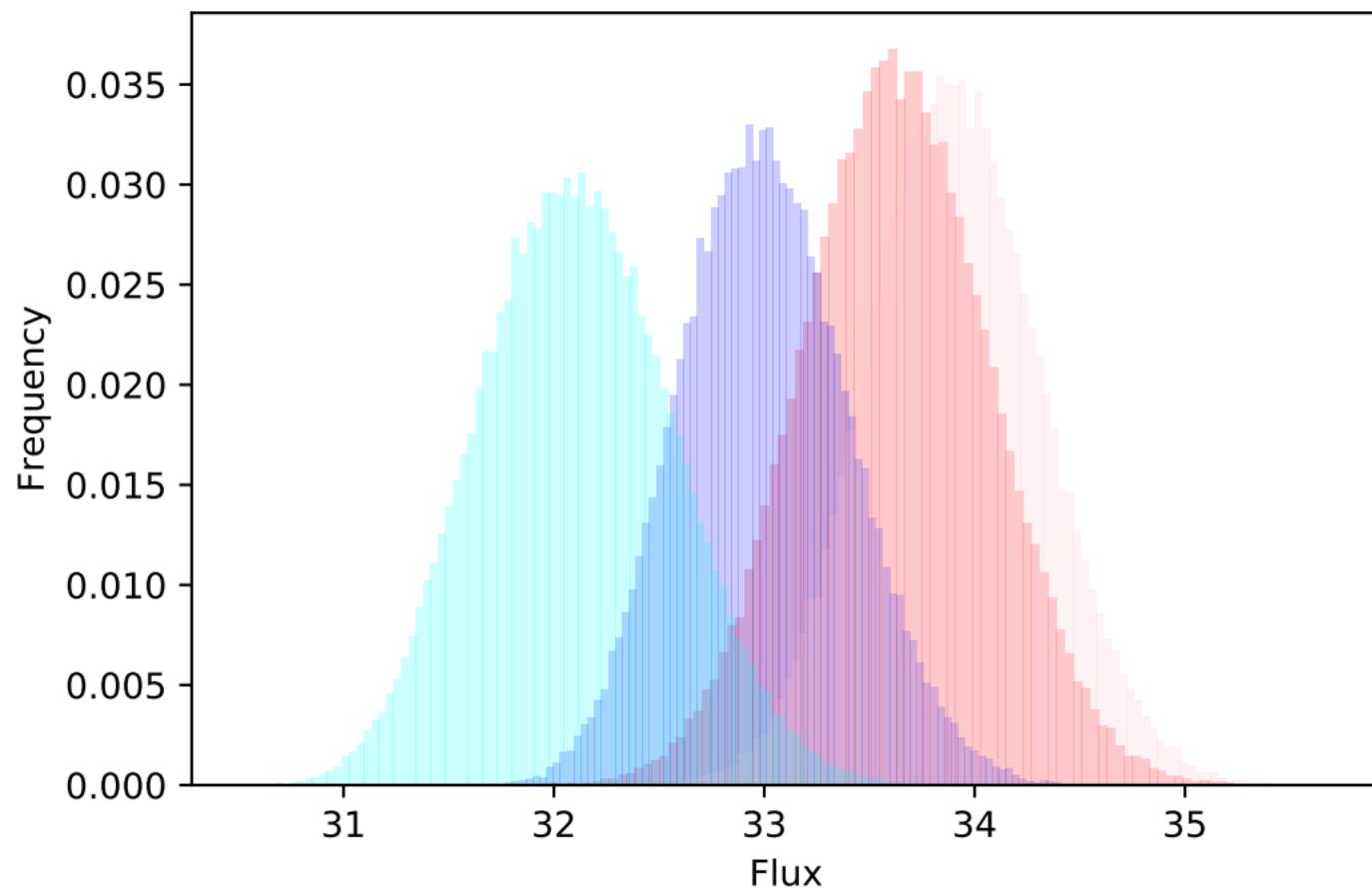
9 : DHAP_h + GAP_h <=> FBP_h
['AT5G03690', 'AT4G26530', 'AT2G21330', '4*AT2G01140', 'AT4G38970', 'AT3G52930']



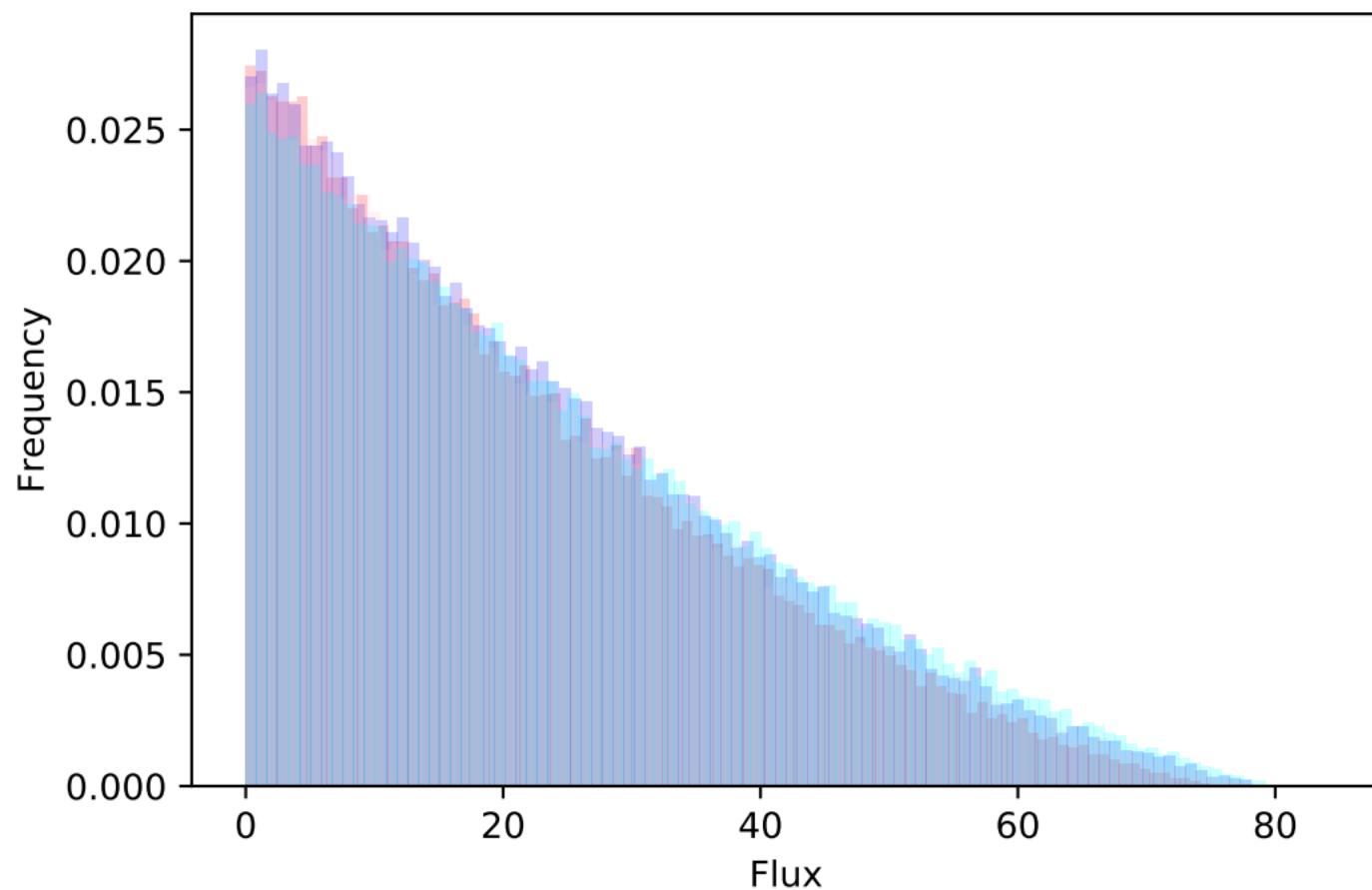
10 : FBP_h + H2O_h --> F6P_h + Pi_h
['4*AT3G54050']



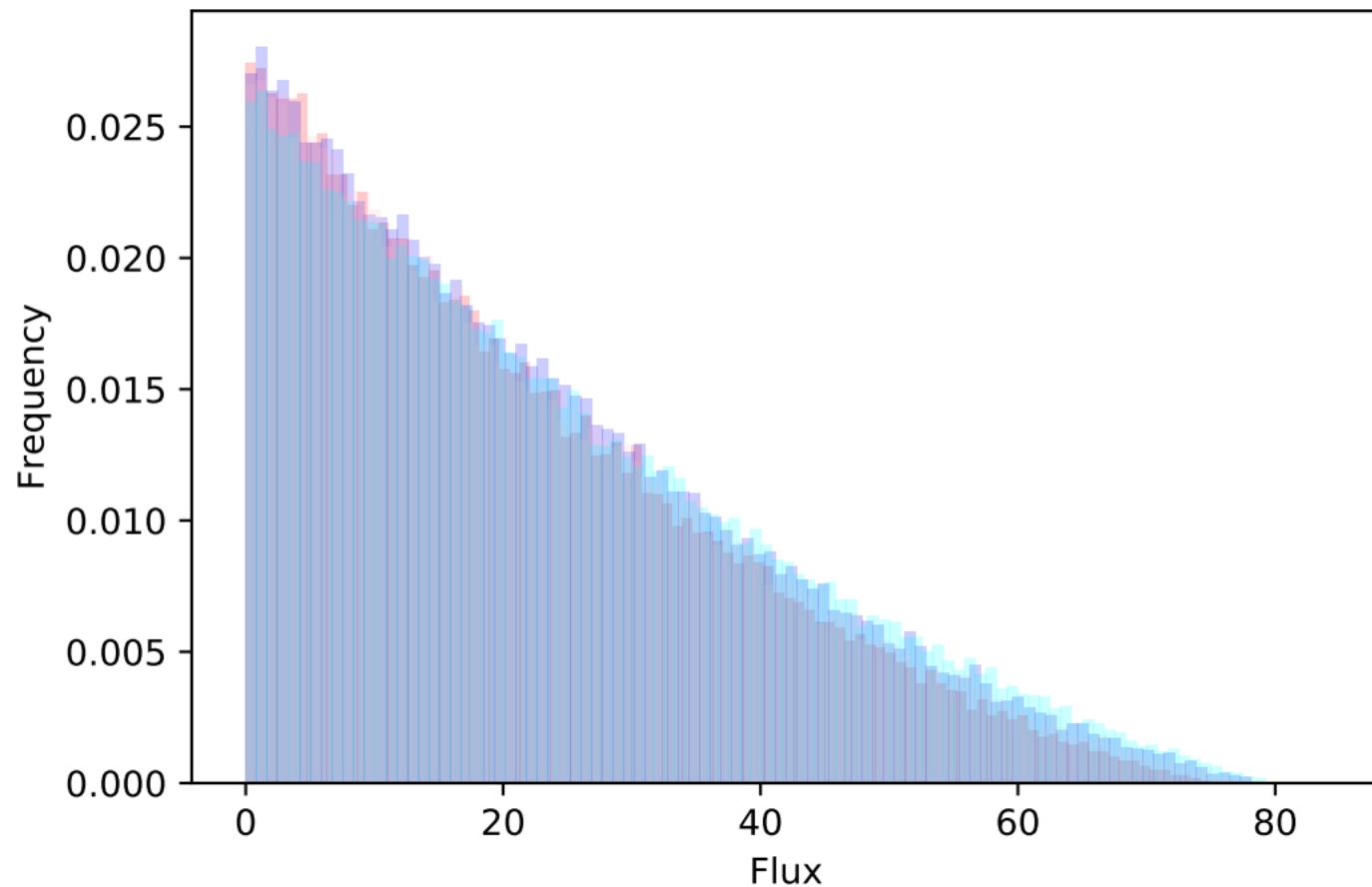
11 : F6P_h + GAP_h <=> E4P_h + X5P_h
['2*AT3G60750', 'AT2G45290']



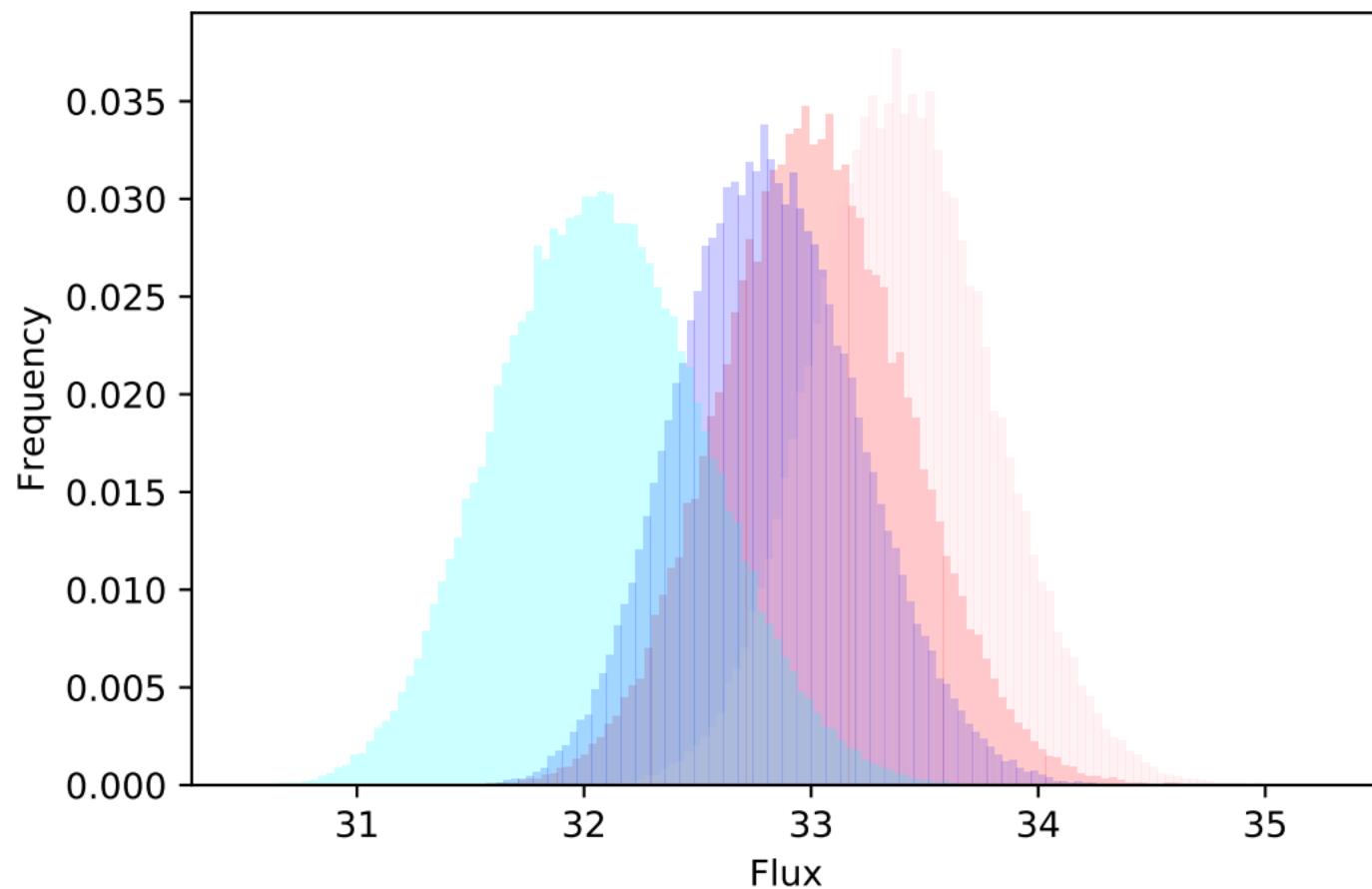
12 : DHAP_h + E4P_h --> SBP_h
['AT5G03690', 'AT4G26530', 'AT2G21330', '4*AT2G01140', 'AT4G38970', 'AT3G52930']



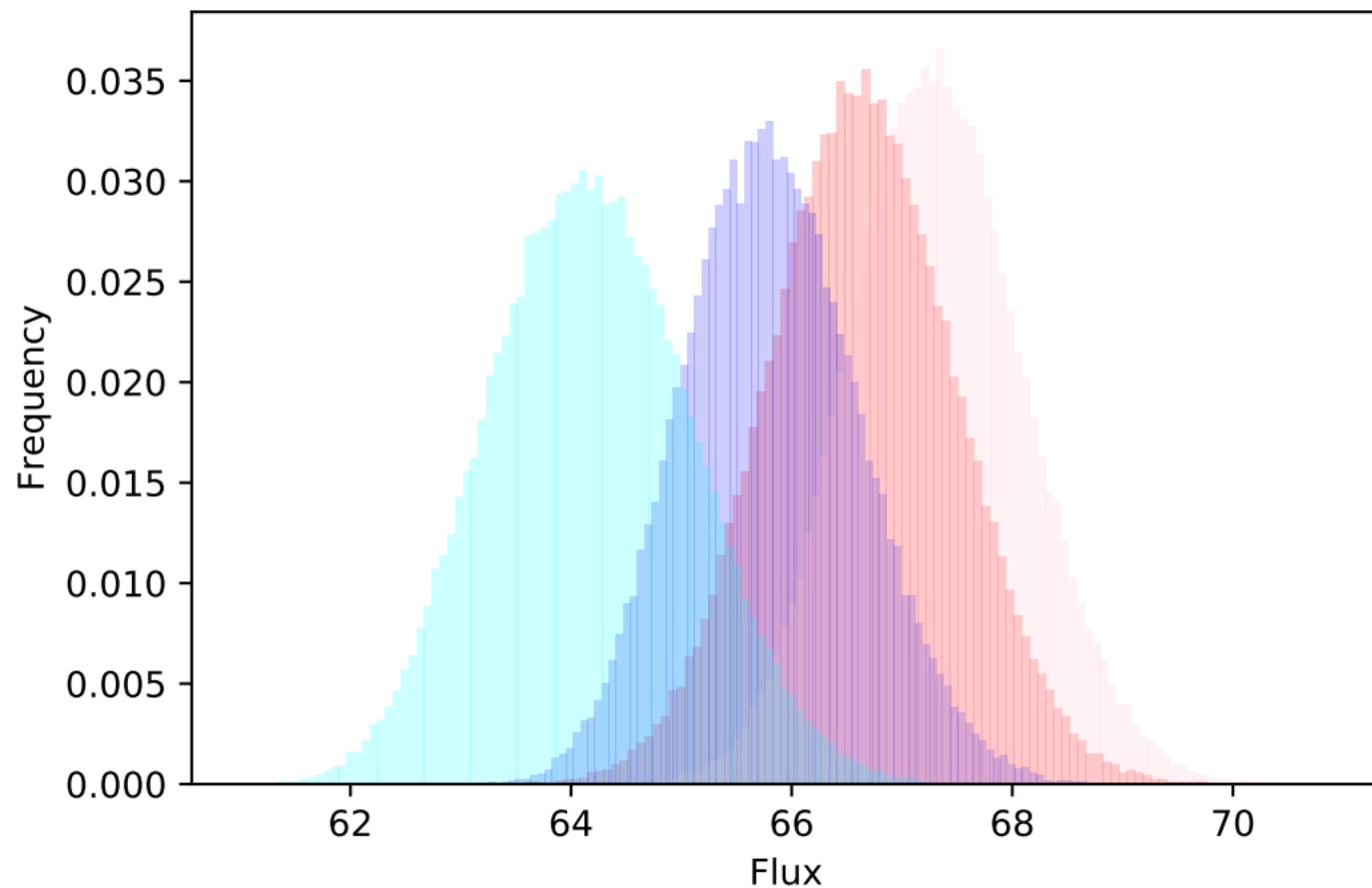
13 : H₂O_{_h} + SBP_{_h} --> Pi_{_h} + S7P_{_h}
['2*AT3G55800']



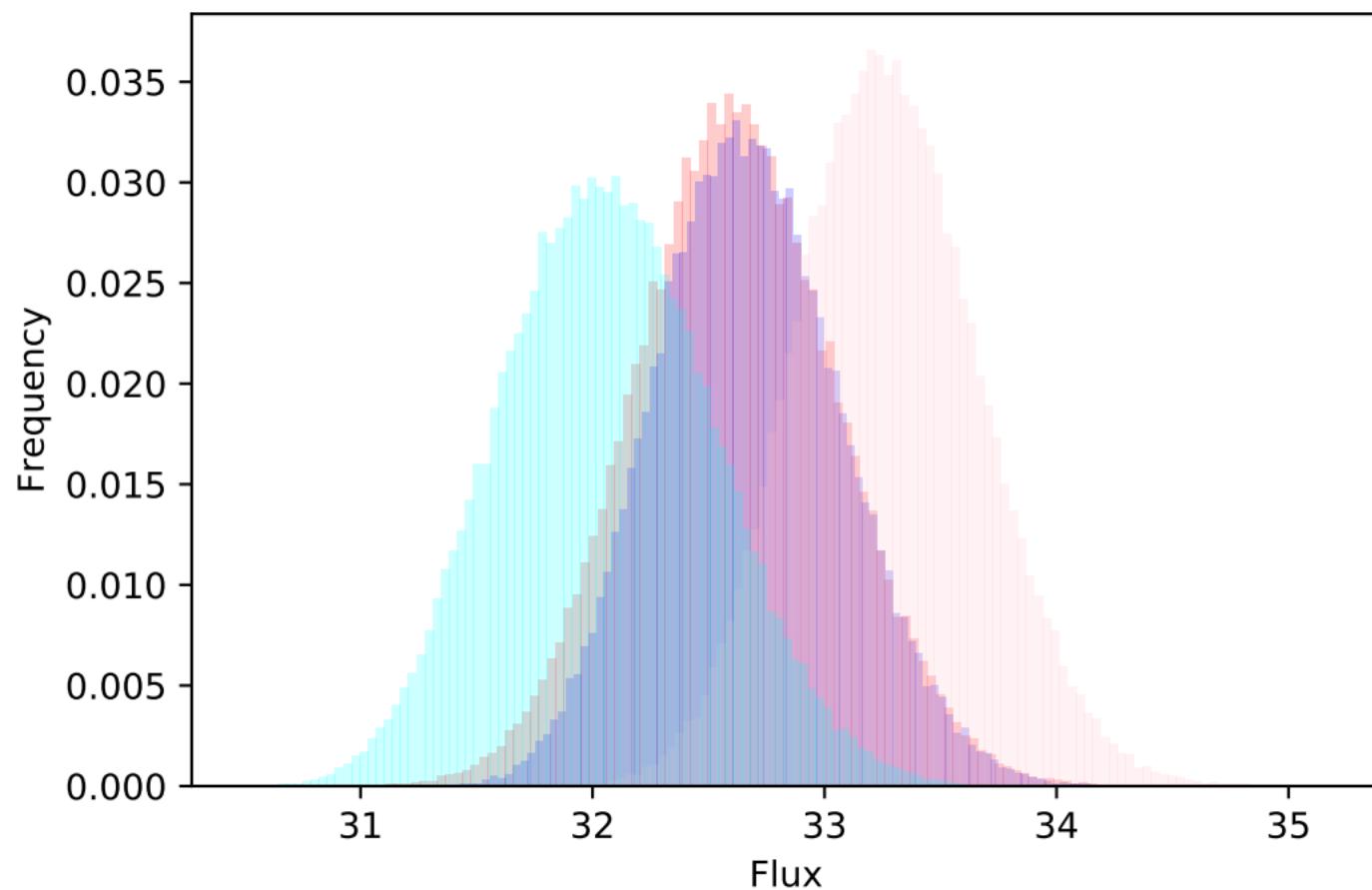
14 : GAP_h + S7P_h <=> R5P_h + X5P_h
['2*AT3G60750', 'AT2G45290']

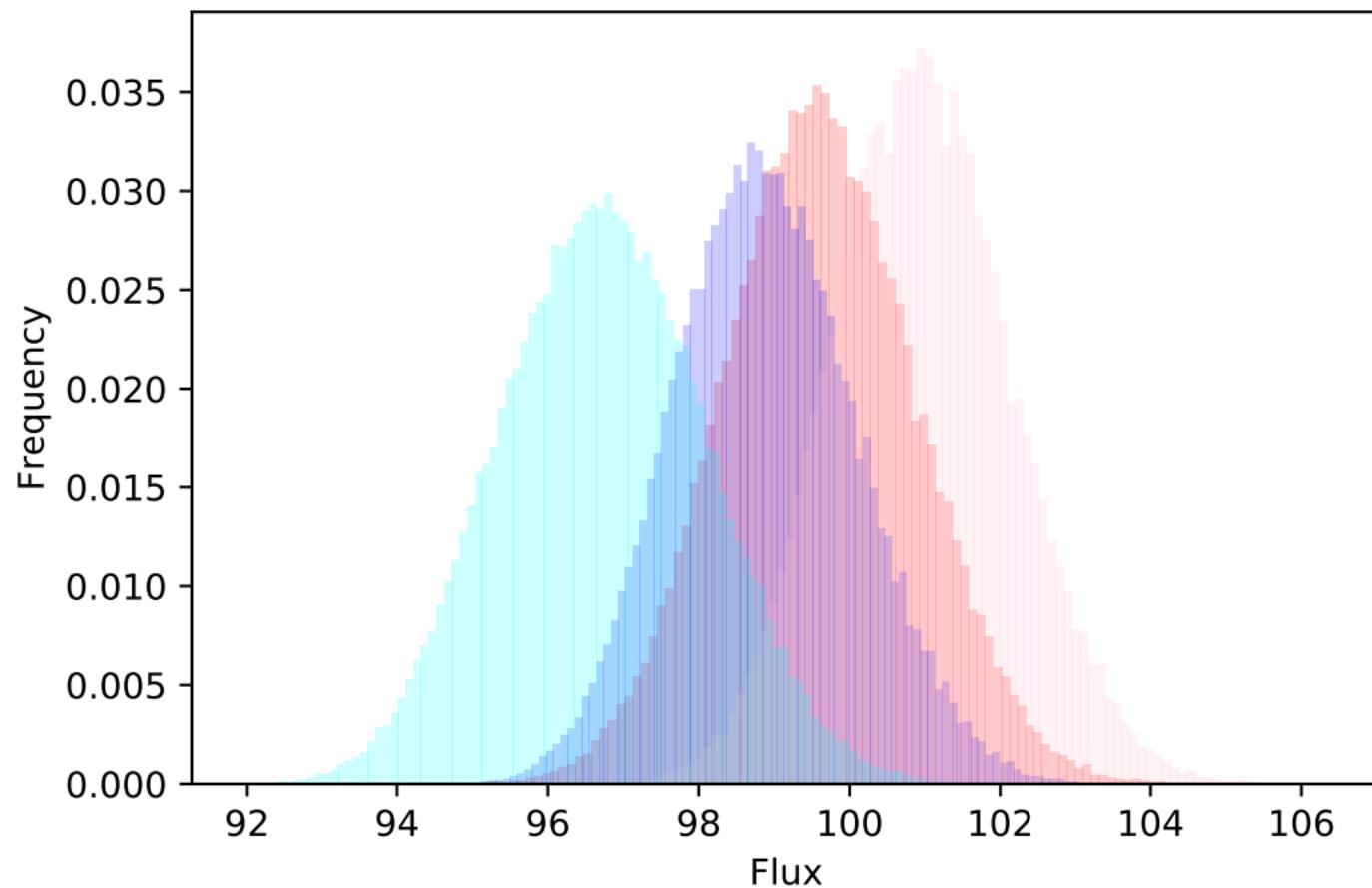
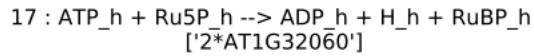


15 : X5P_h <=> Ru5P_h
['8*AT5G61410']

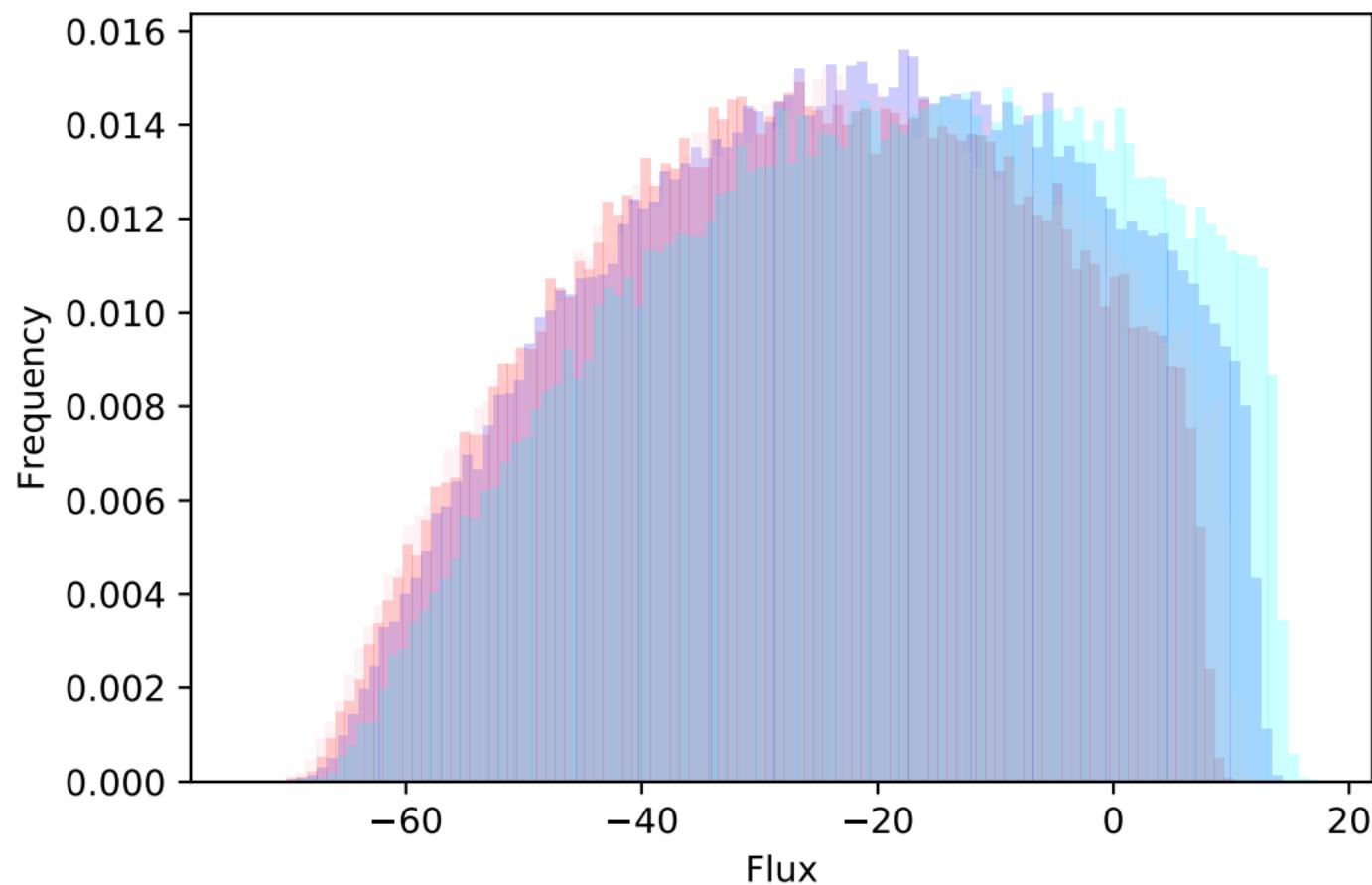


16 : R5P_h <=> Ru5P_h
['2*AT3G04790']

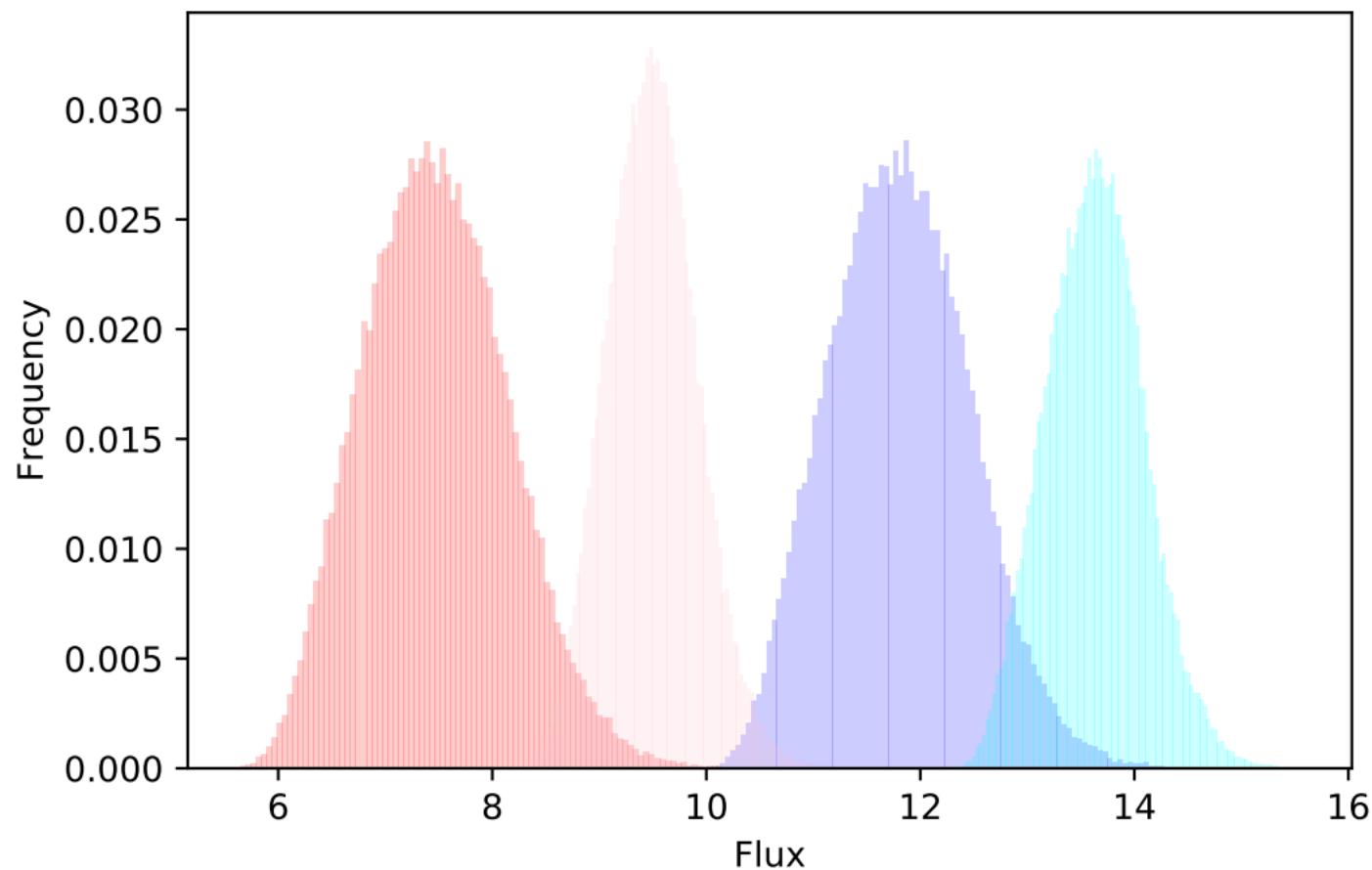




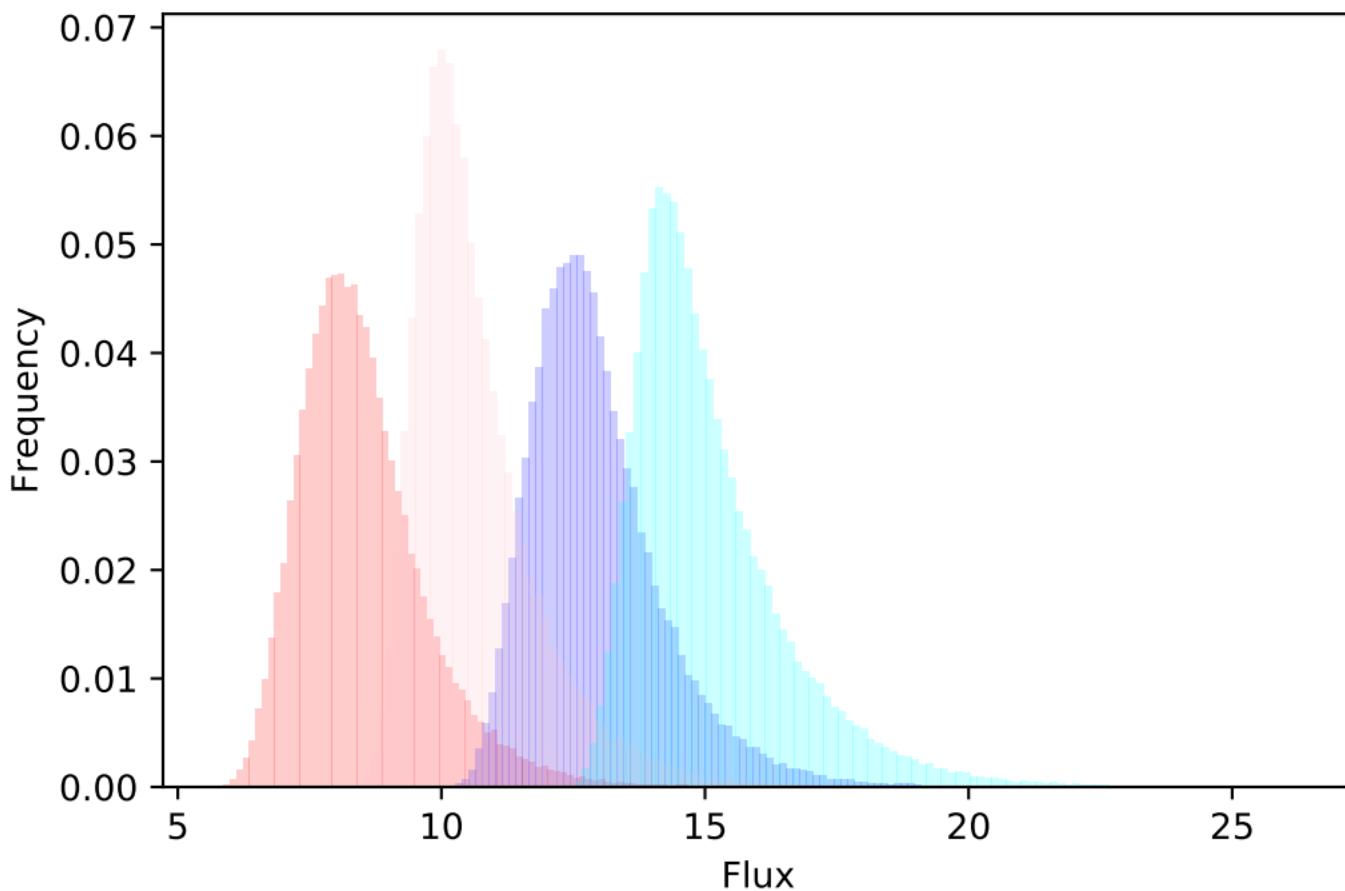
18 : F6P_h <=> G6P_h
['2*AT4G24620']



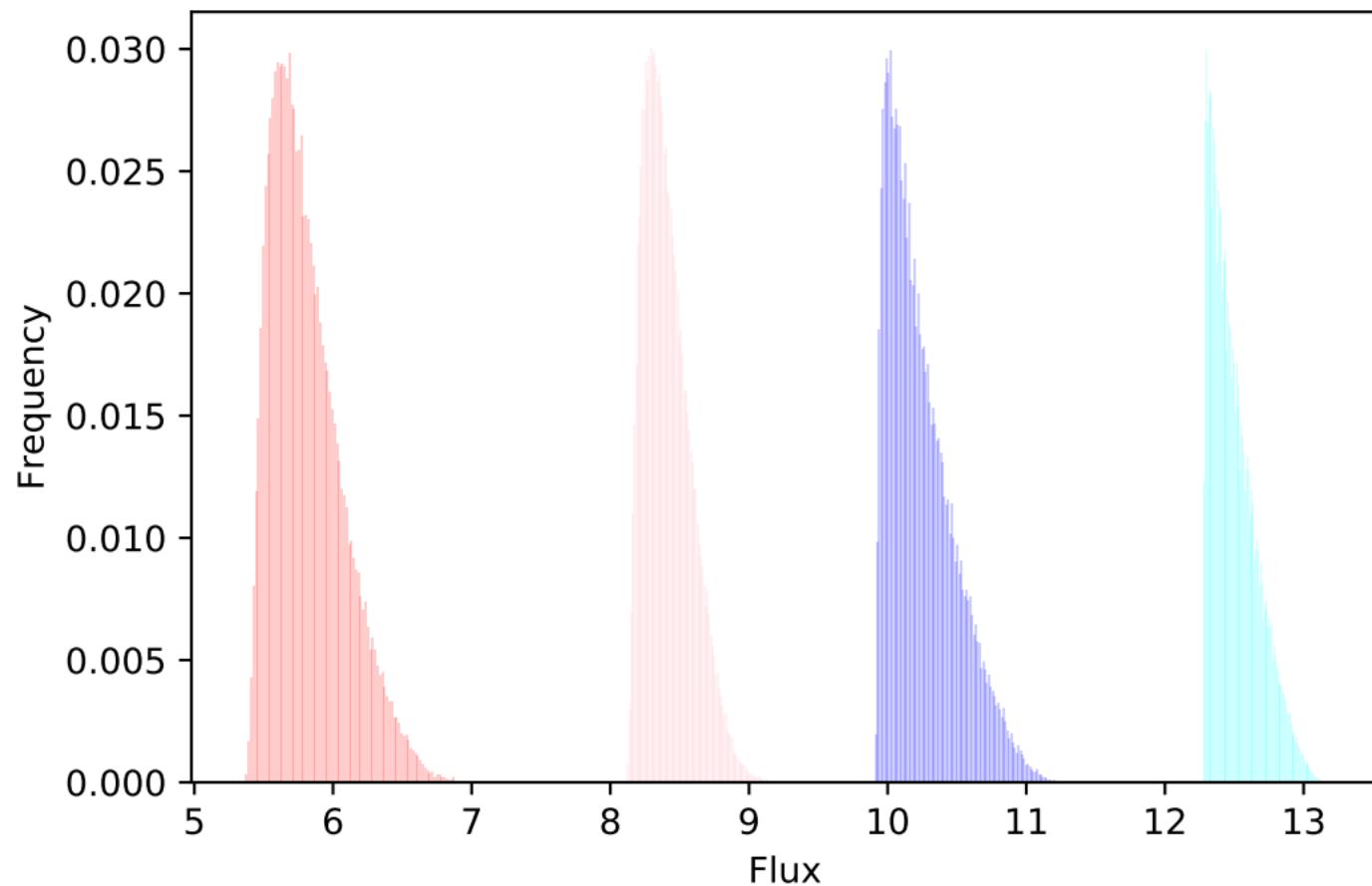
19 : G6P_h <=> G1P_h
['AT1G70730', 'AT5G51820', 'AT1G23190']



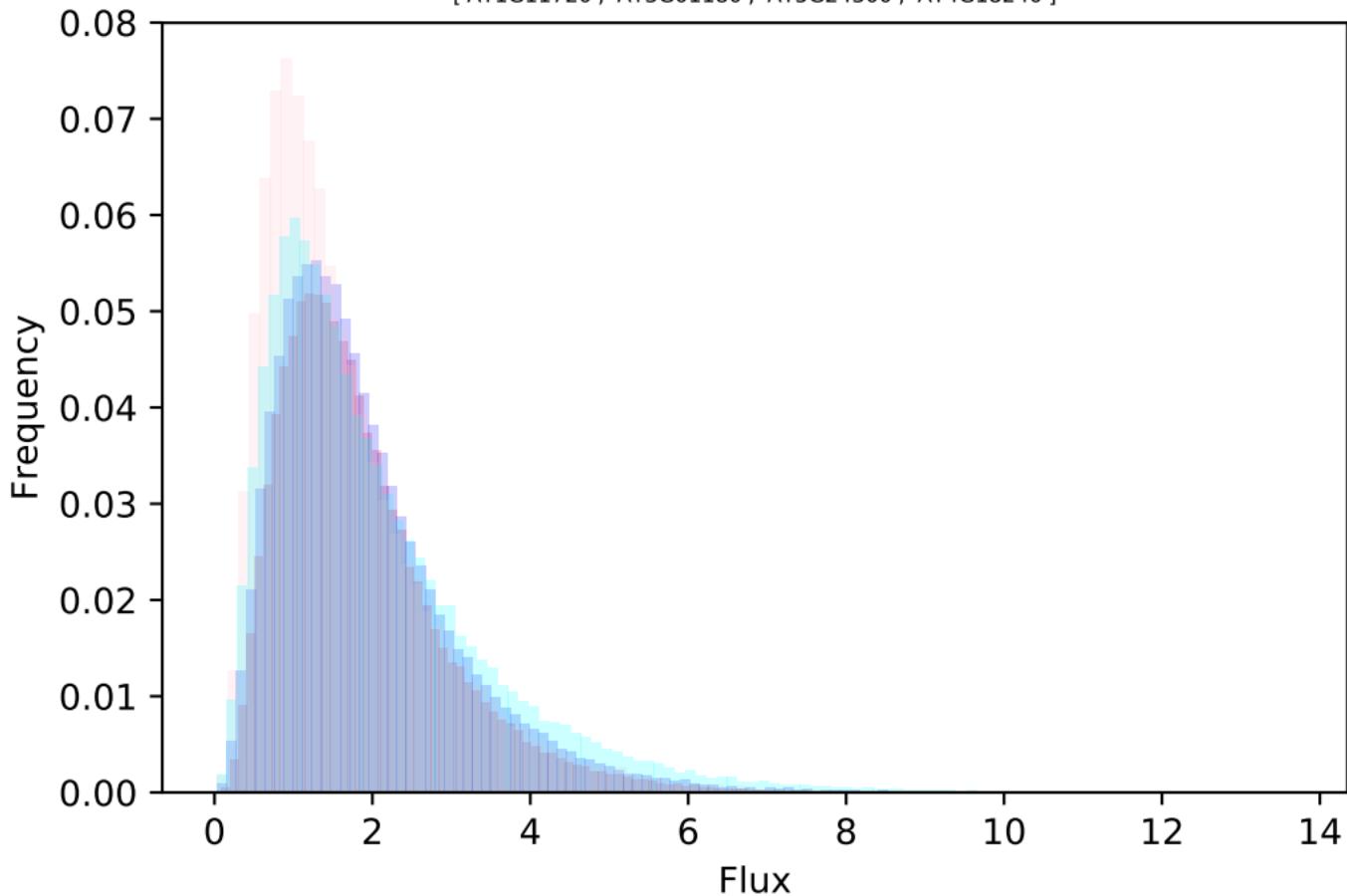
20 : ATP_h + G1P_h --> ADPG_h + PPi_h
['AT2G21590', 'AT1G05610', 'AT4G39210', '2*AT5G48300', '2*AT5G19220', 'AT1G27680']



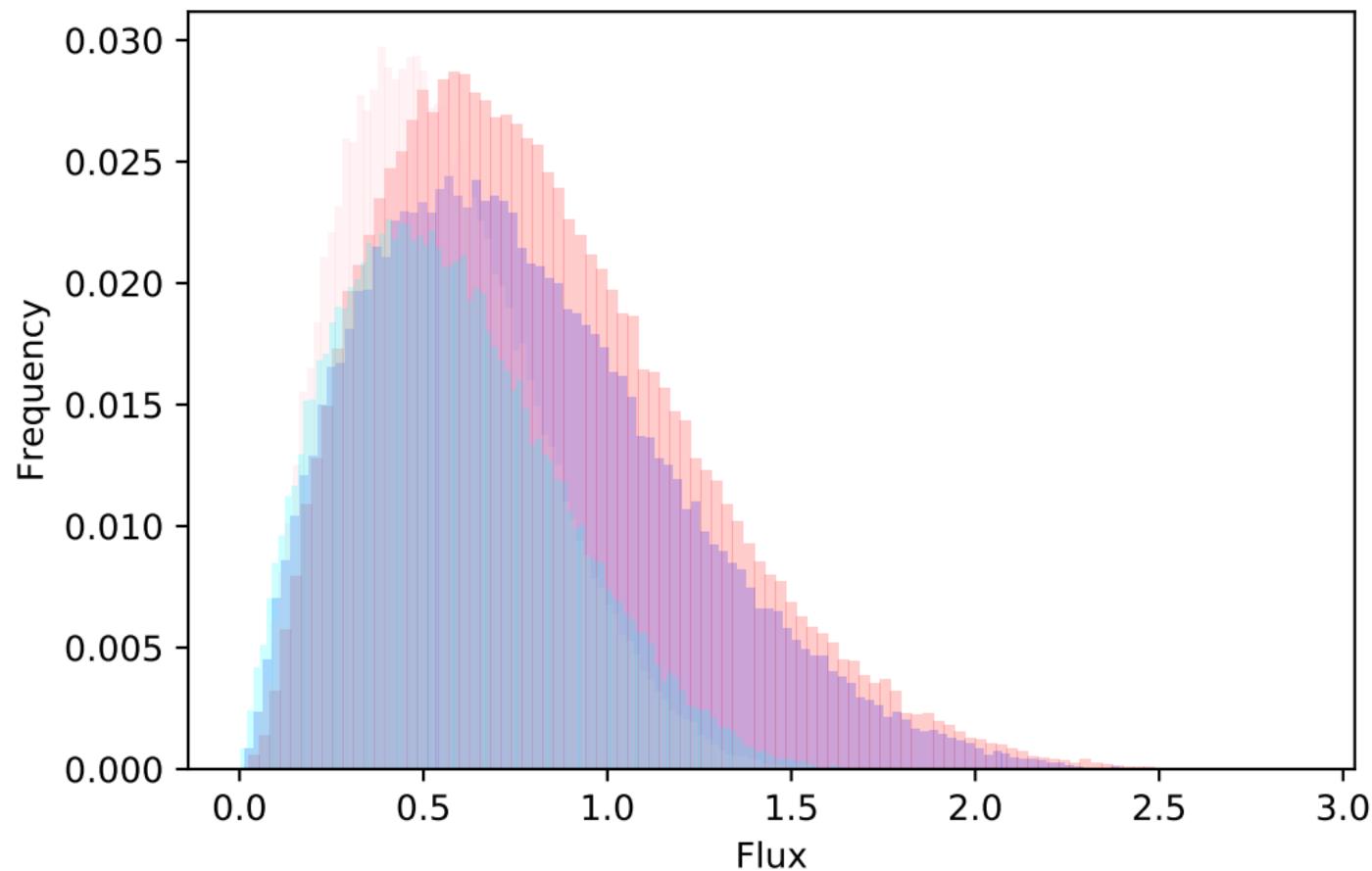
21 : ADPG_h + H2O_h --> ADP_h + H_h + starch1_h
['AT1G11720', 'AT3G01180', 'AT5G24300', 'AT4G18240']

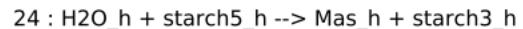


22 : ADPG_h + starch1_h --> ADP_h + H_h + starch2_h
['AT1G11720', 'AT3G01180', 'AT5G24300', 'AT4G18240']

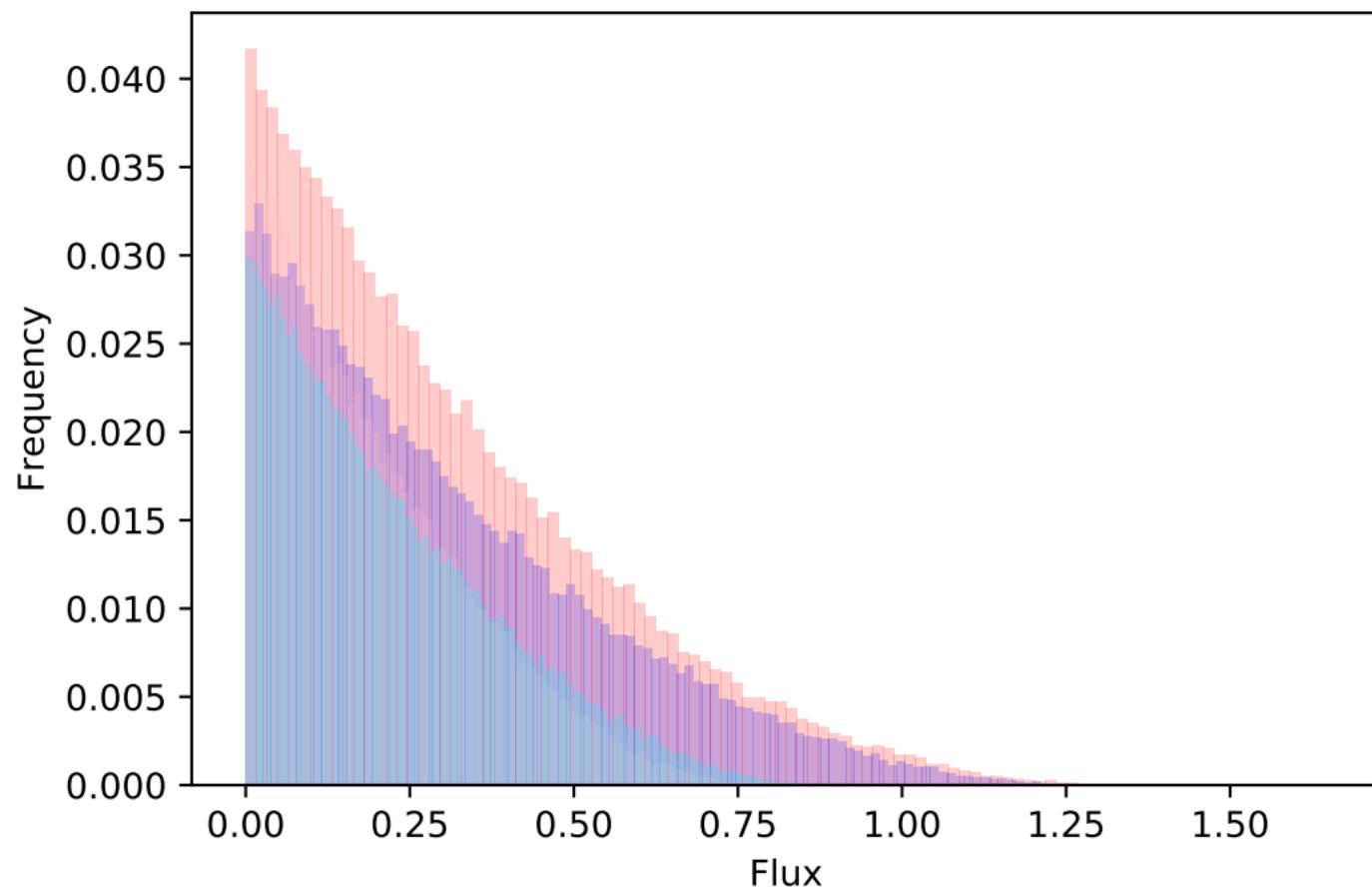


23 : ADPG_h + starch2_h --> ADP_h + H_h + starch3_h
['AT1G11720', 'AT3G01180', 'AT5G24300', 'AT4G18240']

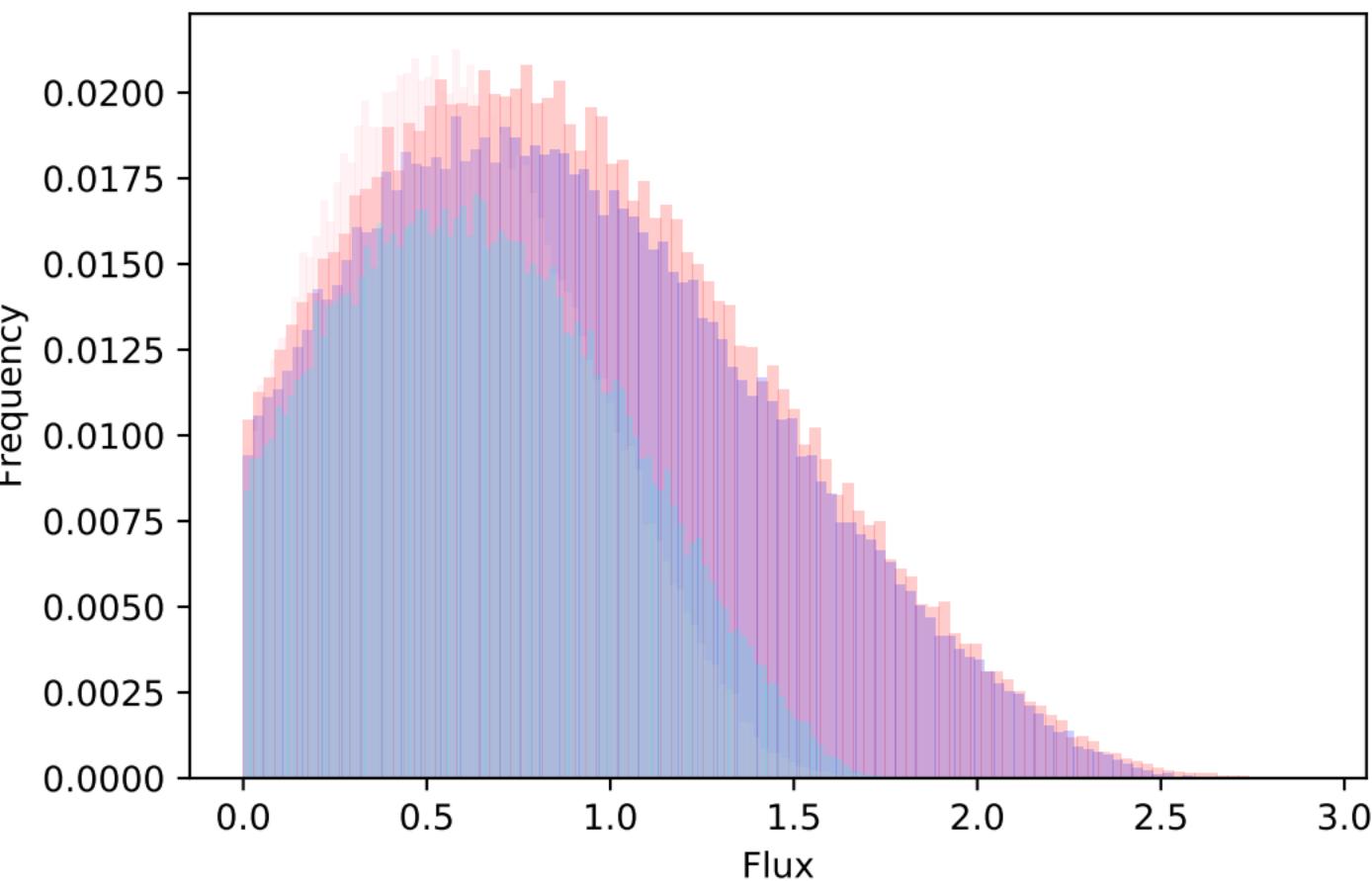




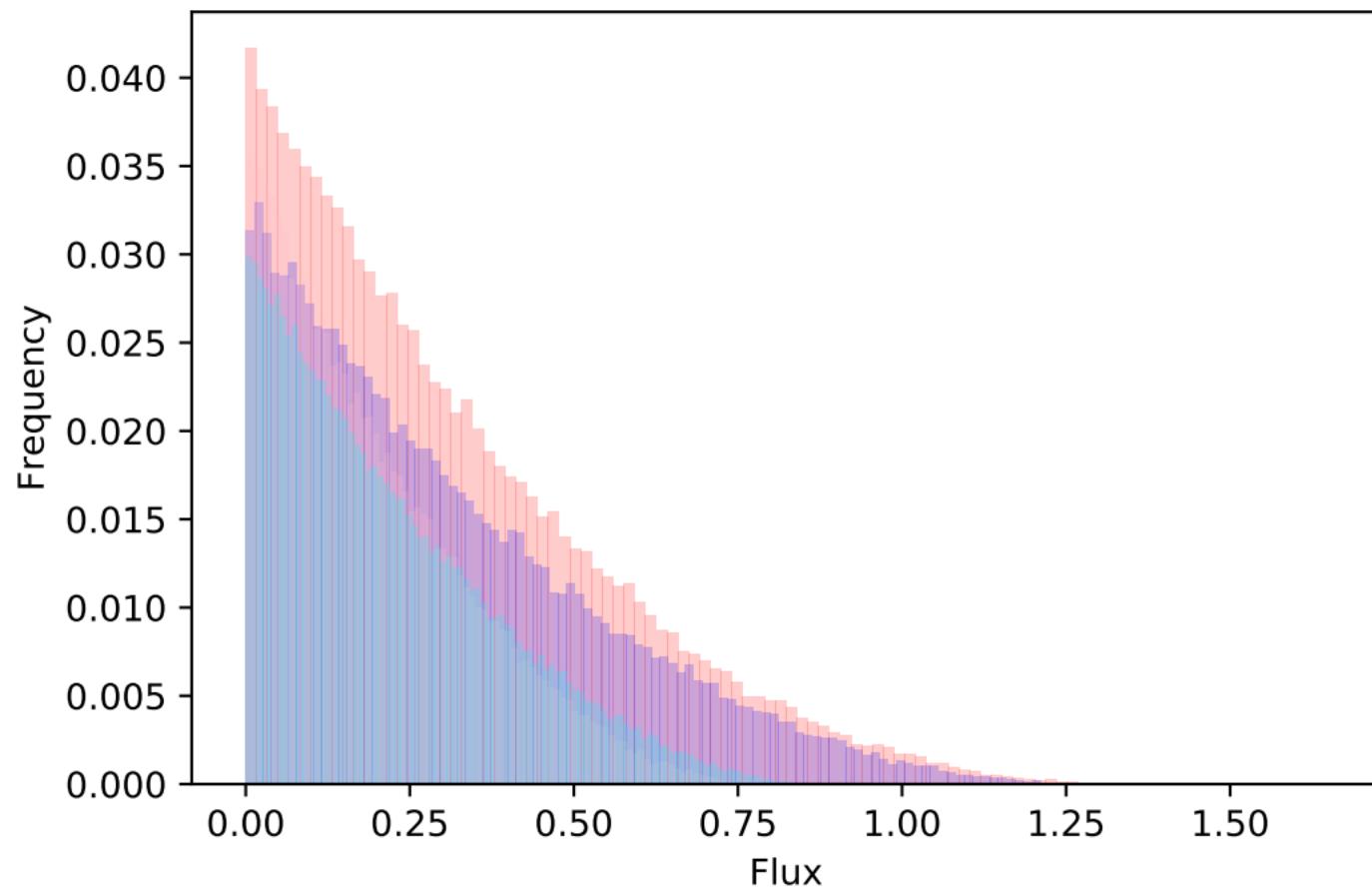
['AT3G23920', 'AT5G18670', 'AT4G15210', 'AT1G69830', 'AT4G17090', 'AT4G00490', 'AT2G32290']



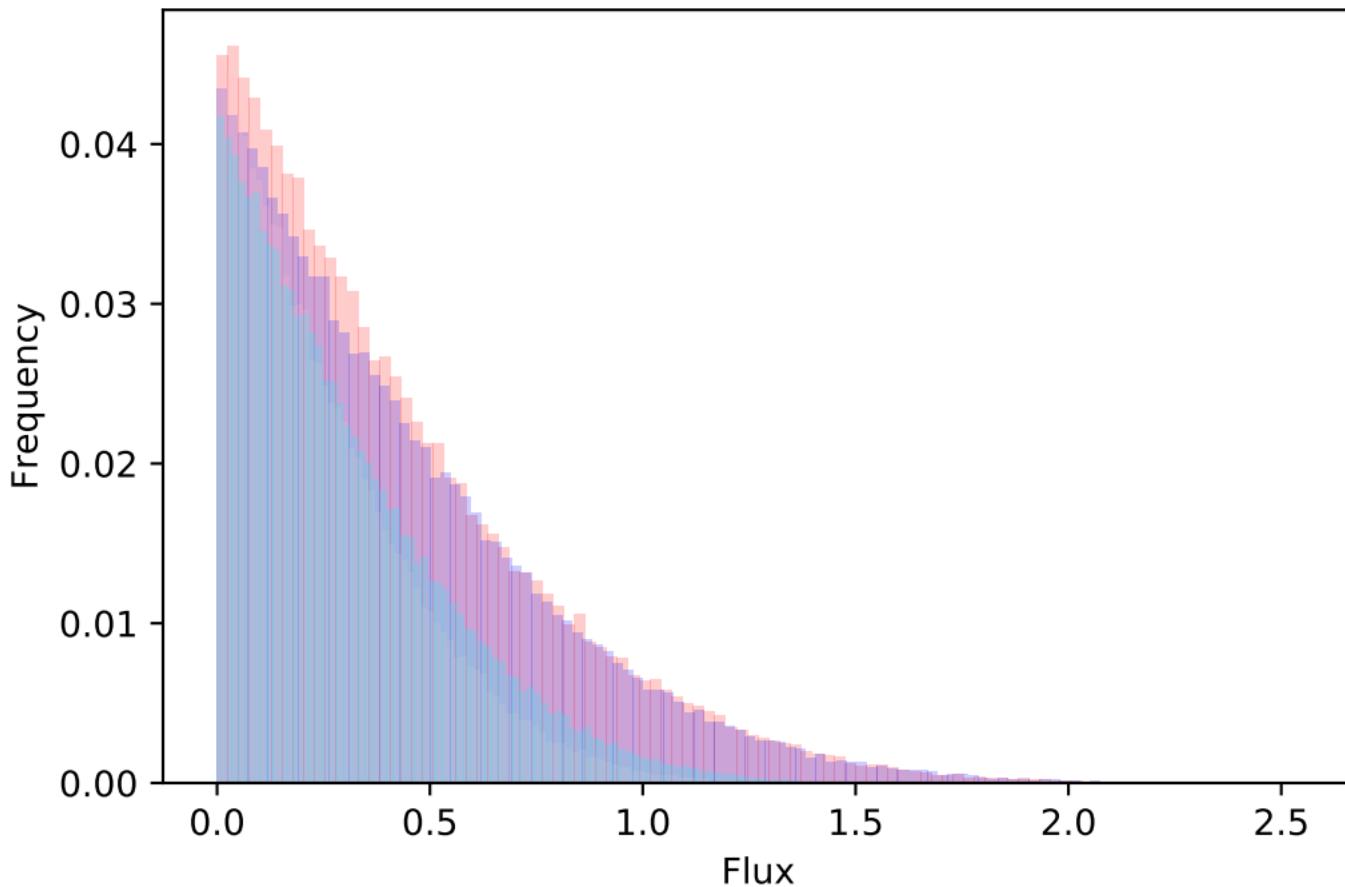
25 : H₂O_h + starch3_h --> Mas_h + starch1_h
['AT3G23920', 'AT2G32290', 'AT4G15210', 'AT1G69830', 'AT4G17090', 'AT4G00490', 'AT5G18670']



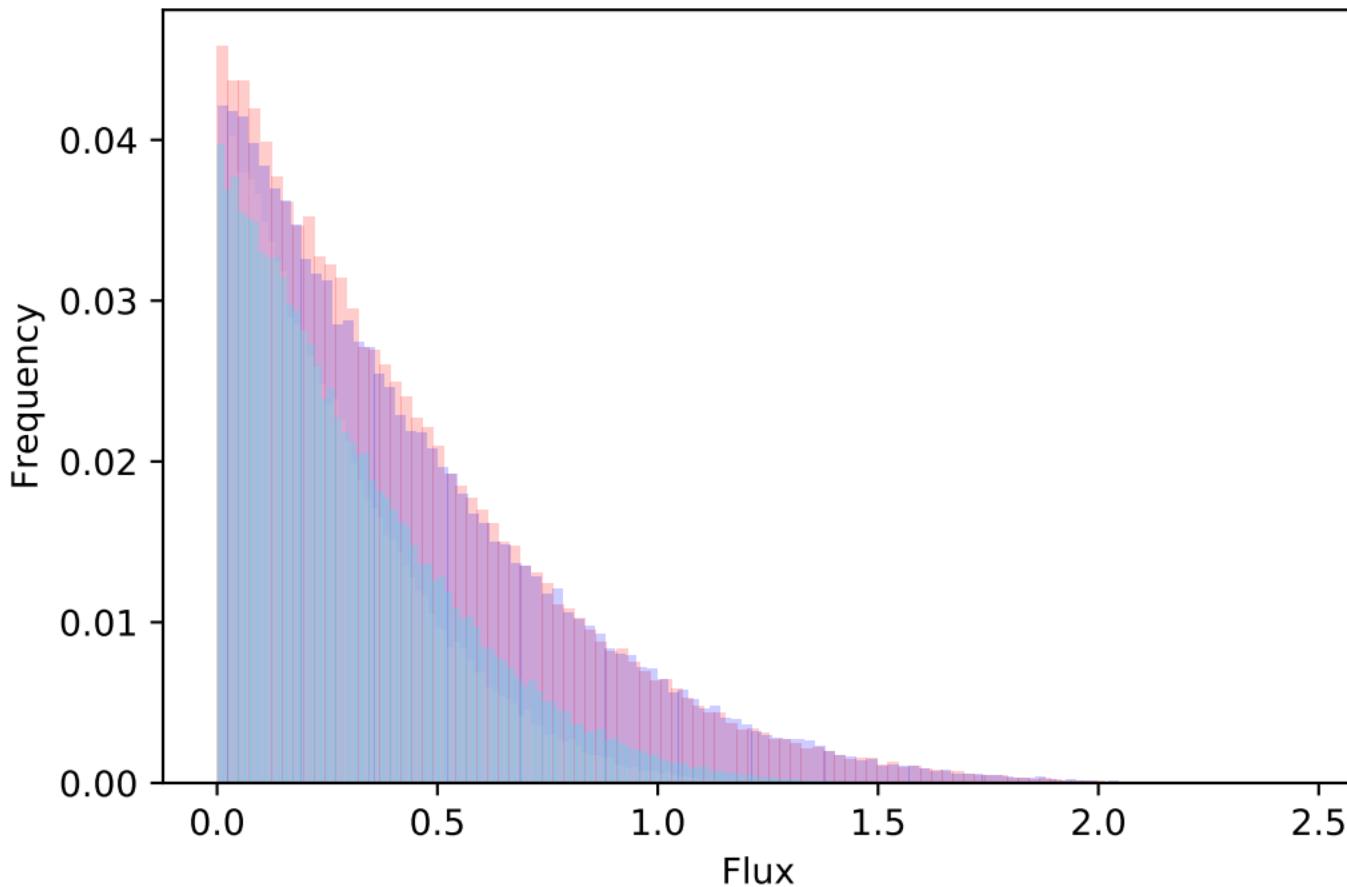
26 : 2.0 starch3_h --> Glc_h + starch5_h
['AT2G40840', 'AT5G64860']



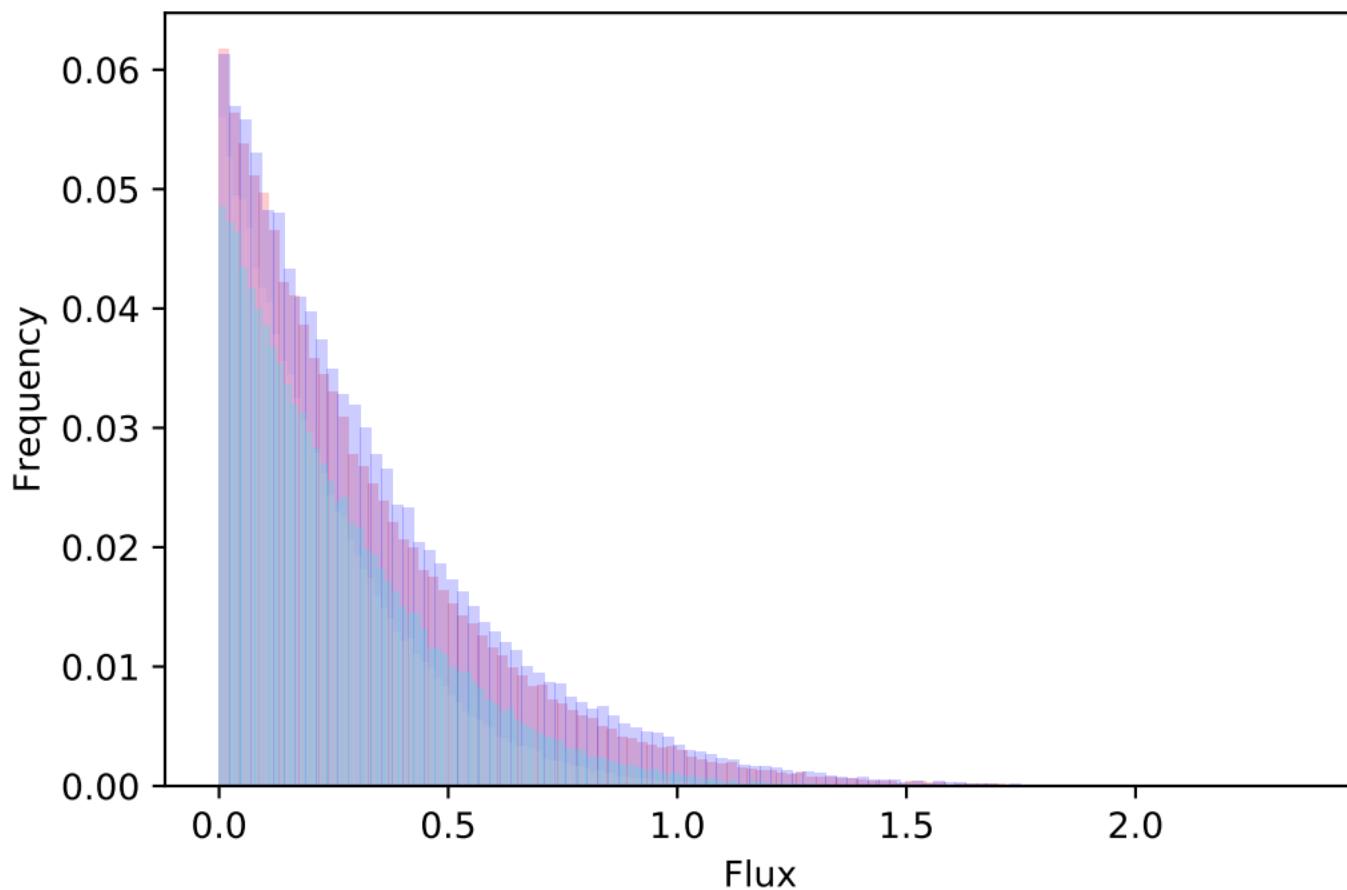
27 : Mas_h + starch1_h --> Glc_h + starch2_h
['AT2G40840', 'AT5G64860']



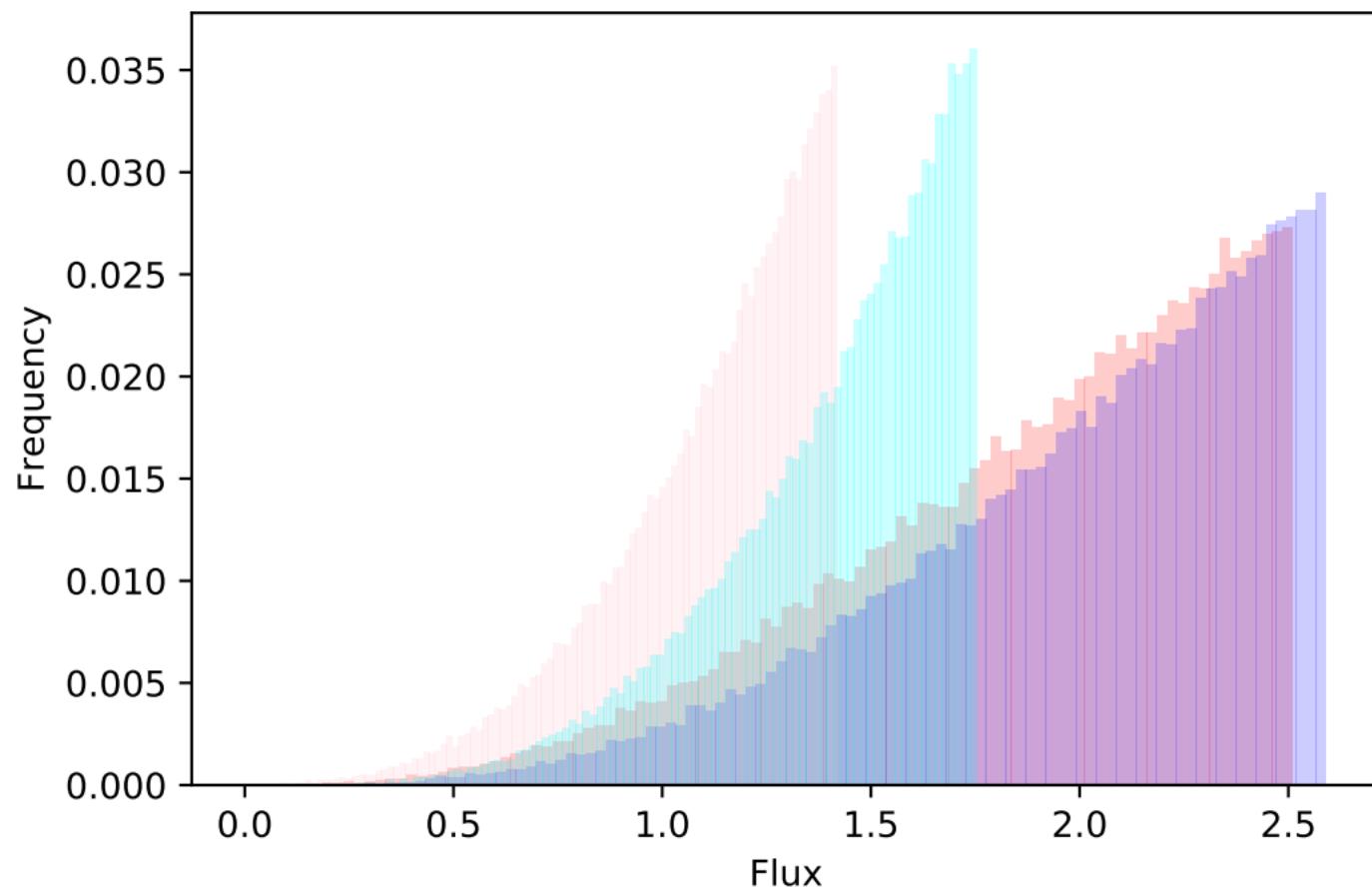
28 : Mas_h + starch2_h --> Glc_h + starch3_h
['AT2G40840', 'AT5G64860']



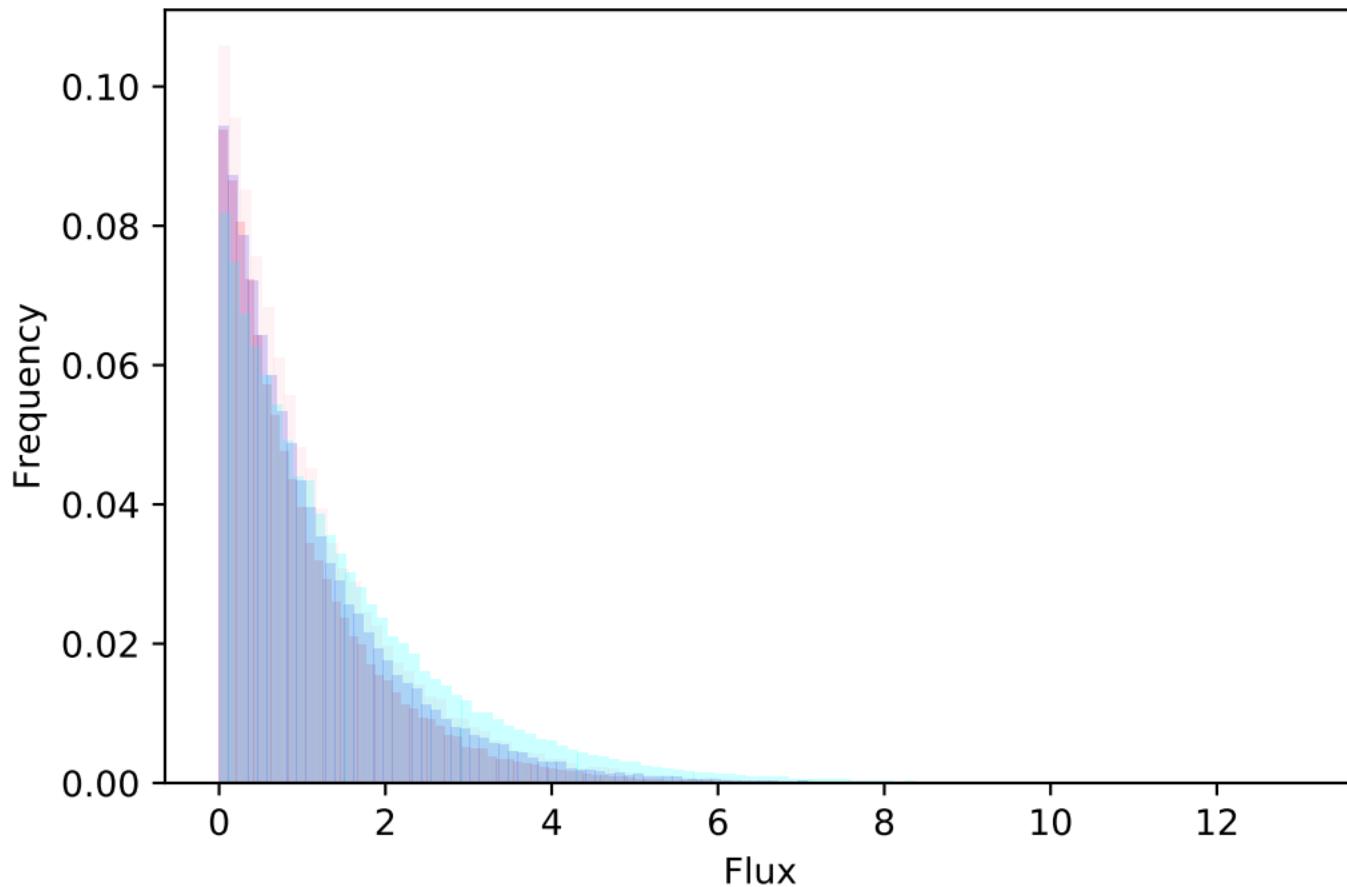
29 : $\text{Mas_c} + \text{starch1_c} \rightarrow \text{Glc_c} + \text{starch2_c}$
['AT2G40840', 'AT5G64860']



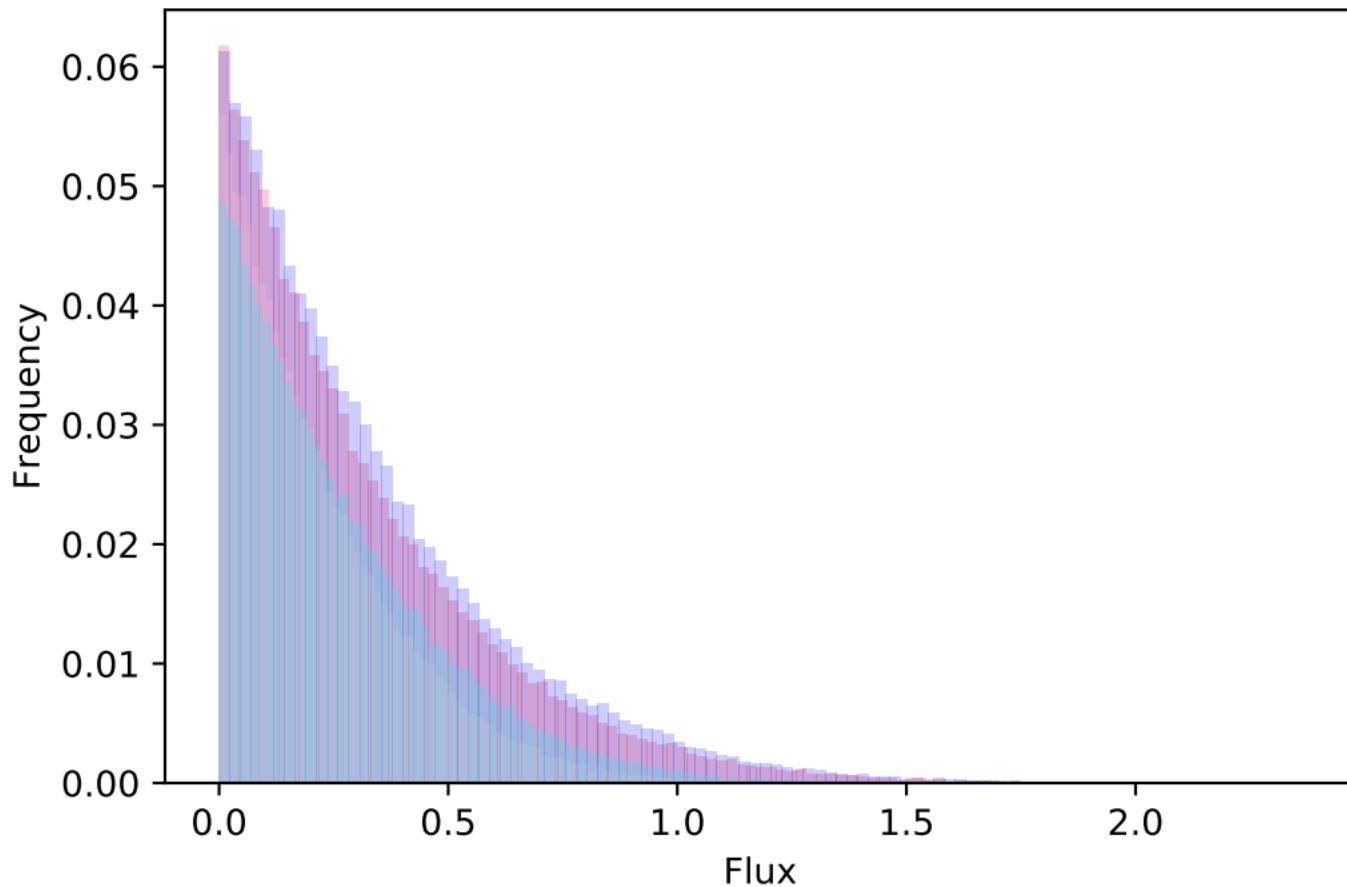
30 : ATP_c + Glc_c --> ADP_c + G6P_c + H_c
['AT2G19860']



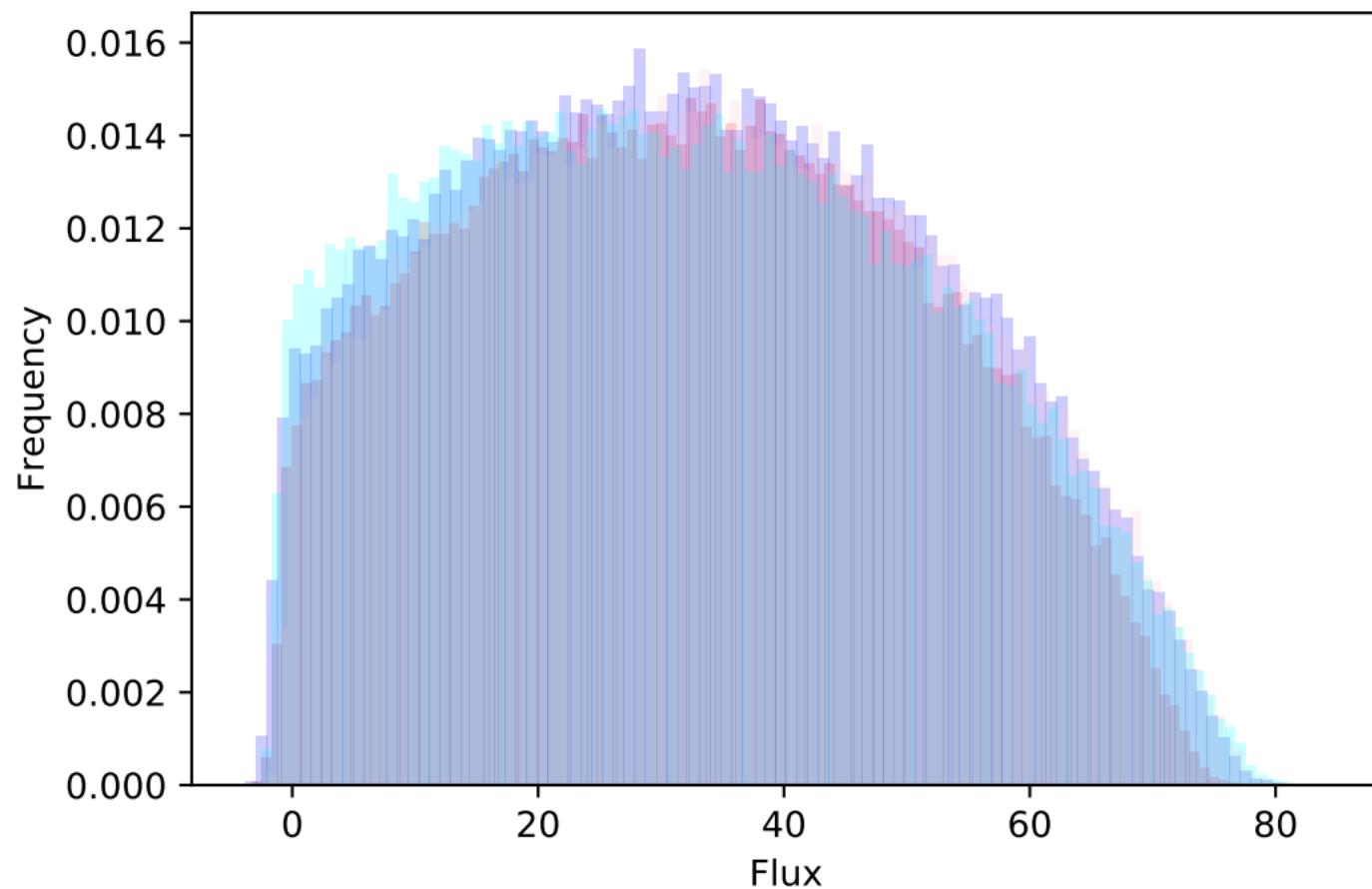
31 : Pi_h + starch2_h --> G1P_h + starch1_h
['AT3G46970', 'AT1G69830']



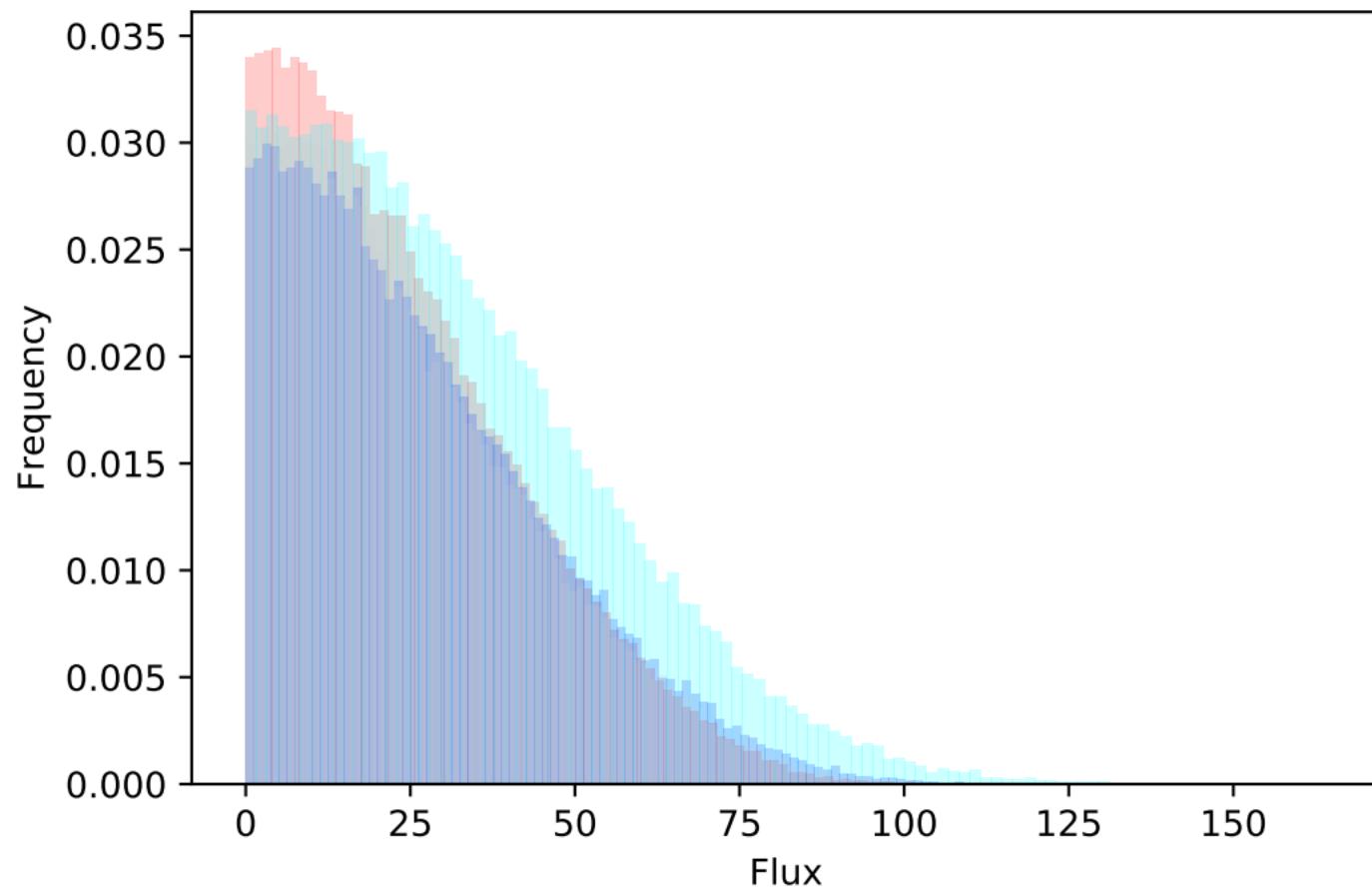
32 : Pi_c + starch2_c --> G1P_c + starch1_c
['AT3G46970']

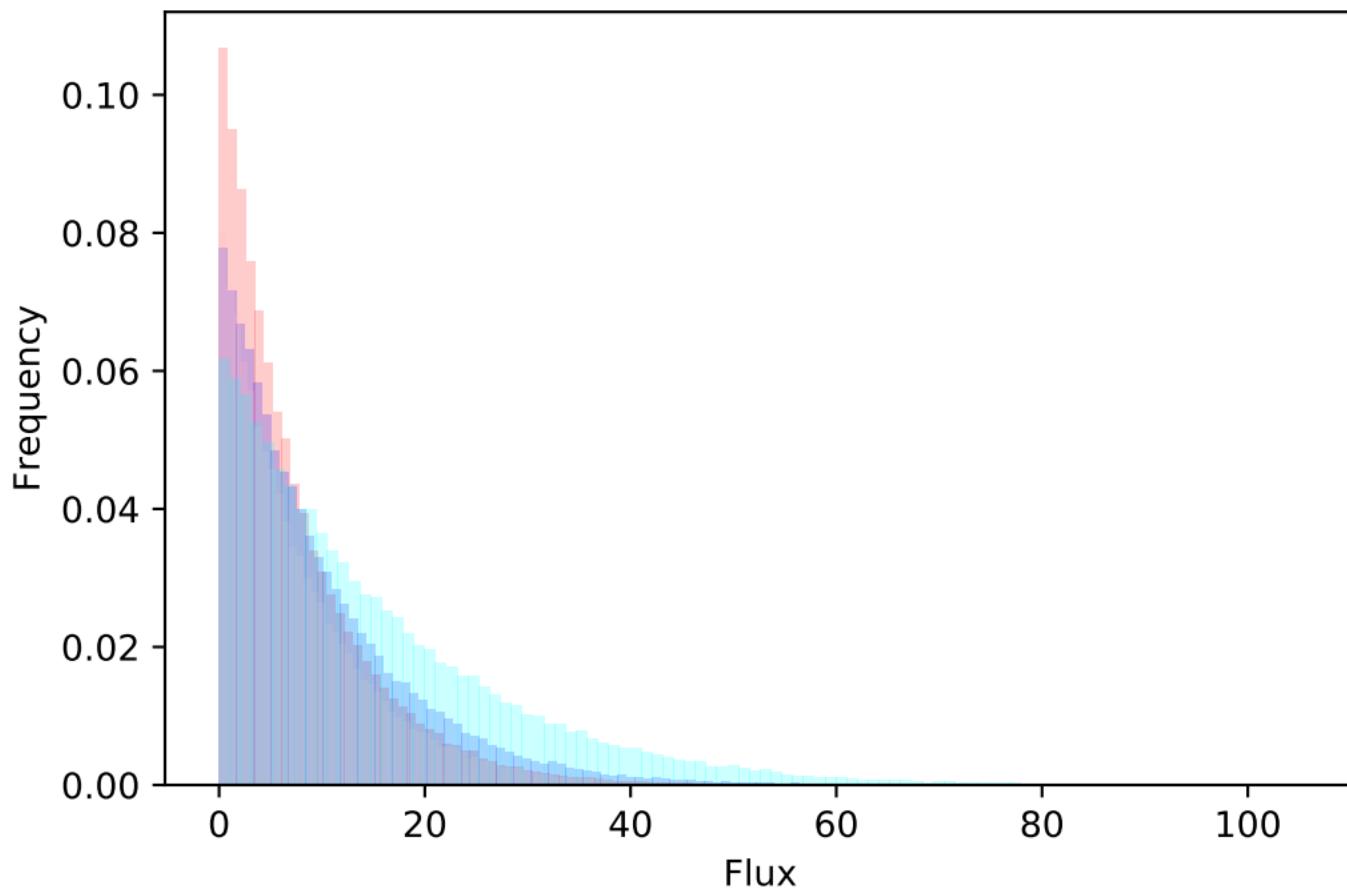
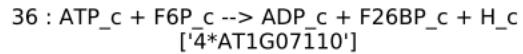


34 : DHAP_c + GAP_c <=> FBP_c
['AT5G03690', 'AT3G52930', 'AT2G36460', 'AT4G26530', '4*AT4G26520']

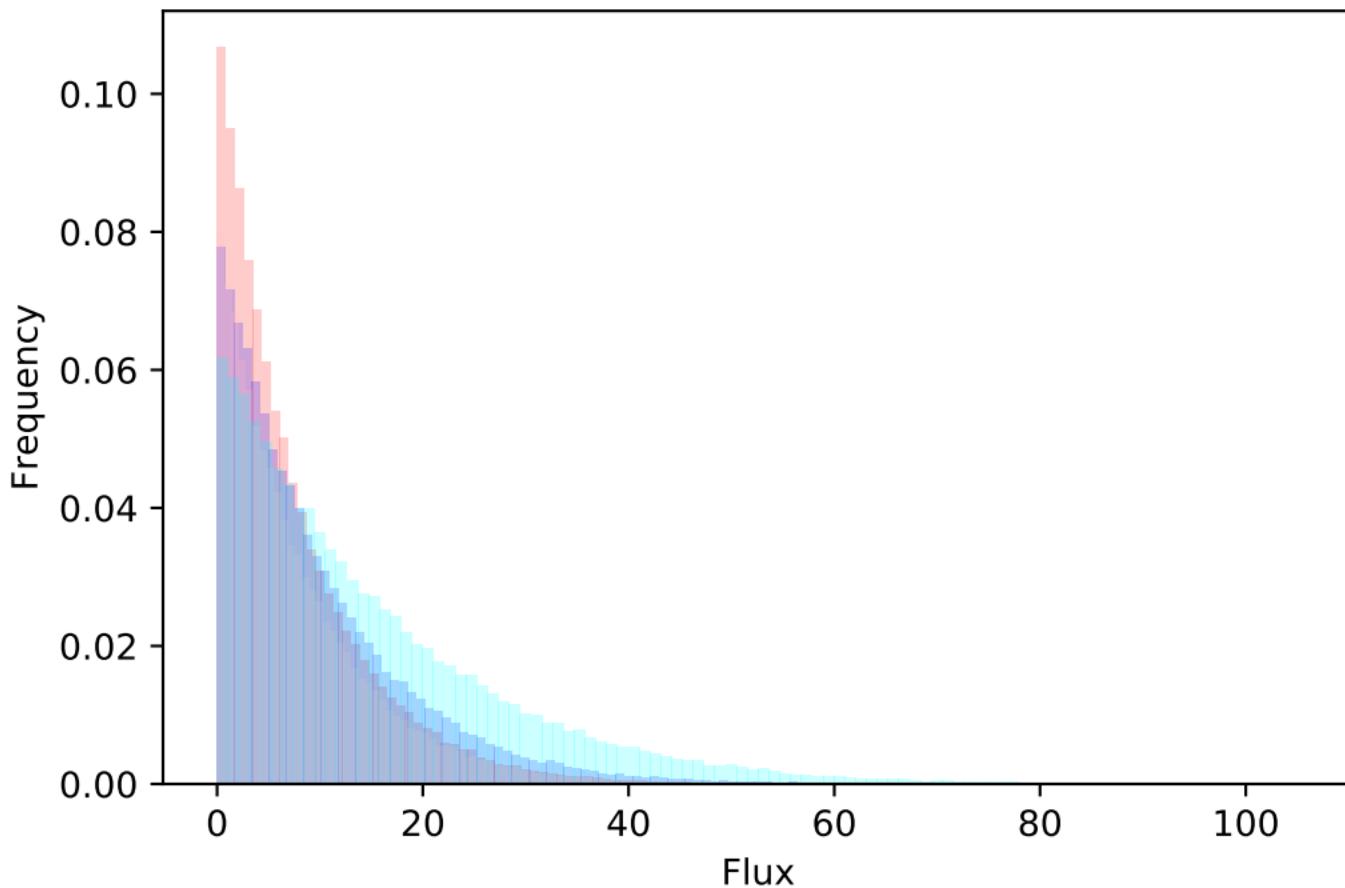


35 : FBP_c + H2O_c --> F6P_c + Pi_c
['4*AT1G43670']

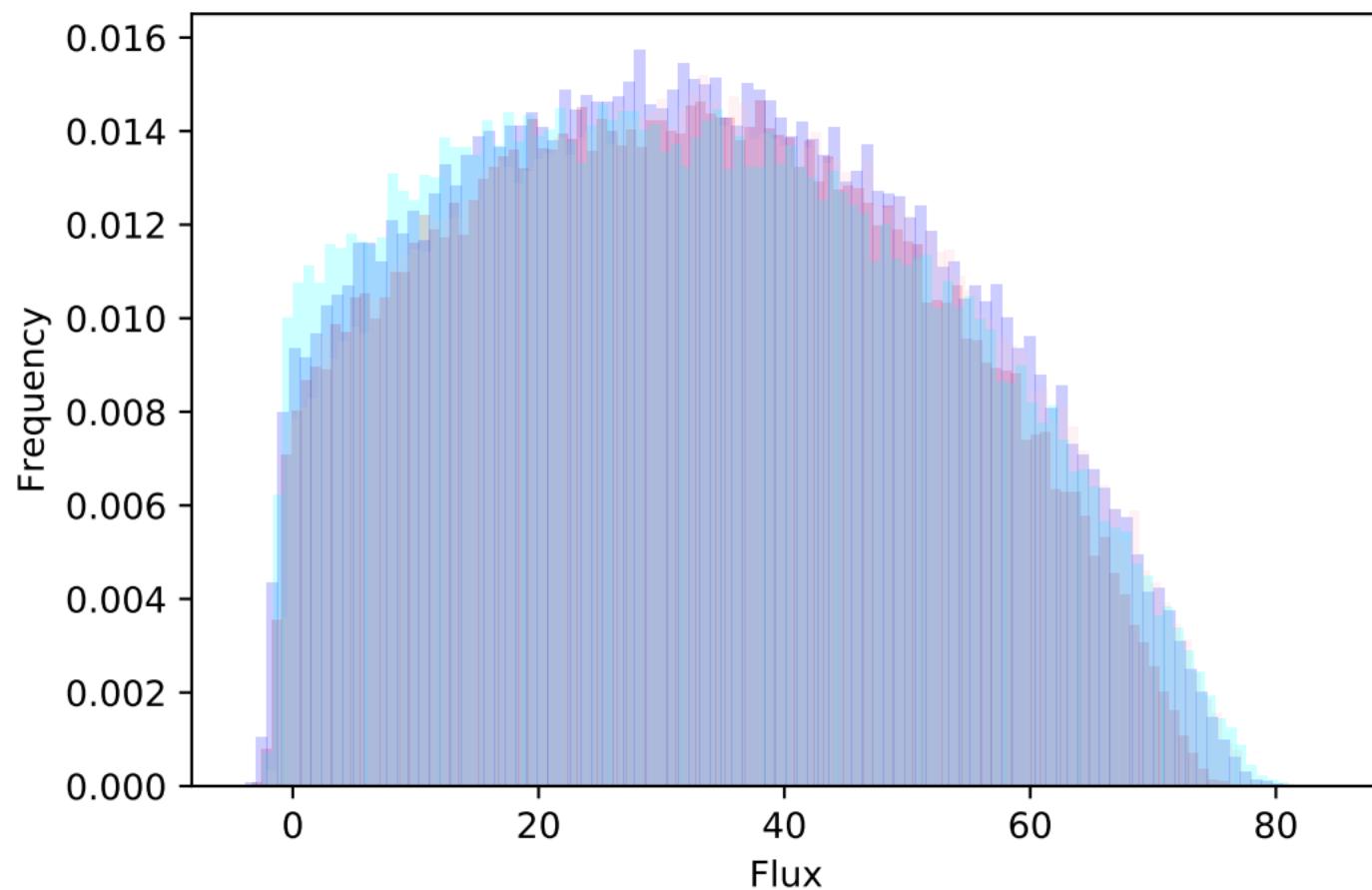




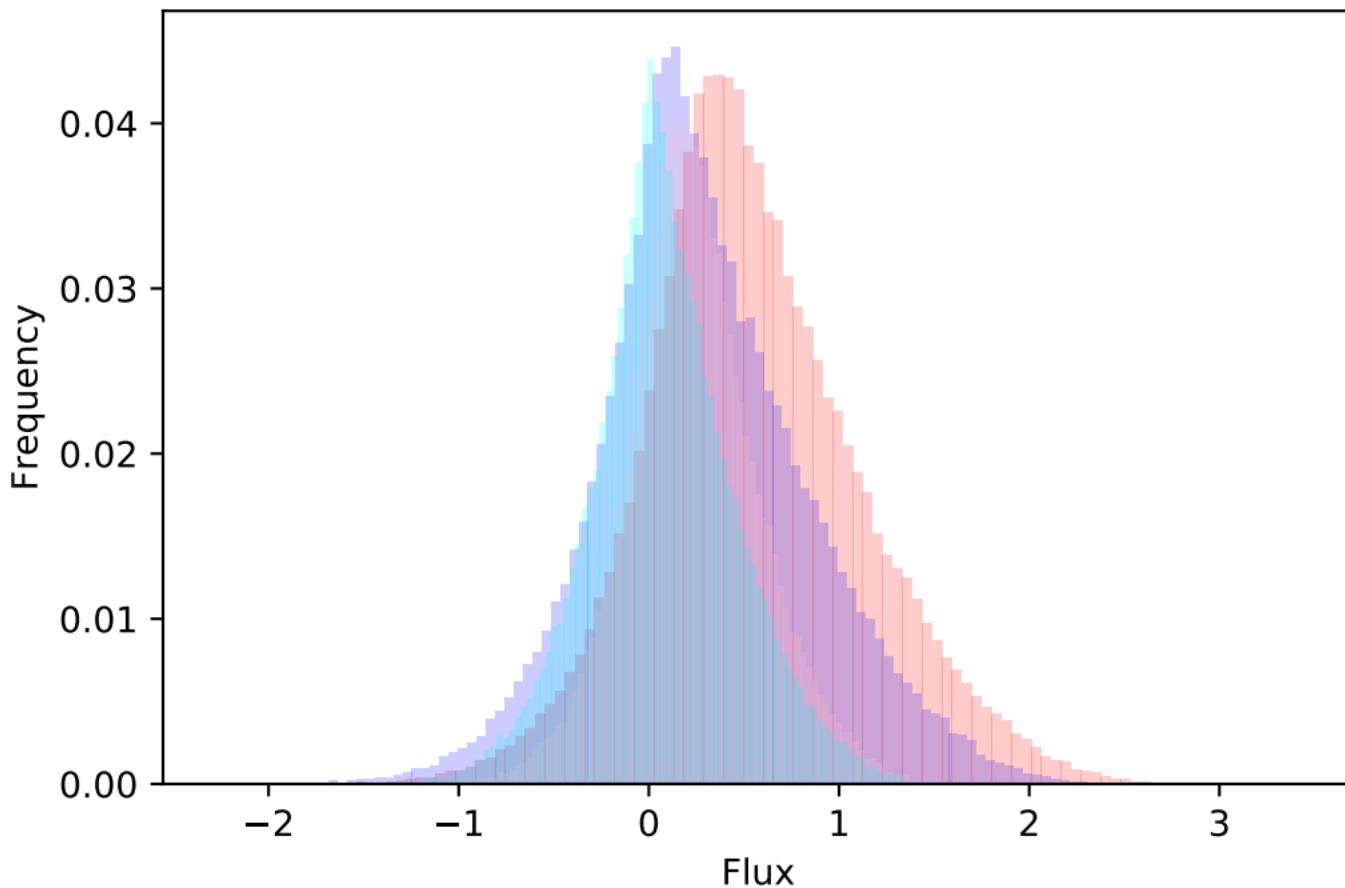
37 : F26BP_c + H2O_c <=> F6P_c + Pi_c
['4*AT1G07110']



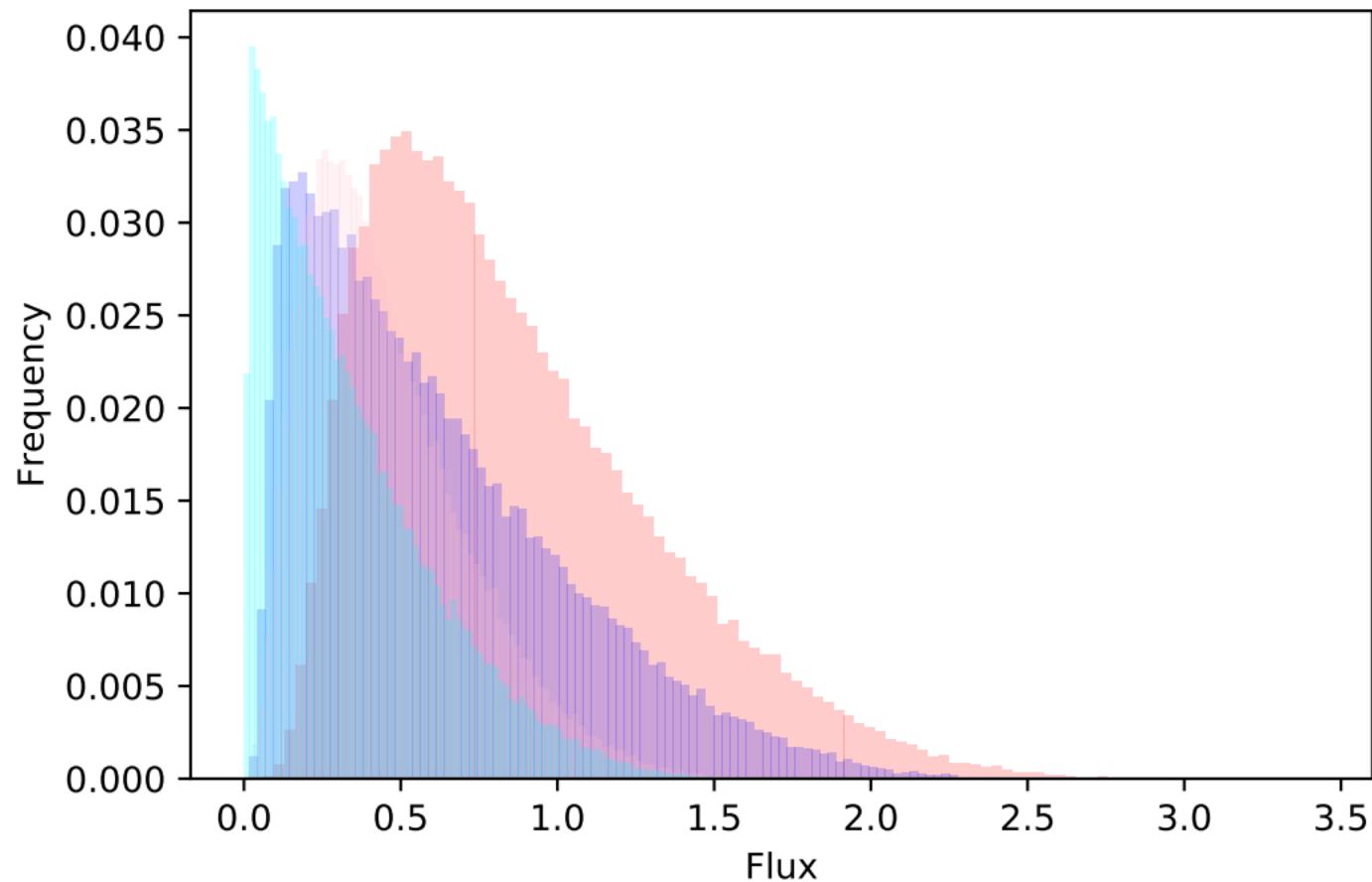
38 : F6P_c <=> G6P_c
['AT5G42740', '2*AT4G24620']



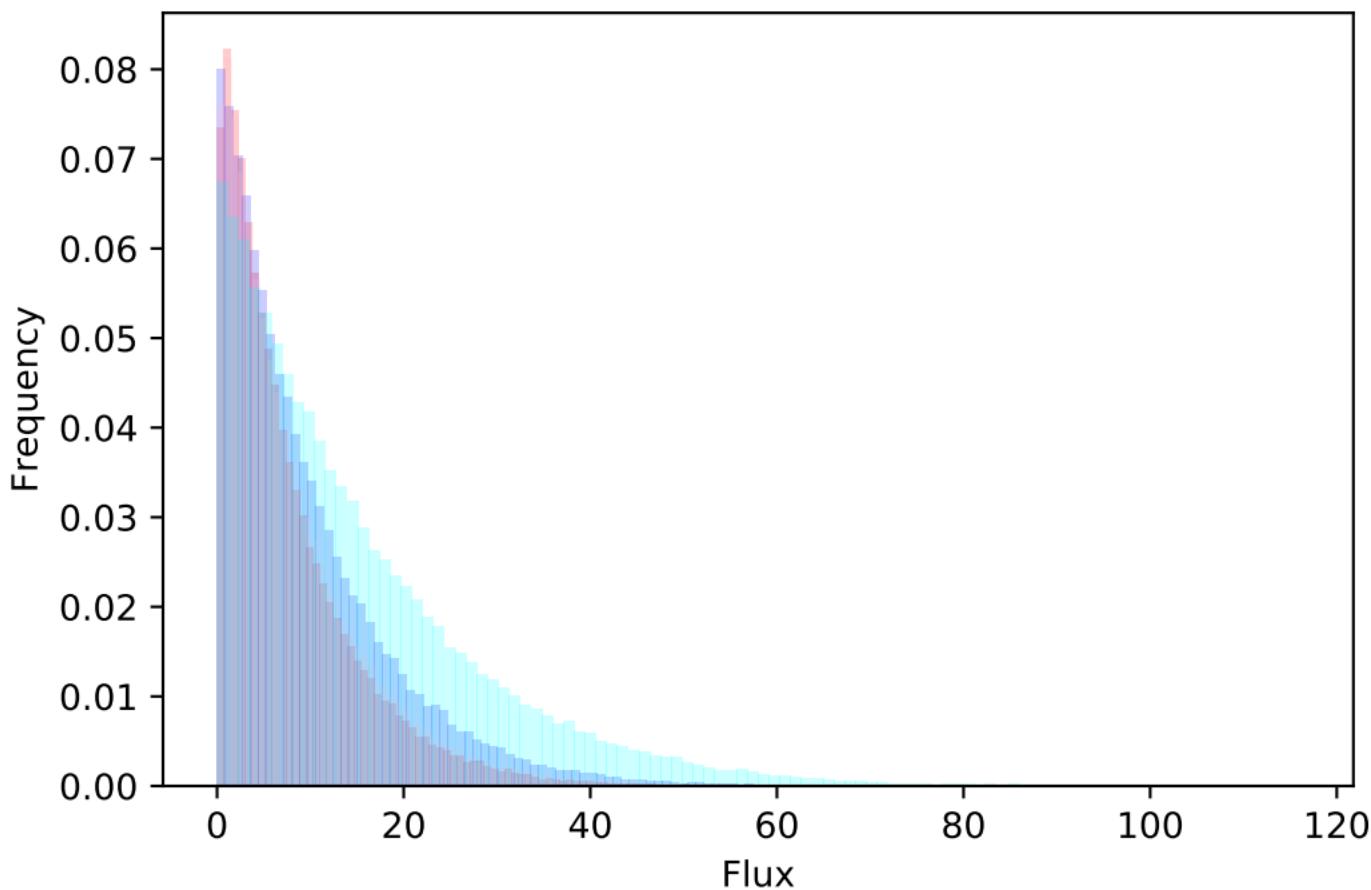
39 : G6P_c <=> G1P_c
['AT1G70730', 'AT5G51820', 'AT1G23190']



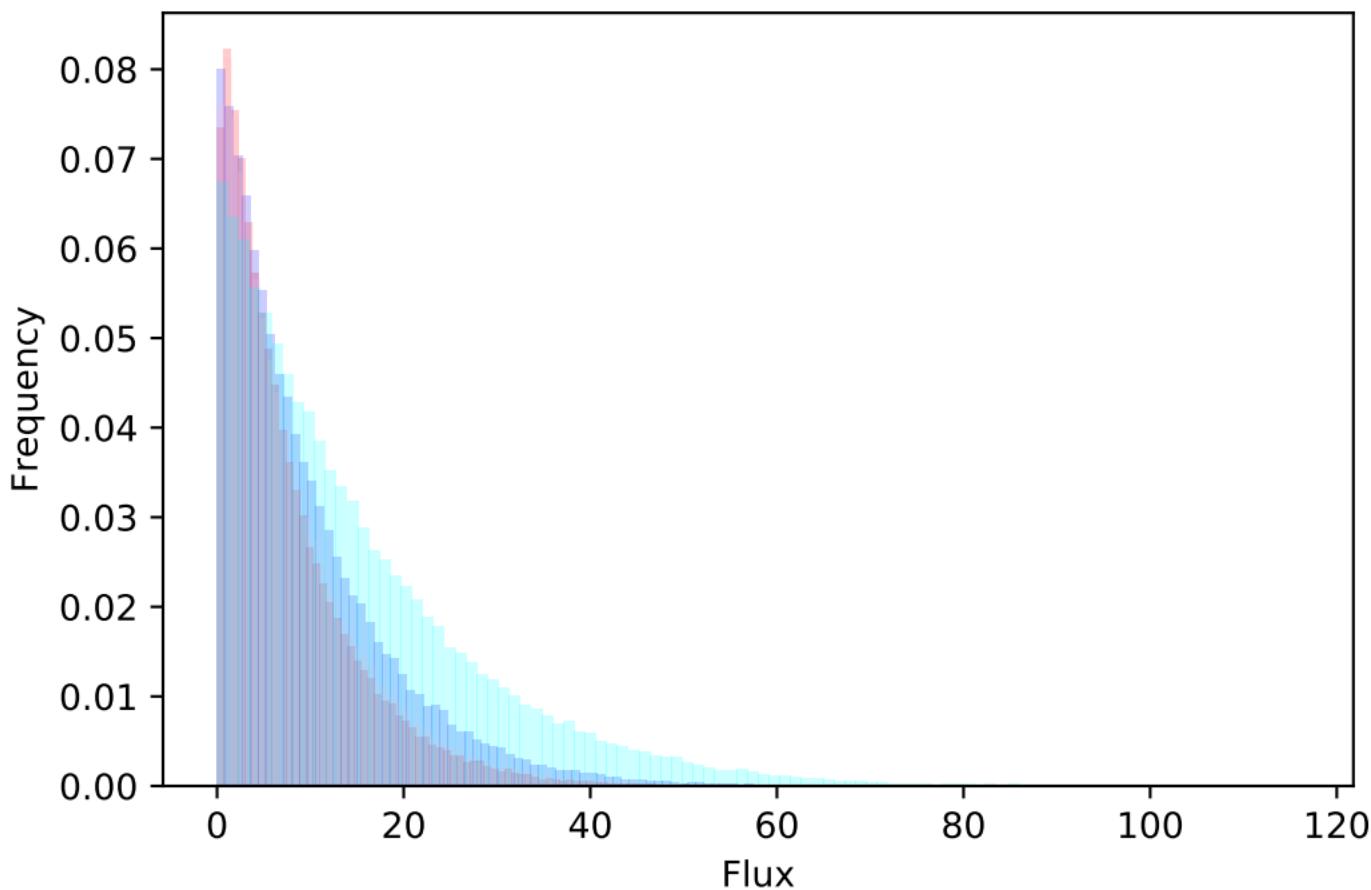
40 : G1P_c + H_c + UTP_c <=> PPi_c + UDPG_c
['AT5G17310', 'AT3G03250']



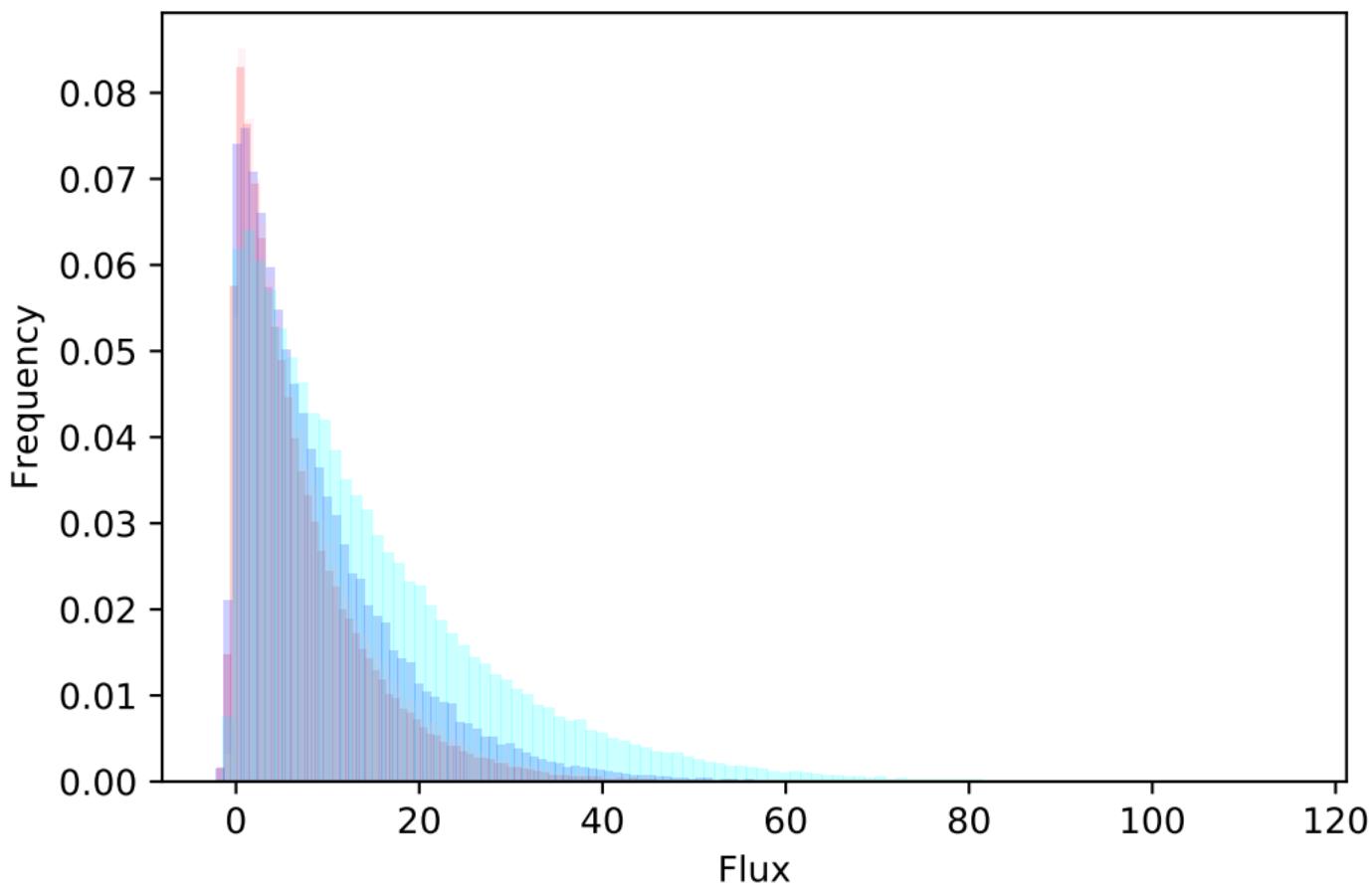
41 : F6P_c + UDPG_c --> S6P_c + UDP_c
['2*AT5G20280', '4*AT5G20280']



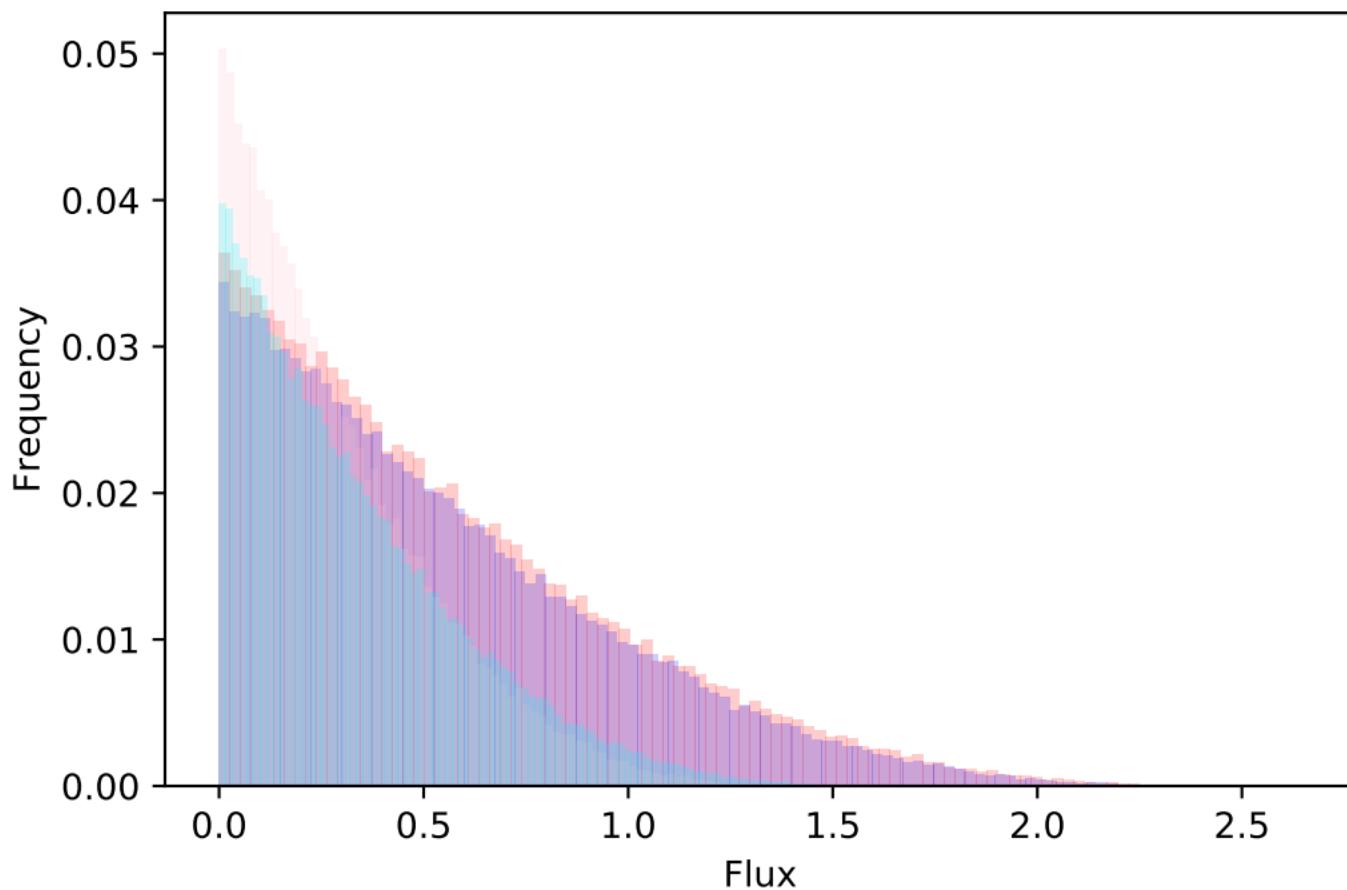
42 : H2O_c + S6P_c --> Pi_c + Suc_c
['2*AT2G35840', 'AT3G52340']



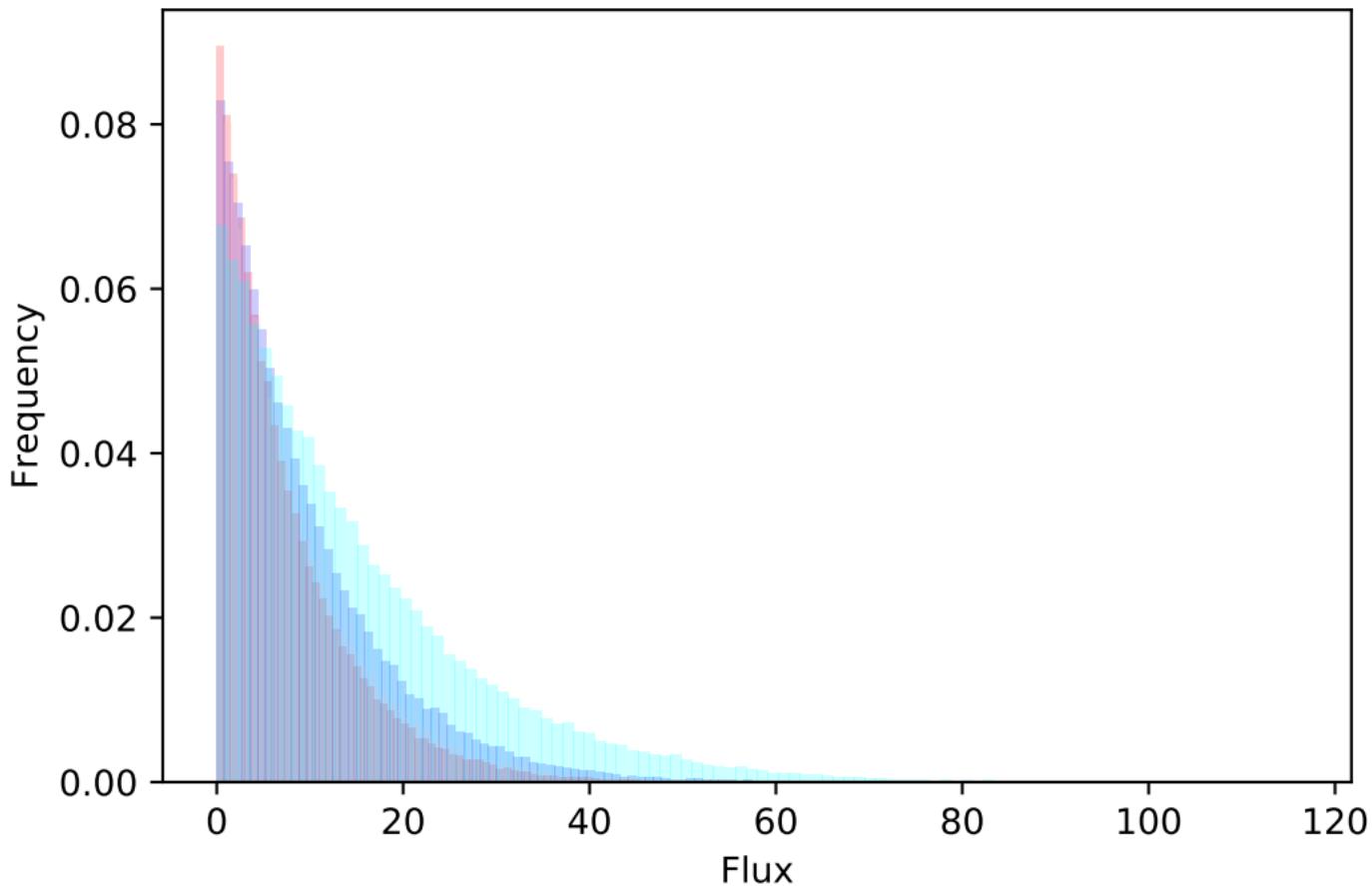
43 : Suc_c + UDP_c <=> Frc_c + UDPG_c
['4*AT5G20830', 'AT5G49190', 'AT3G43190']



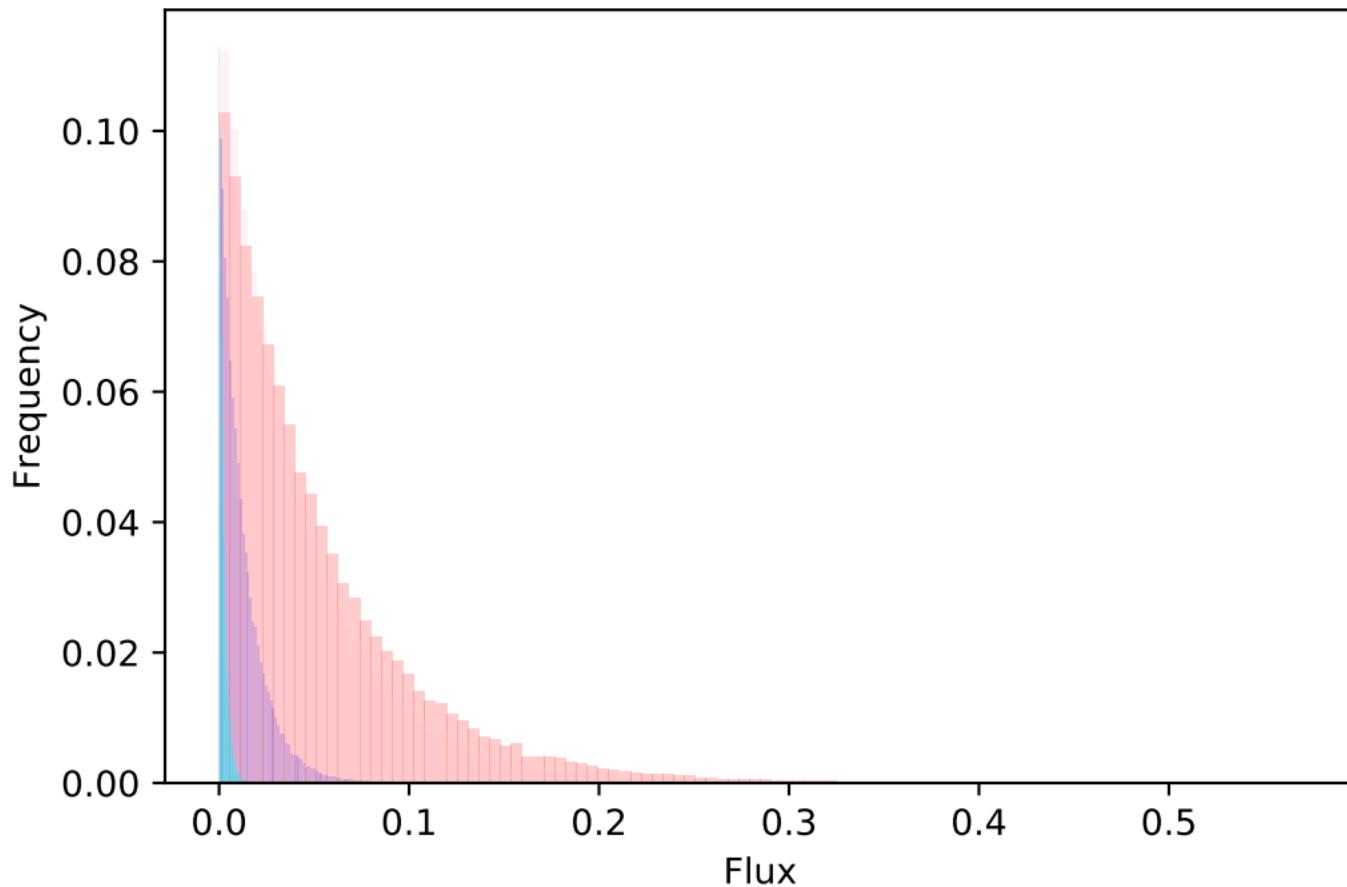
44 : H₂O_c + Suc_c --> Frc_c + Glc_c
['AT1G35580', 'AT4G09510']



45 : ATP_c + Frc_c --> ADP_c + F6P_c + H_c
['AT3G54090', 'AT3G59480', 'AT2G31390', 'AT2G19860']

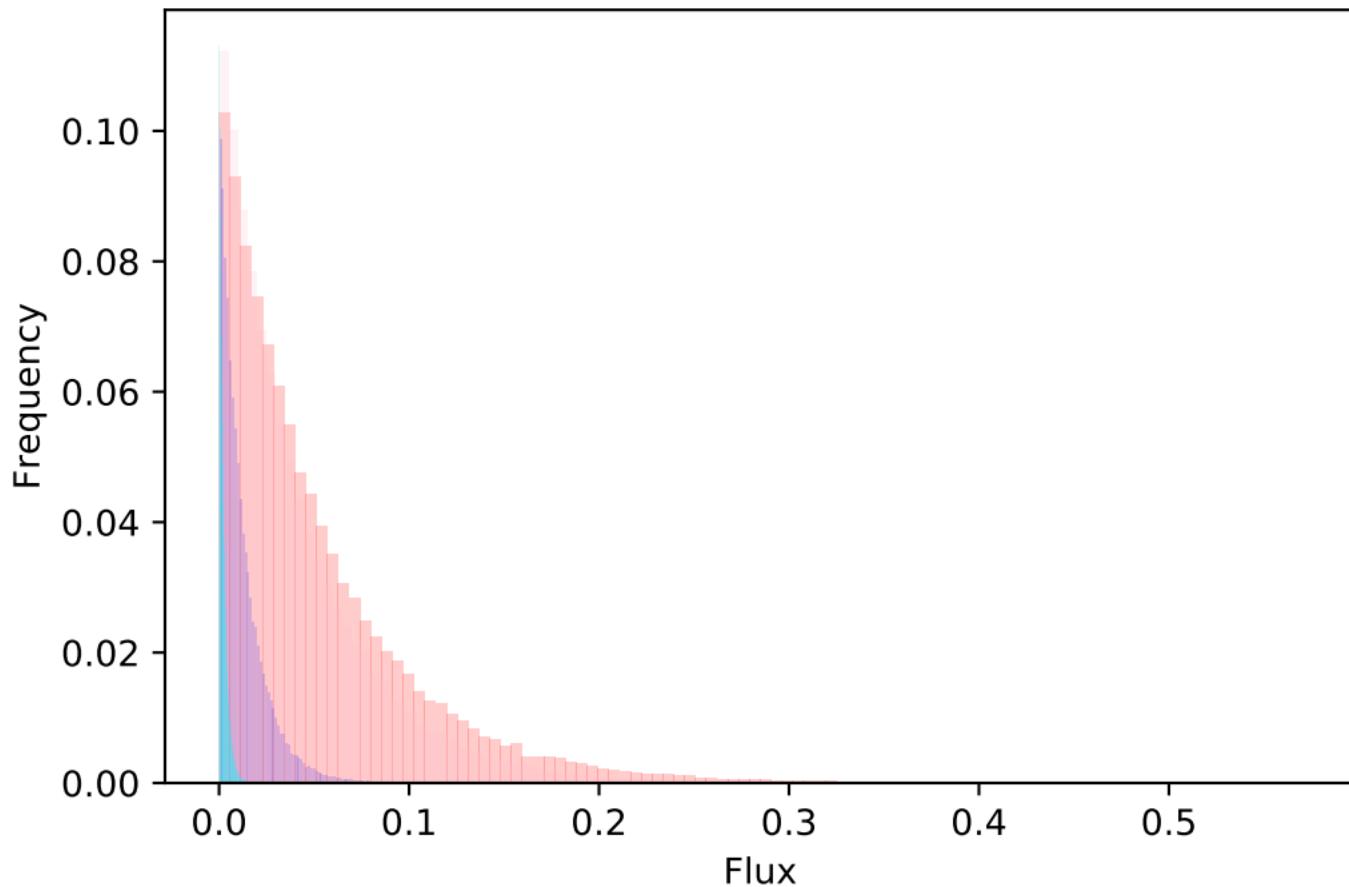


46 : G6P_c + UDPG_c --> T6P_c + UDP_c
['AT1G06410', 'AT1G78580', 'AT2G18700', 'AT1G60140', 'AT1G16980', 'AT1G17000']



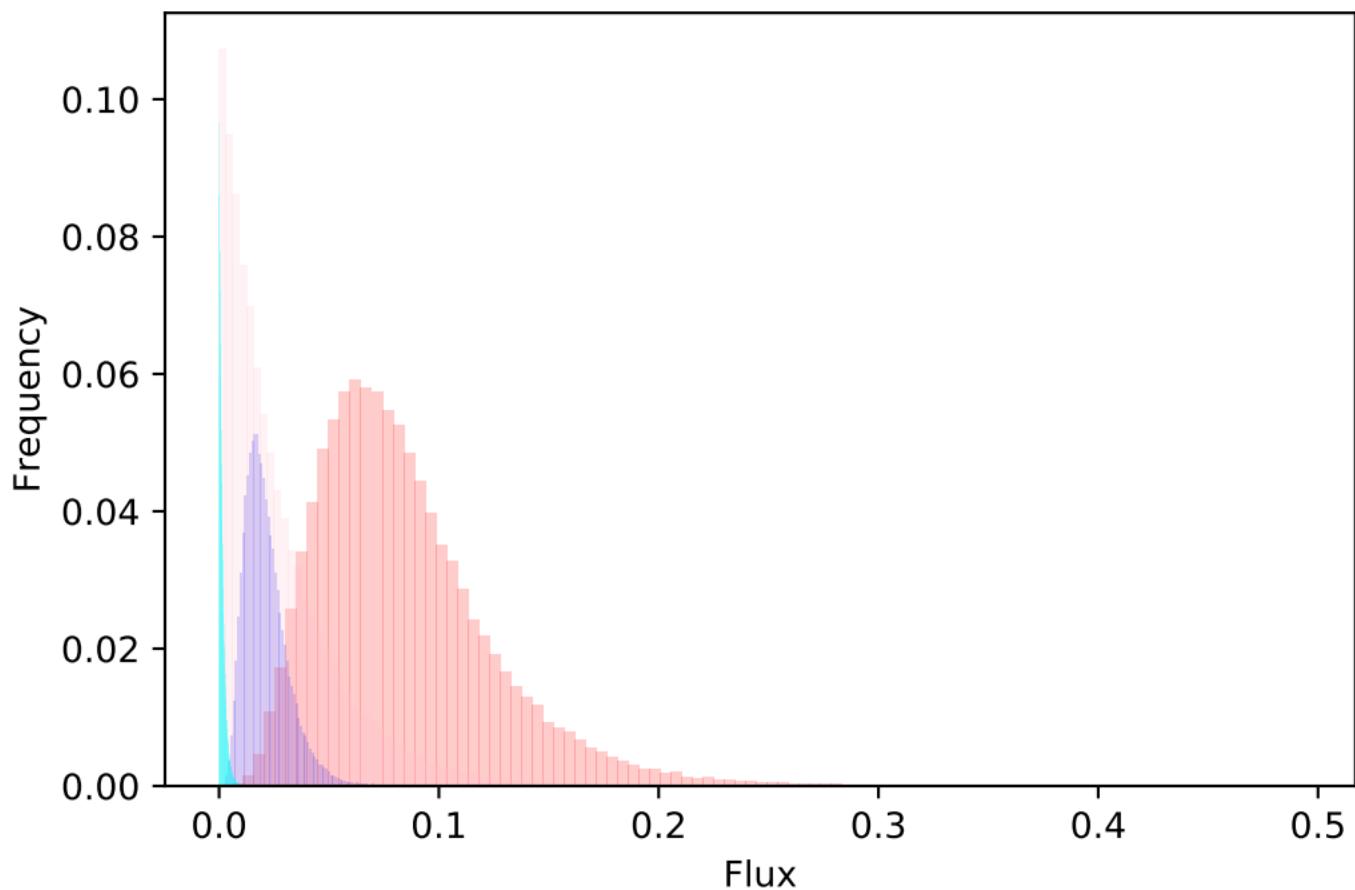


['AT5G65140', 'AT4G39770', 'AT1G35910', 'AT4G22590', 'AT1G22210', 'AT2G22190', 'AT4G12430']



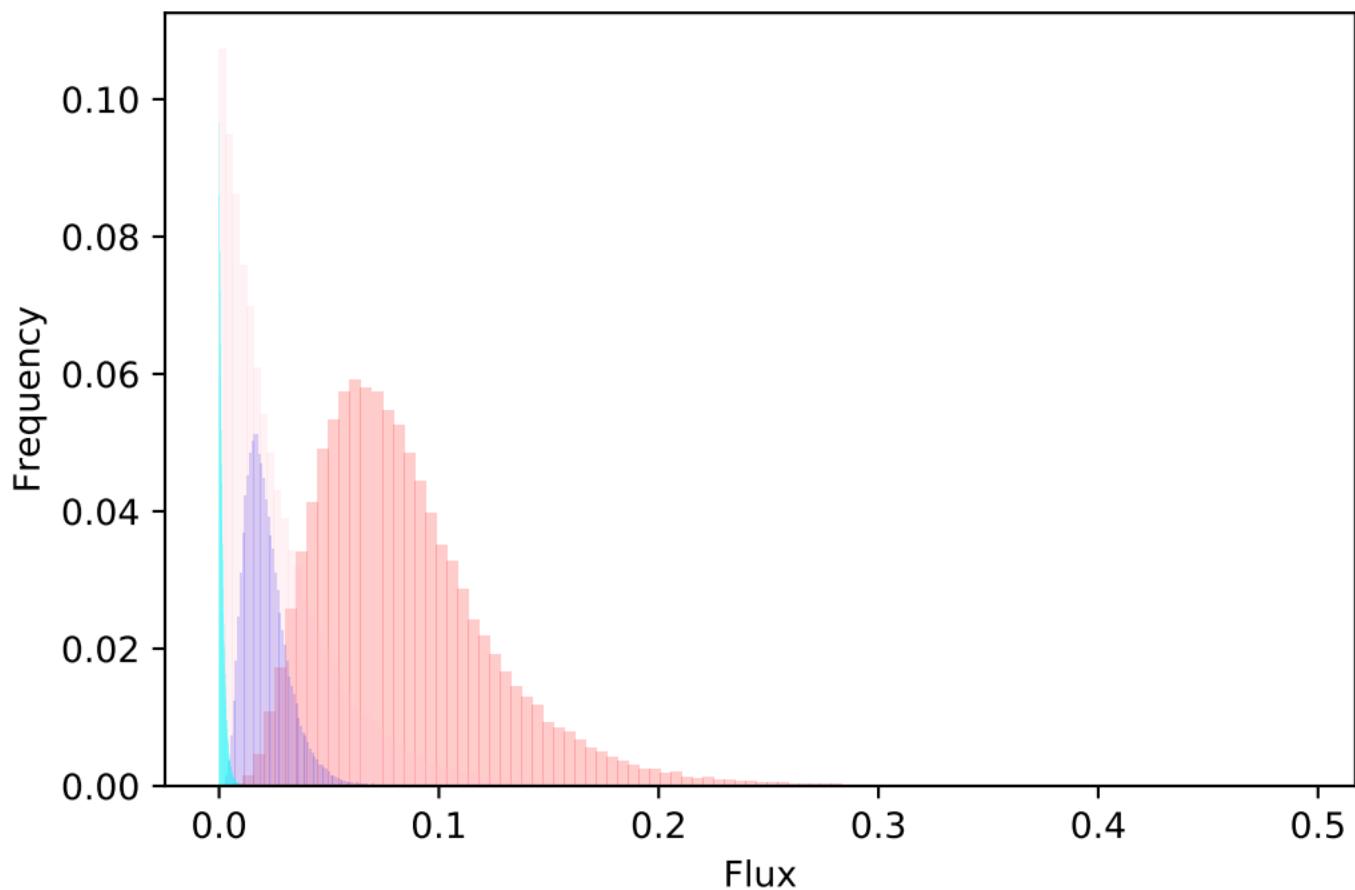


['AT4G32410', 'AT4G18780', 'AT2G21770', 'AT5G44030', 'AT2G25540', 'AT4G39350', 'AT5G64740', 'AT5G09870', 'AT5G05170', 'AT5G17420']



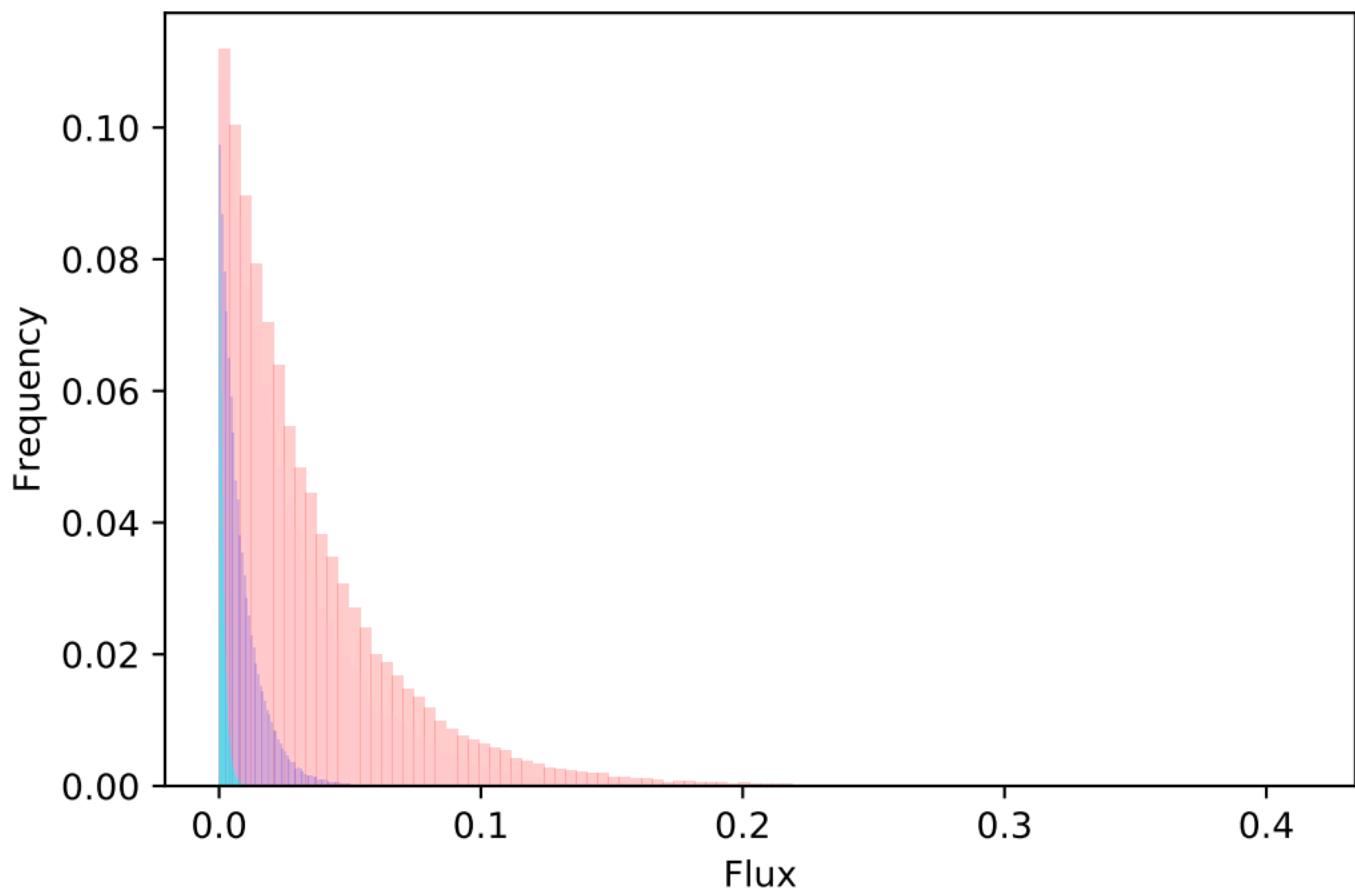
49 : UDPG_c + cellulose1_c --> UDP_c + cellulose2_c

['AT4G32410', 'AT4G18780', 'AT2G21770', 'AT5G44030', 'AT5G17420', 'AT4G39350', 'AT5G64740', 'AT5G05170', 'AT5G09870', 'AT2G25540']

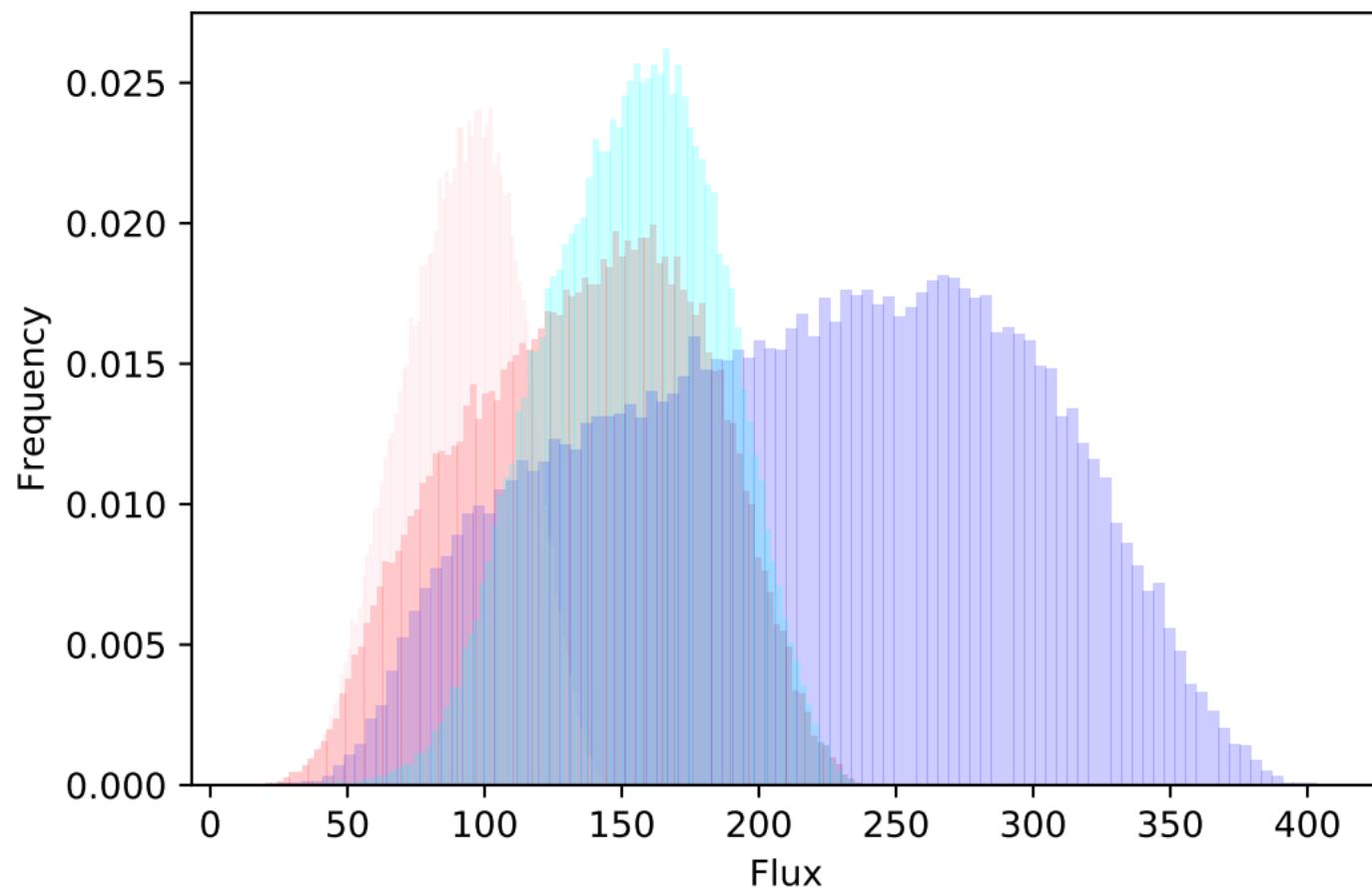


50 : UDPG_c + cellulose2_c --> UDP_c + cellulose3_c

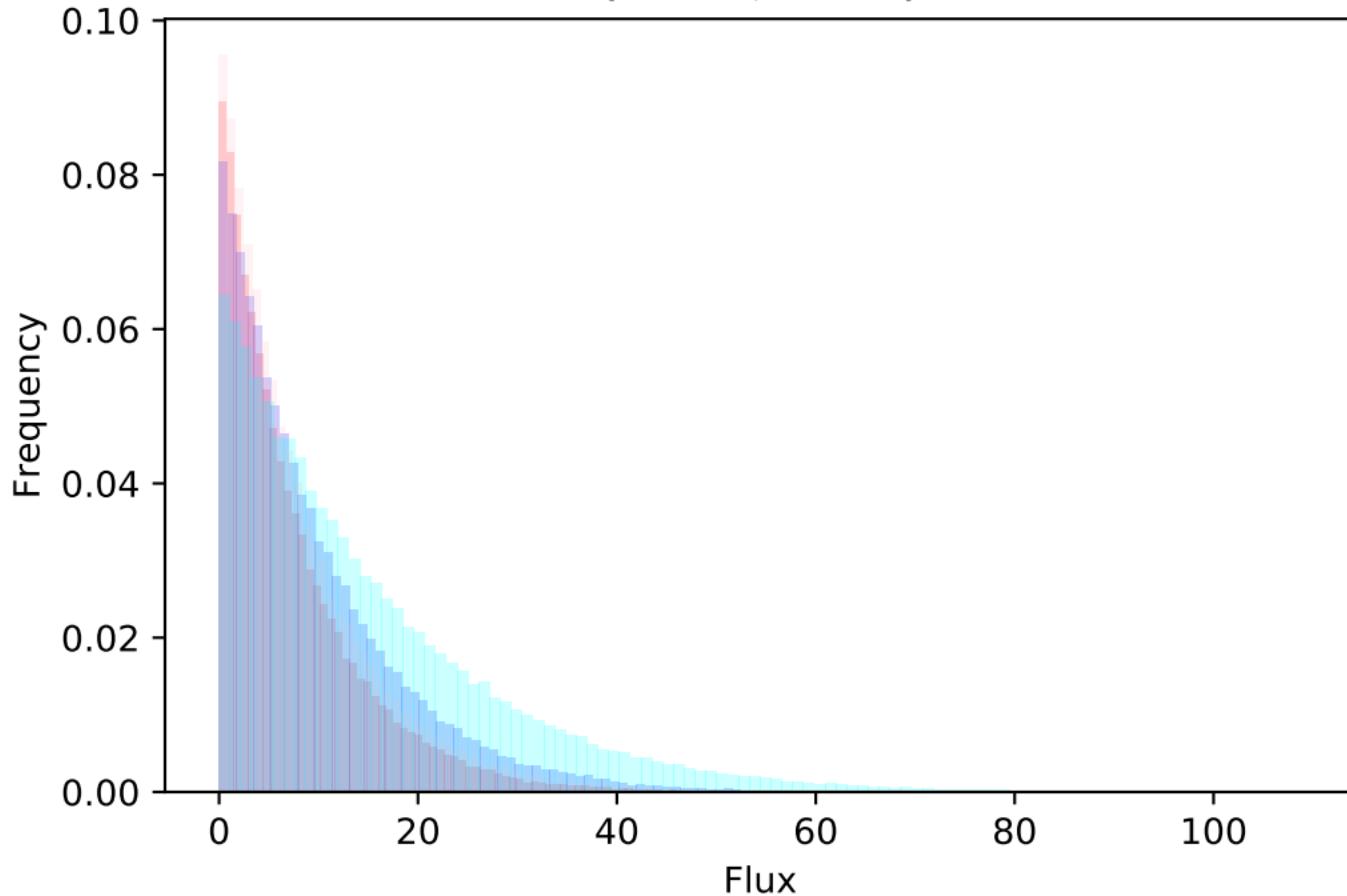
['AT4G32410', 'AT4G18780', 'AT2G21770', 'AT5G44030', 'AT5G17420', 'AT4G39350', 'AT5G64740', 'AT5G05170', 'AT5G09870', 'AT2G25540']



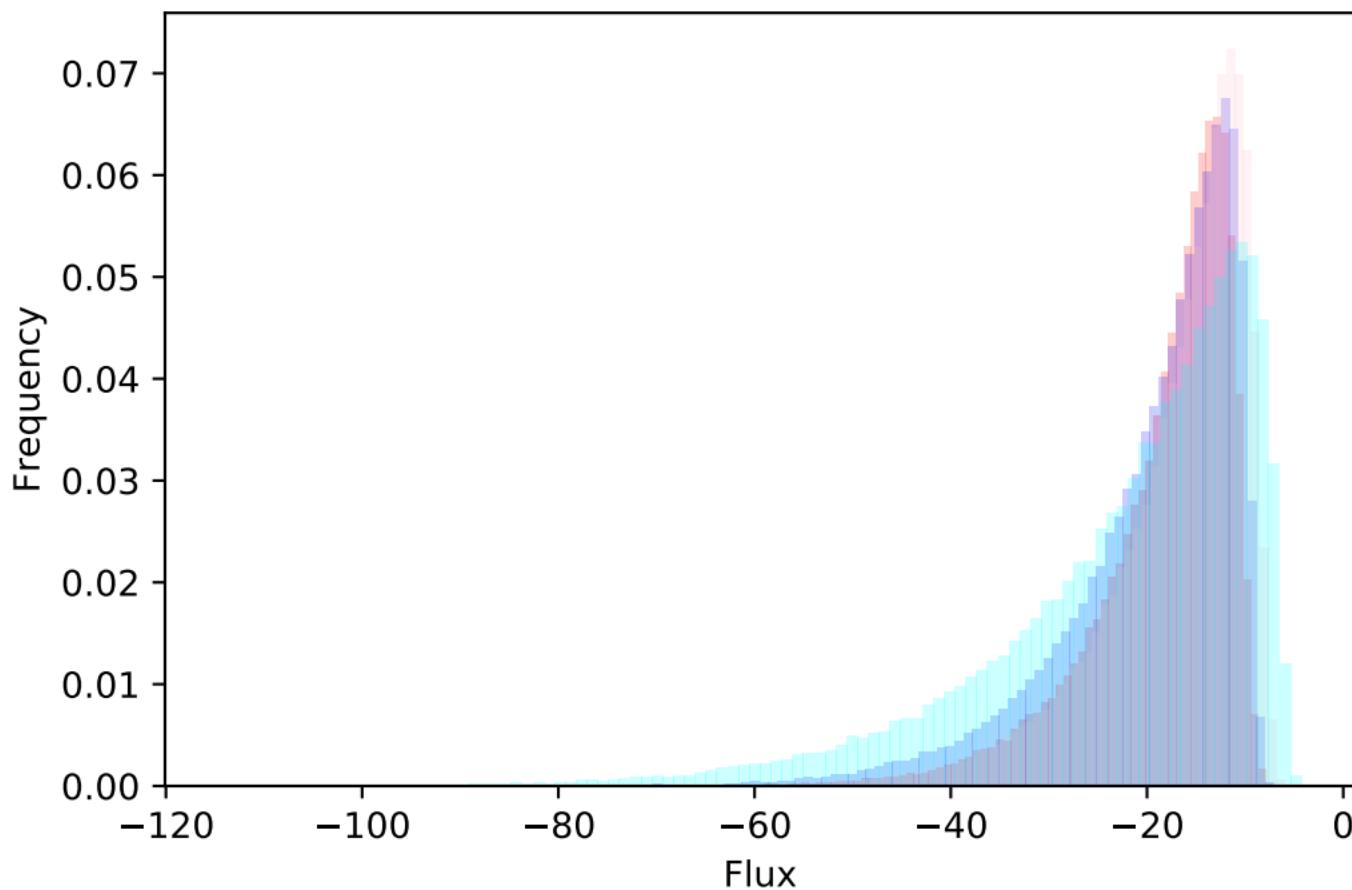
51 : Mal_c + NAD_c <=> NADH_c + OAA_c
['AT2G22780', 'AT5G56720', 'AT5G09660', 'AT5G43330']



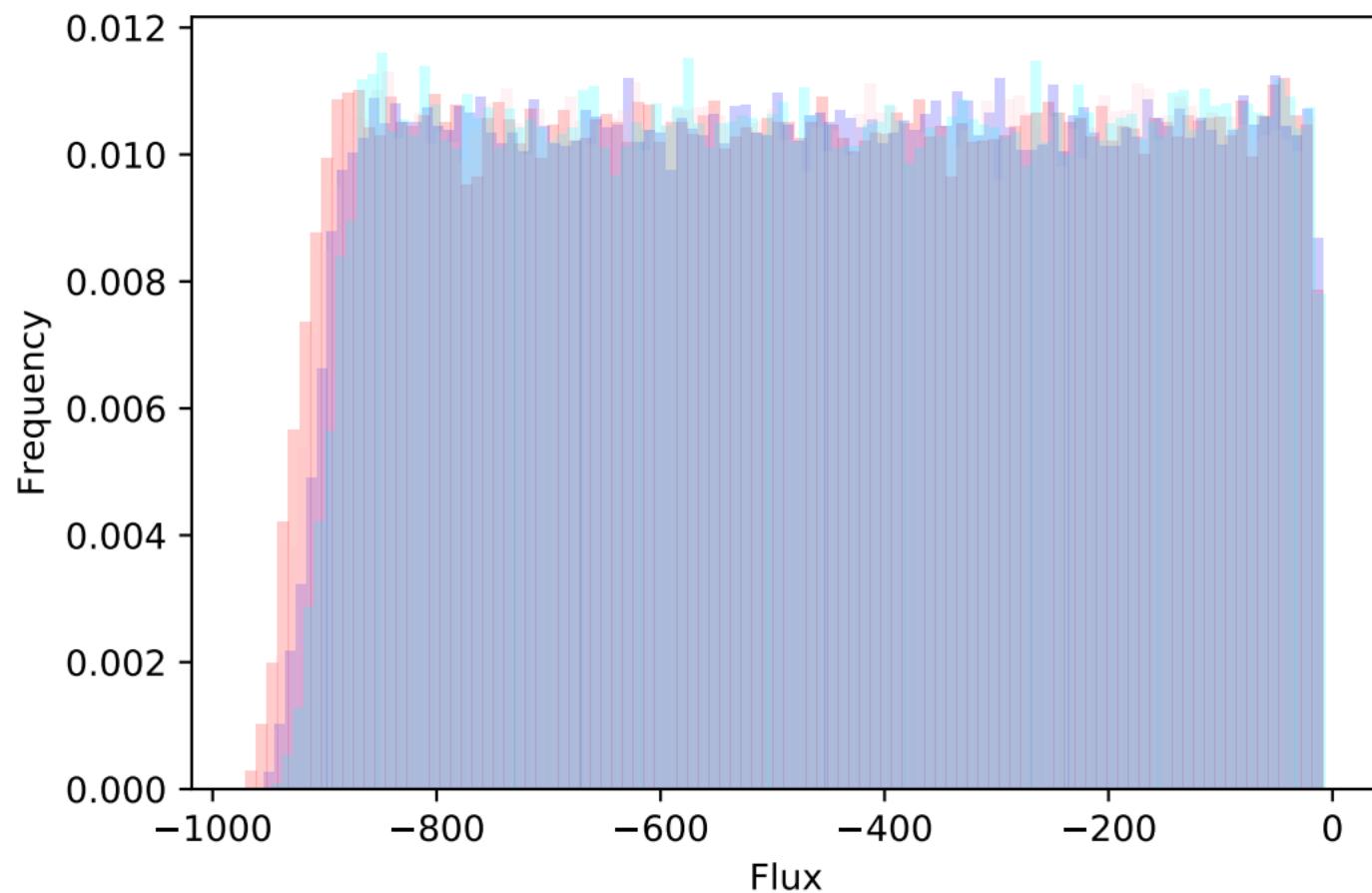
52 : ATP_c + OAA_c --> ADP_c + CO2_c + PEP_c
['AT5G65690', 'AT4G37870']



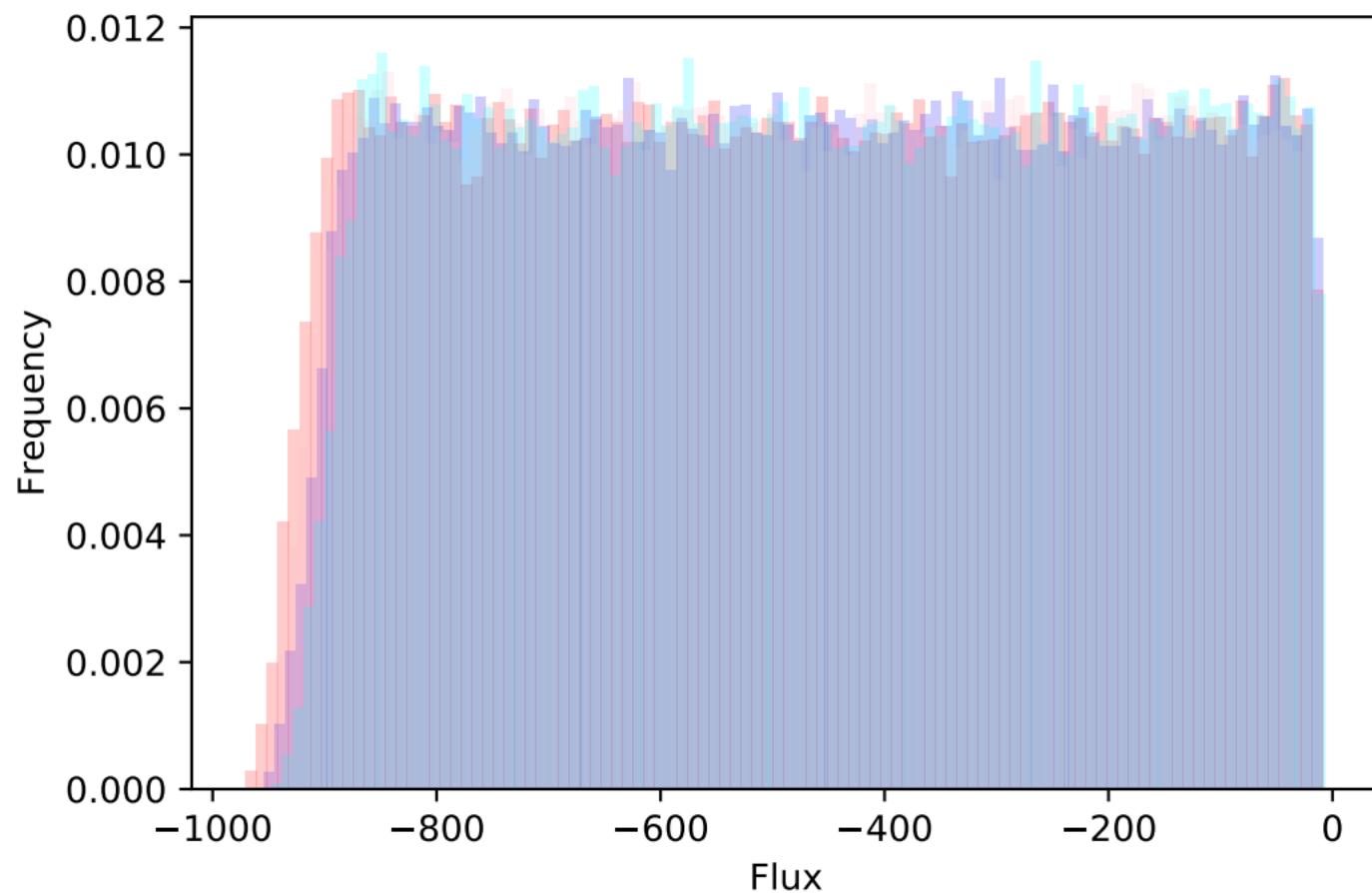
53 : OAA_c + Pi_c <=> HCO3_c + PEP_c
['4*AT1G53310', 'AT1G68750', 'AT2G42600', 'AT3G14940']



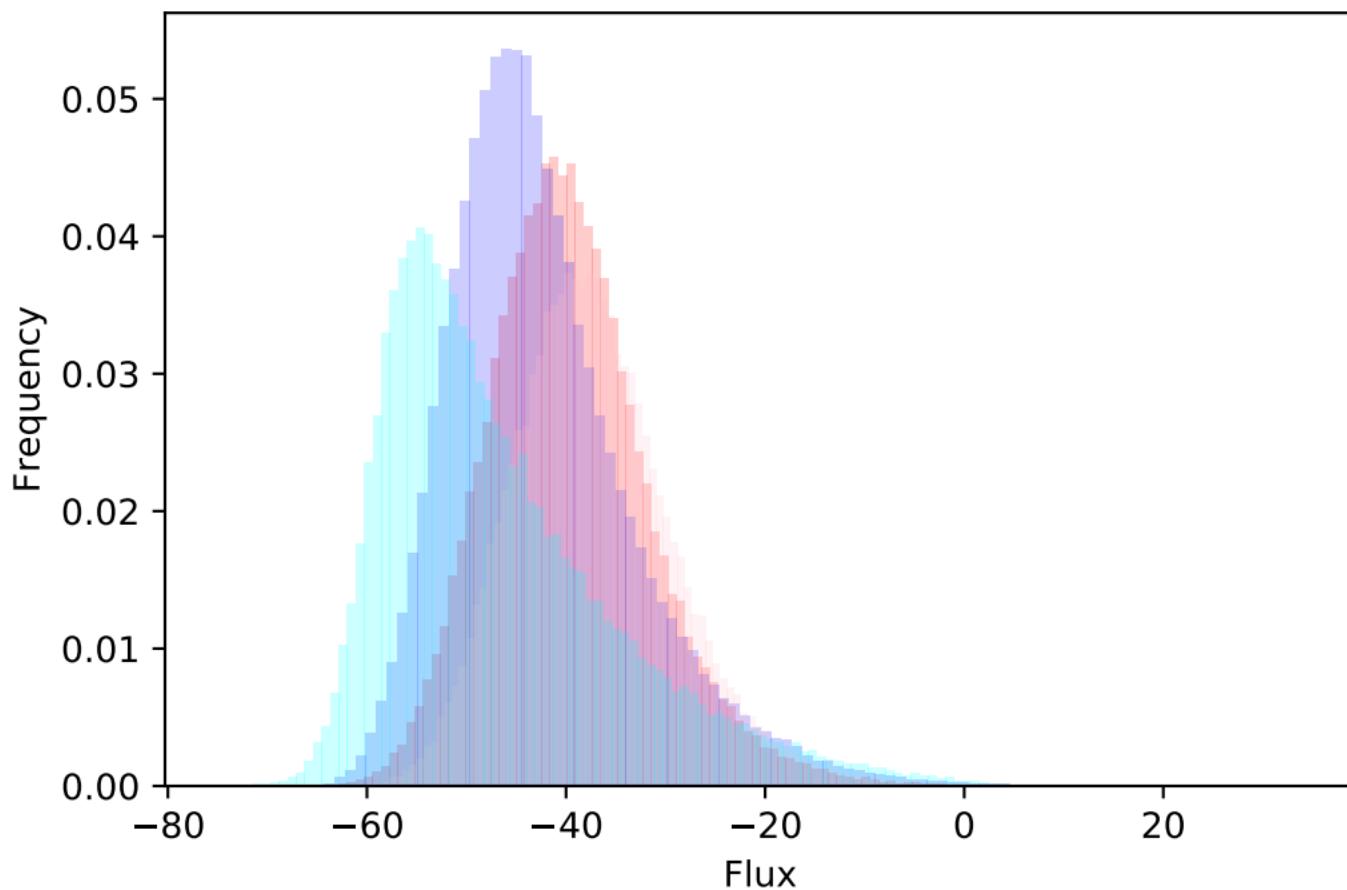
54 : H₂O_c + PEP_c <=> 2PGA_c
['2*AT2G29560', 'AT2G36530']



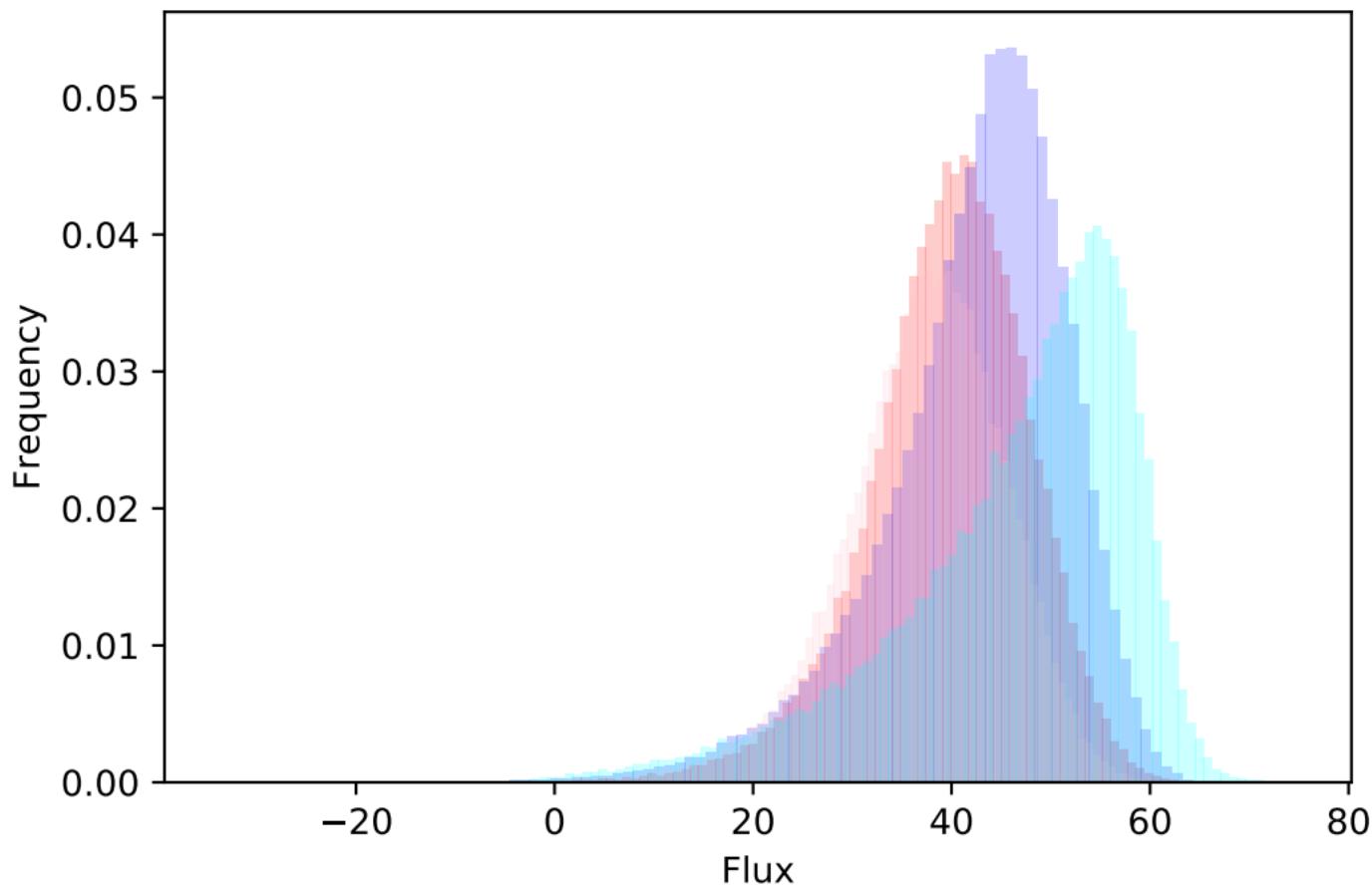
55 : 2PGA_c <=> PGA_c
['AT3G50520', 'AT5G04120', 'AT1G09780', 'AT3G08590']

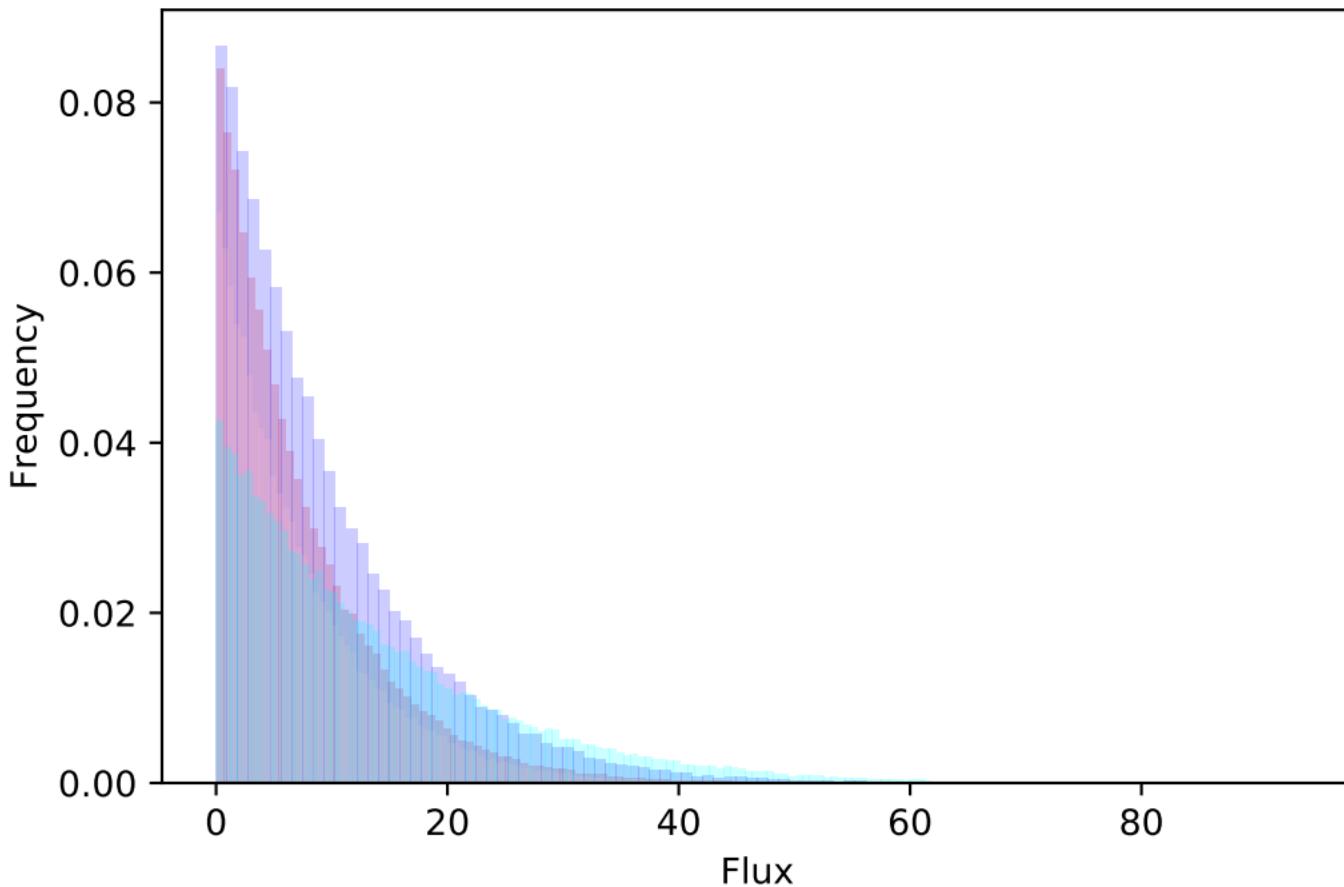


56 : ATP_c + PGA_c <=> ADP_c + DPGA_c
['AT1G79550', 'AT3G12780']

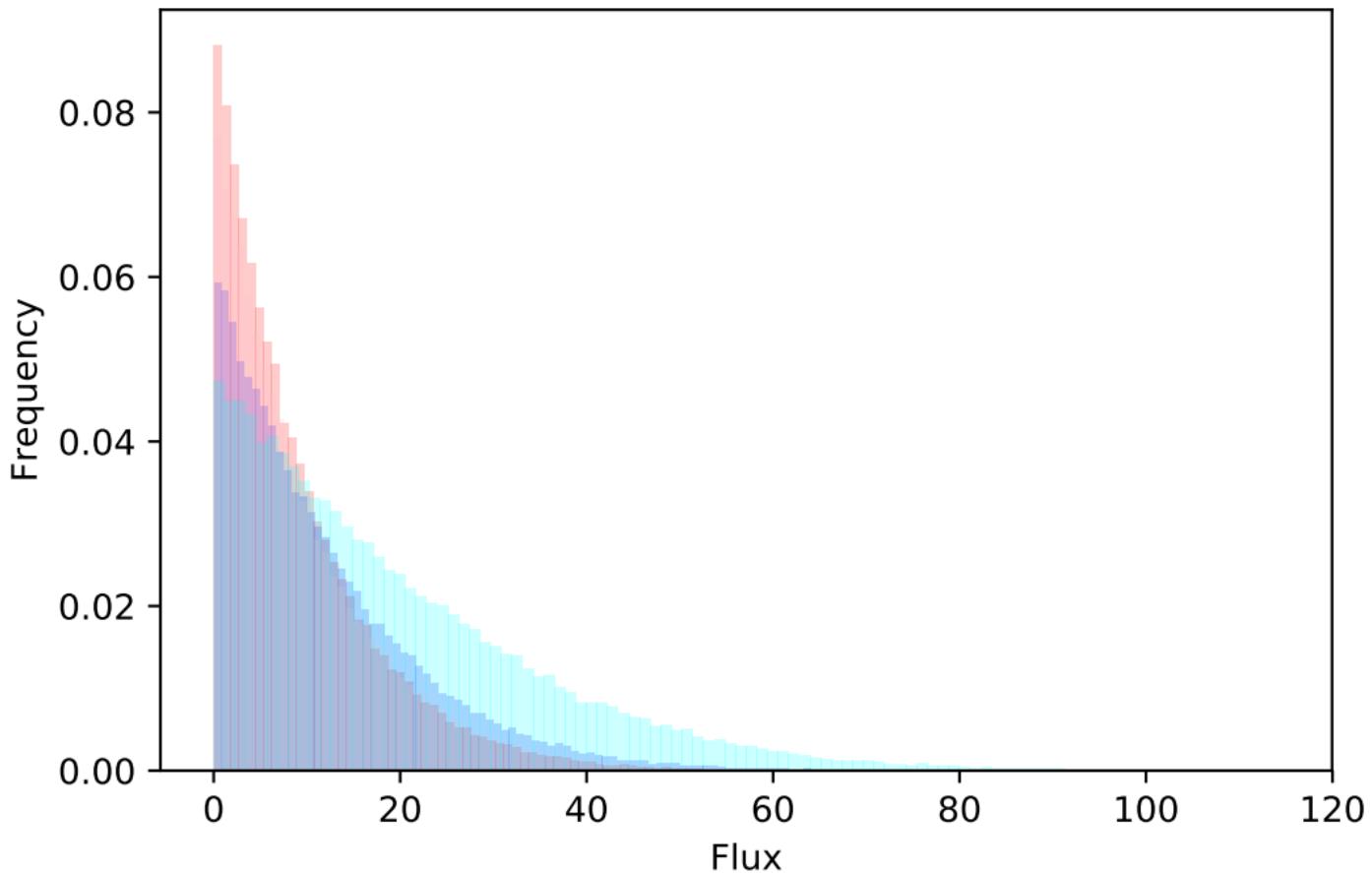


57 : GAP_c + NAD_c + Pi_c <=> DPGA_c + NADH_c
['AT1G13440', '4*AT3G04120']

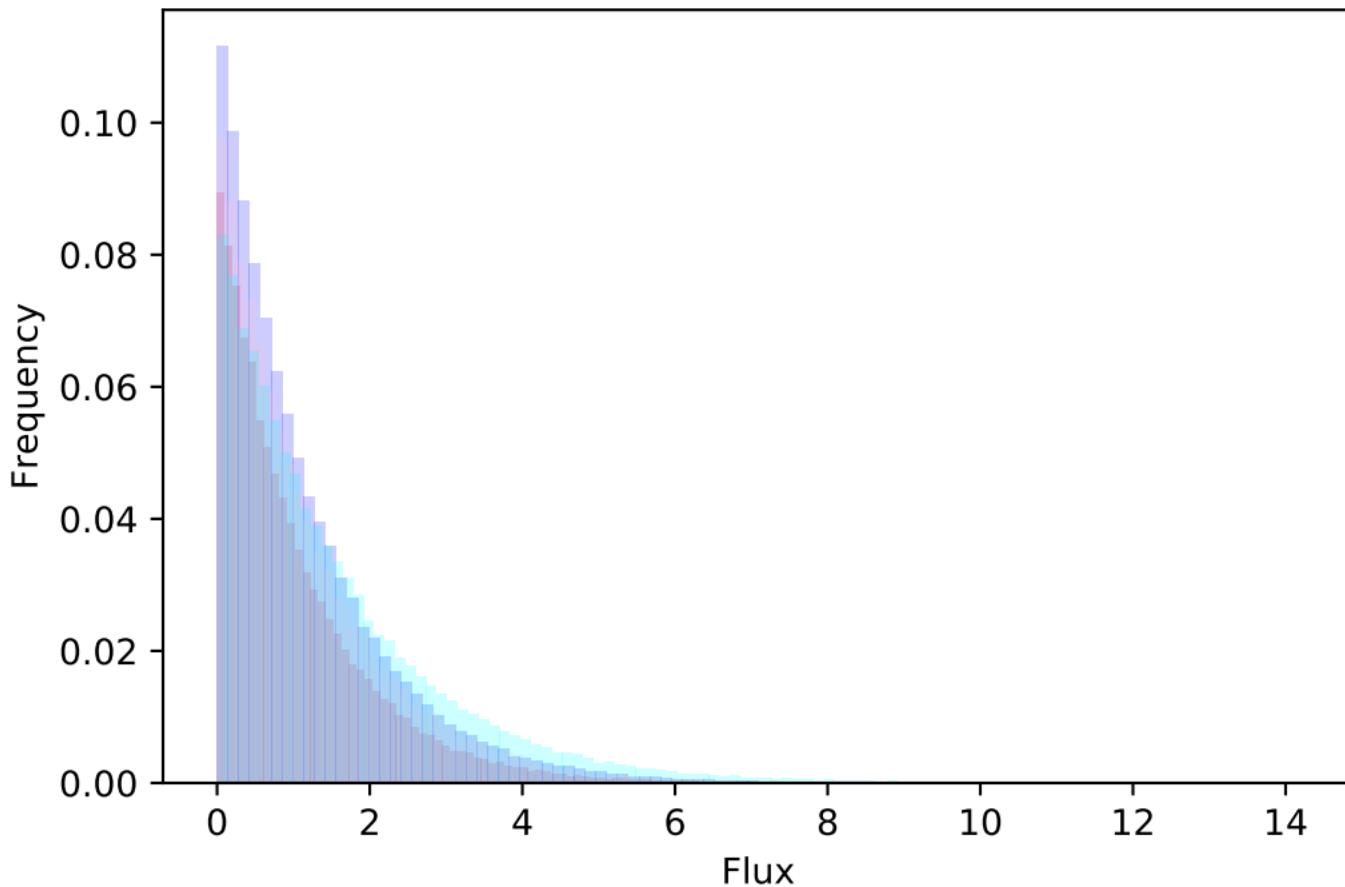


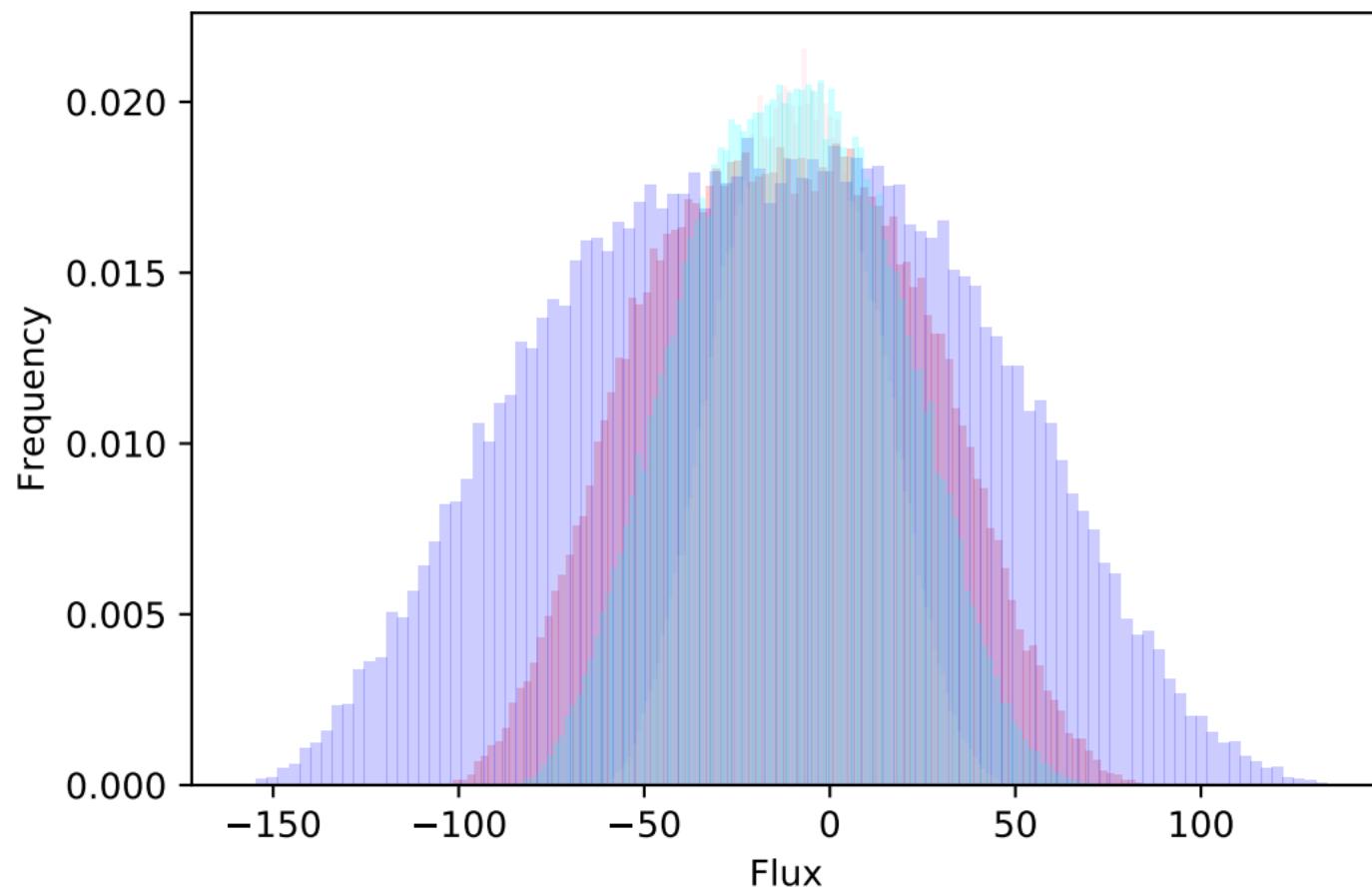
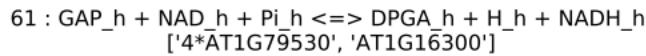


59 : ATP_c + F6P_c --> ADP_c + FBP_c + H_c
['AT4G32840', 'AT4G29220', 'AT5G56630', 'AT5G47810', 'AT4G26270']

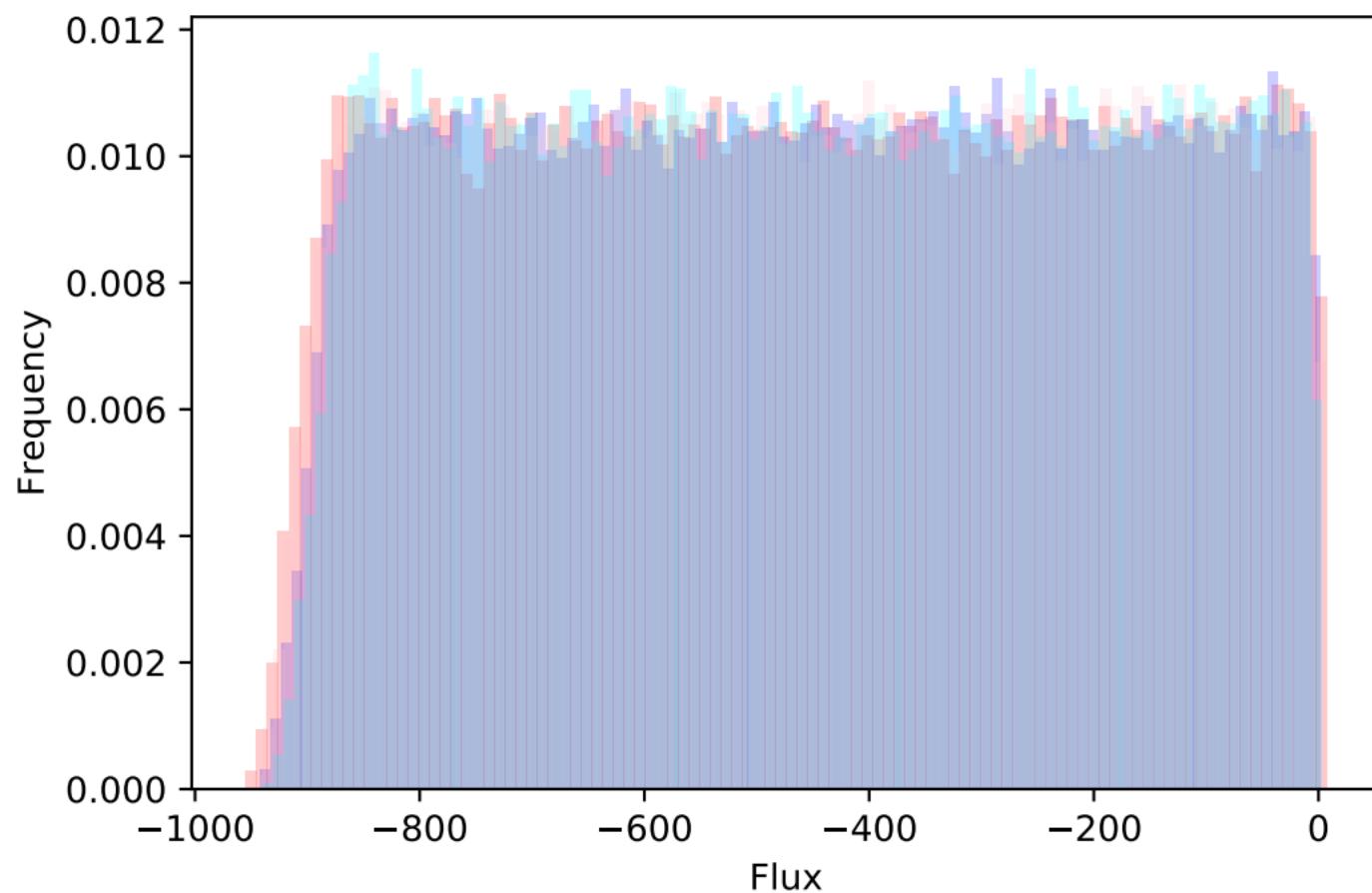


60 : ATP_h + F6P_h --> ADP_h + FBP_h + H_h
['AT5G61580', 'AT2G22480']

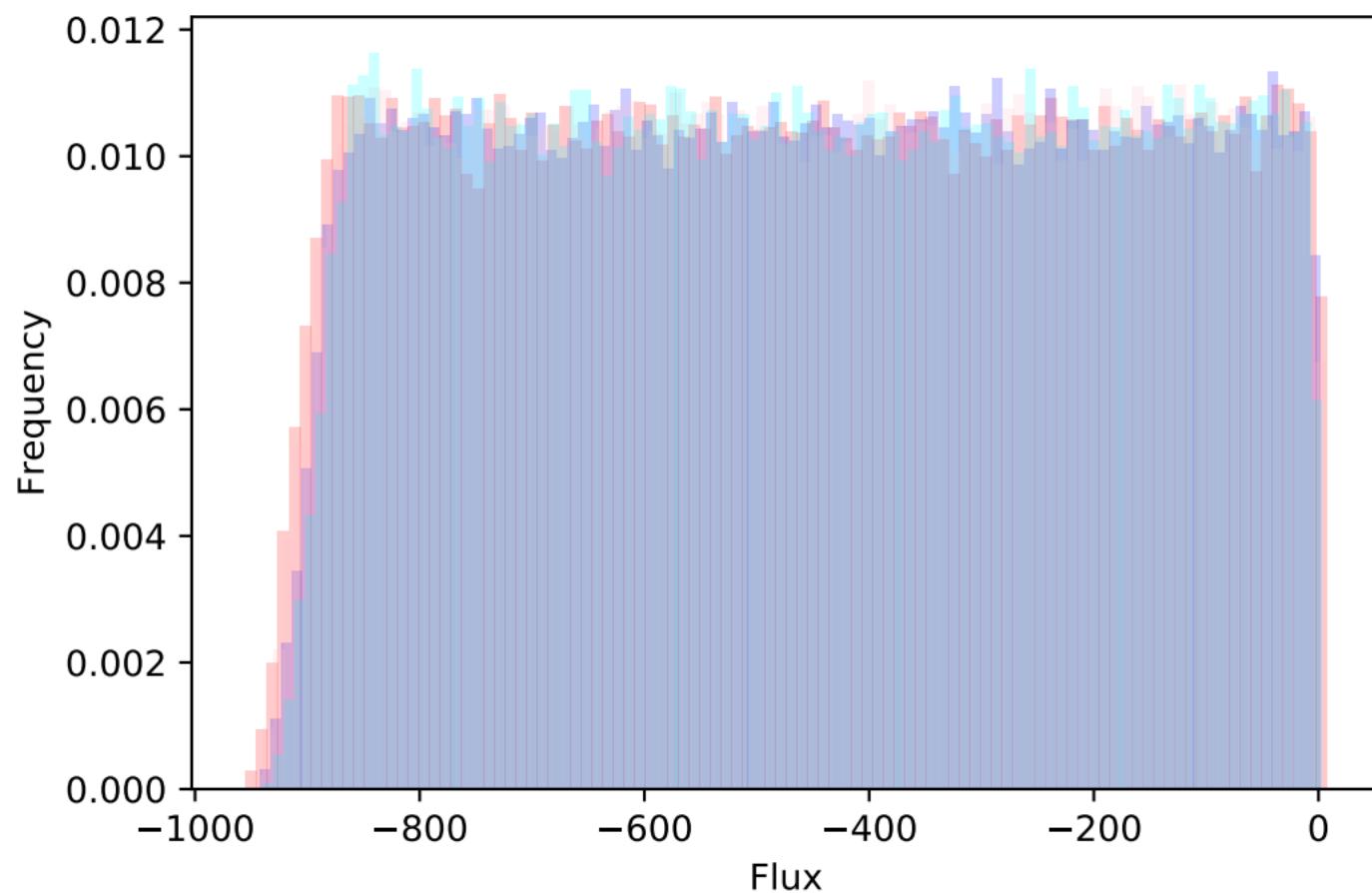




62 : PGA_h <=> 2PGA_h
['AT1G22170', 'AT1G09780', 'AT1G78050']

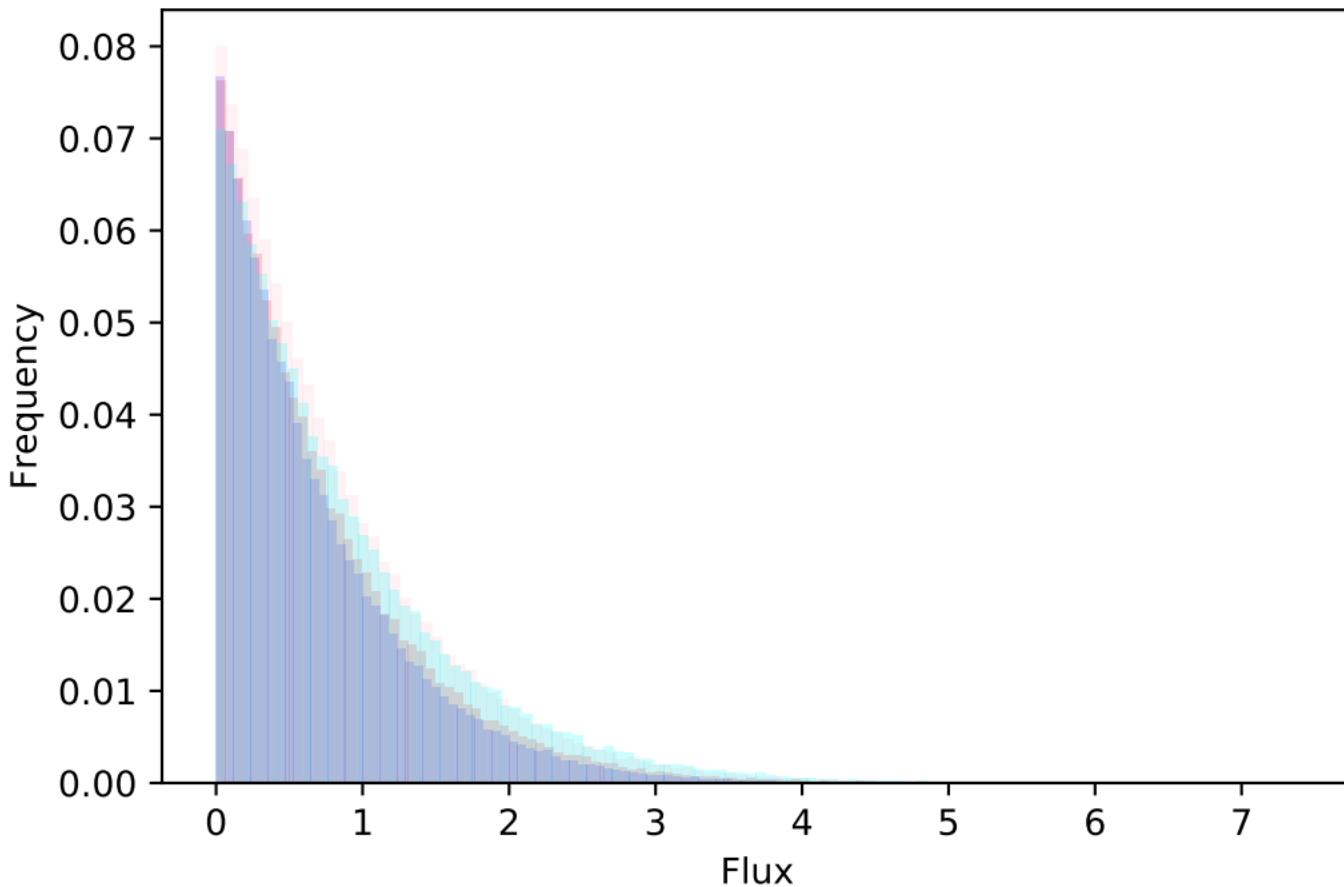


63 : 2PGA_h <=> H2O_h + PEP_h
['2*AT1G74030', 'AT2G36530']

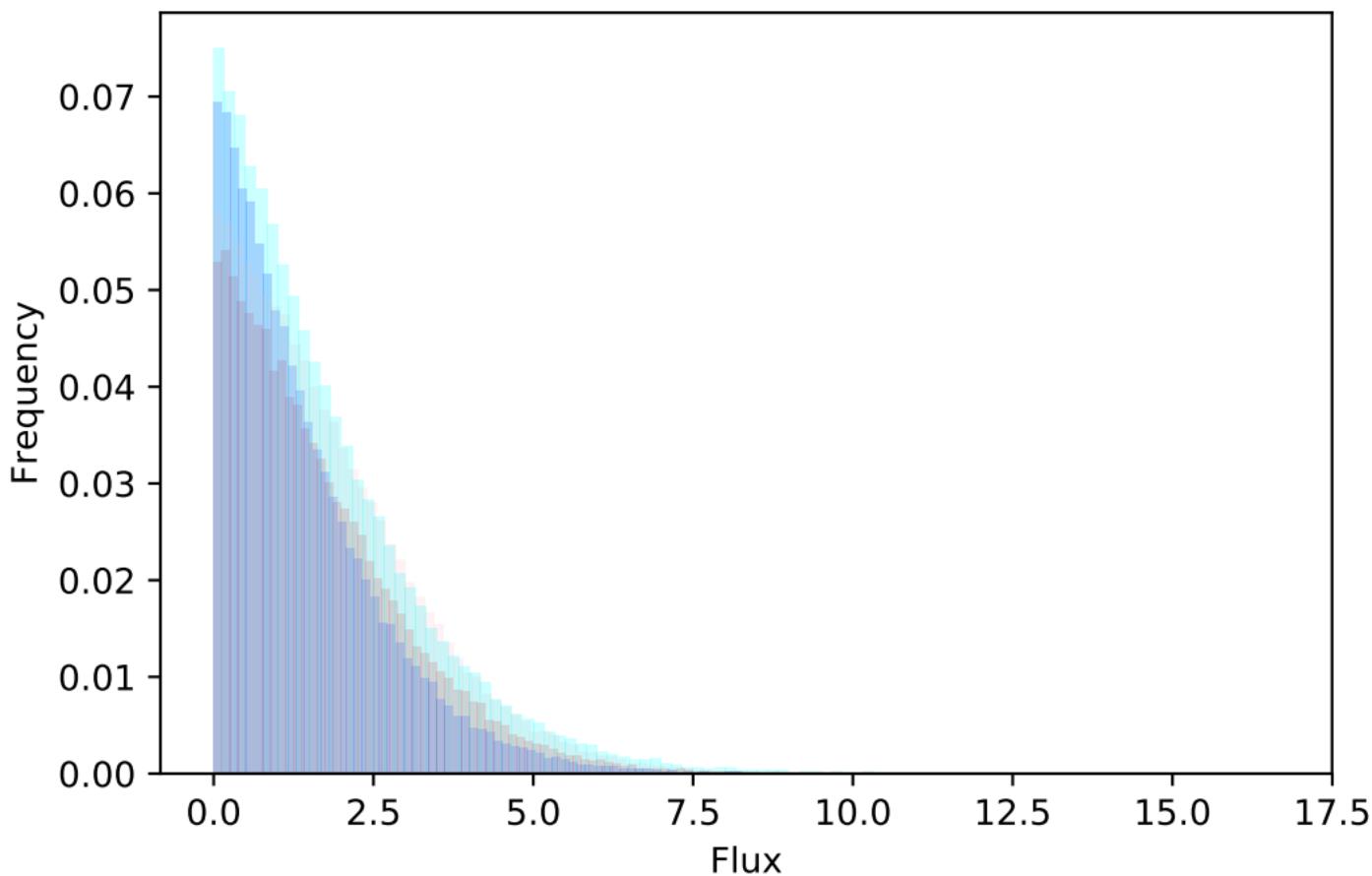




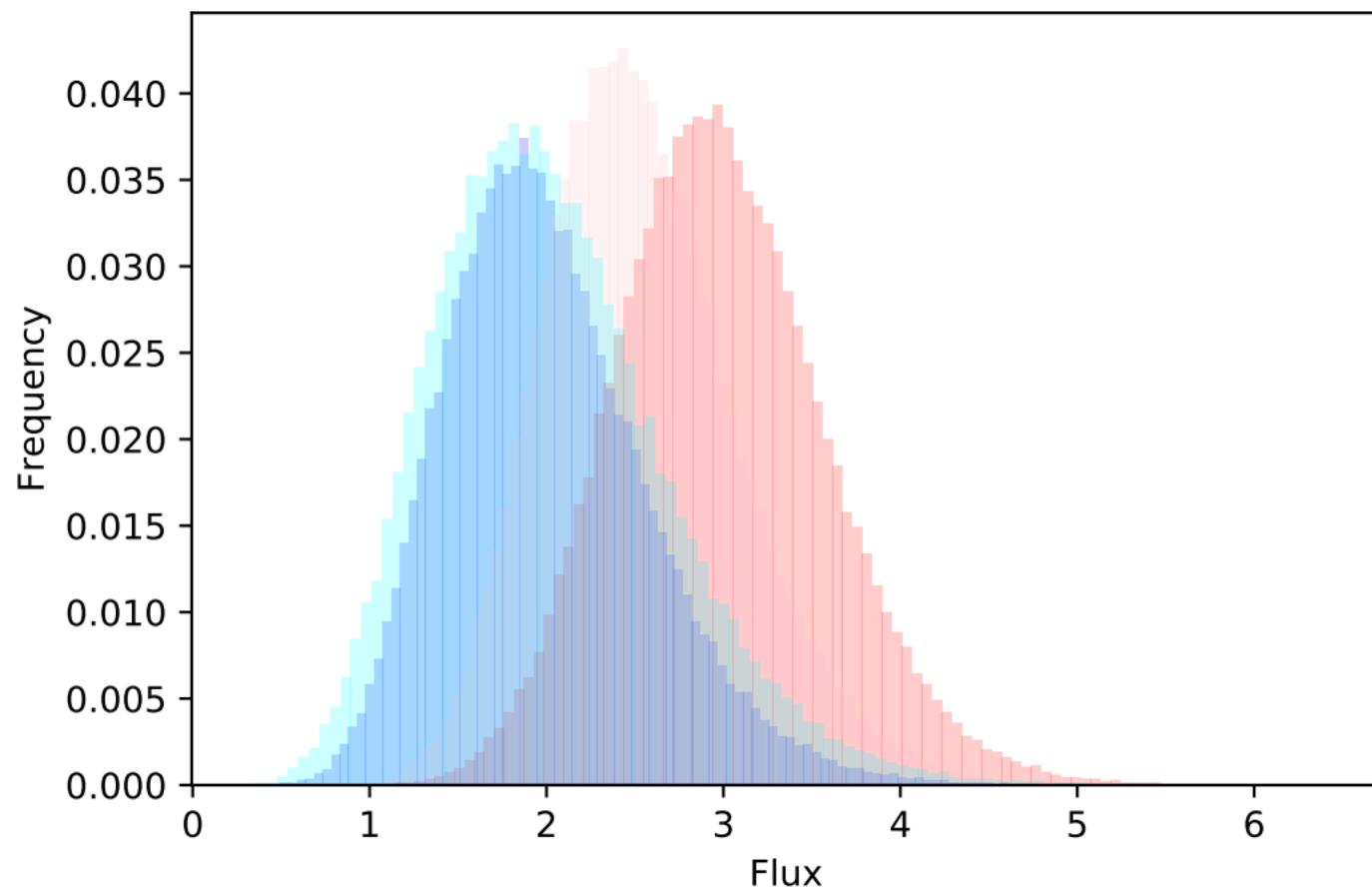
['AT3G55810', 'AT2G36580', '4*AT3G04050', 'AT5G63680', 'AT3G25960', 'AT3G55650', 'AT5G08570', 'AT3G52990']



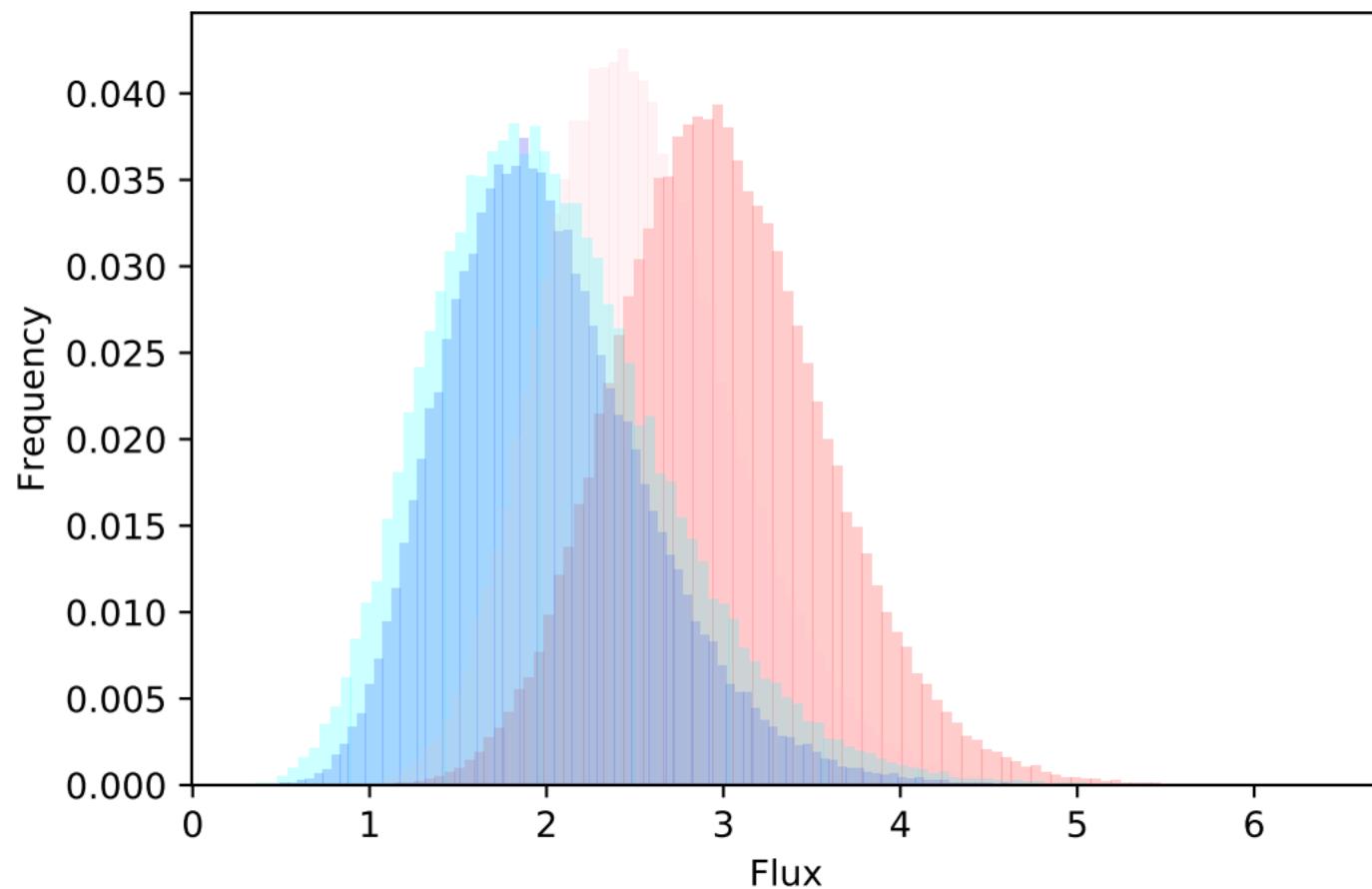
65 : ADP_h + H_h + PEP_h --> ATP_h + Pyr_h
['AT1G32440', '4*AT5G52920', '4*AT3G22960']



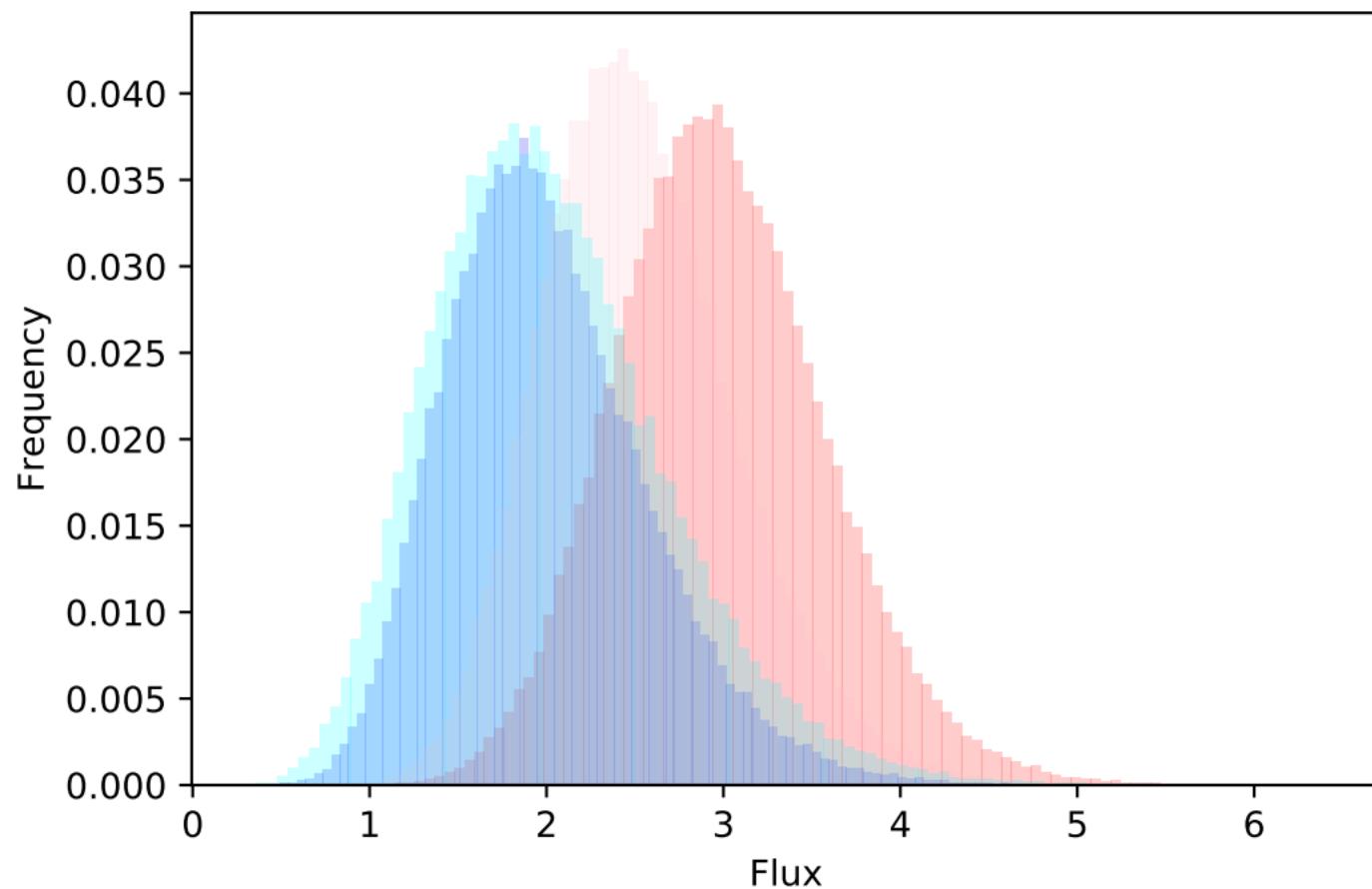
66 : H_m + Pyr_m + ThPP_m --> CO2_m + H_DASH_Eth_DASH_ThPP_m
['2*AT5G50850', '2*AT1G59900']



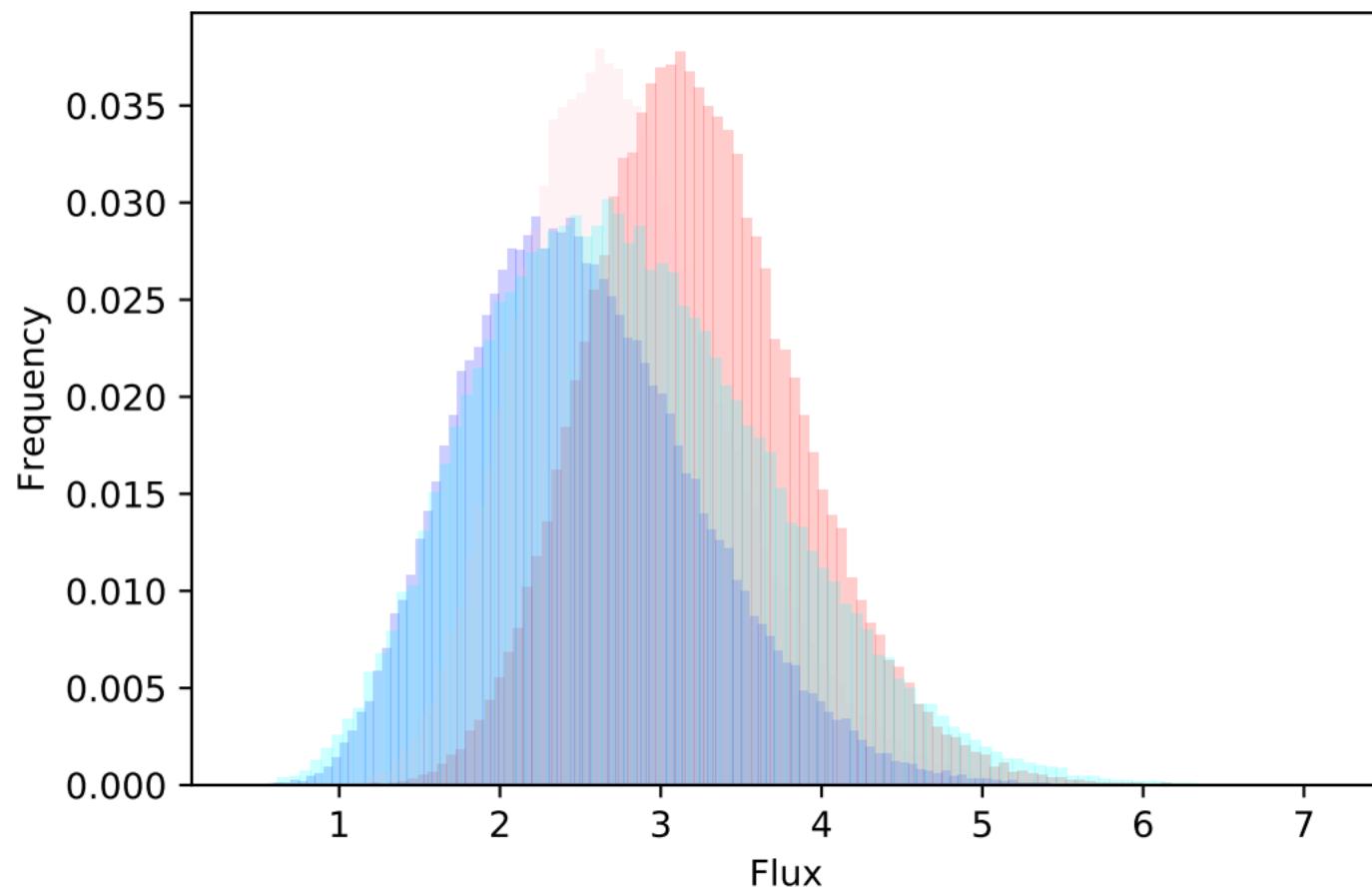
67 : H_DASH_Eth_DASH_ThPP_m + LPA_m --> A_DASH_DHL_m + ThPP_m
['2*AT5G50850', '2*AT1G59900']



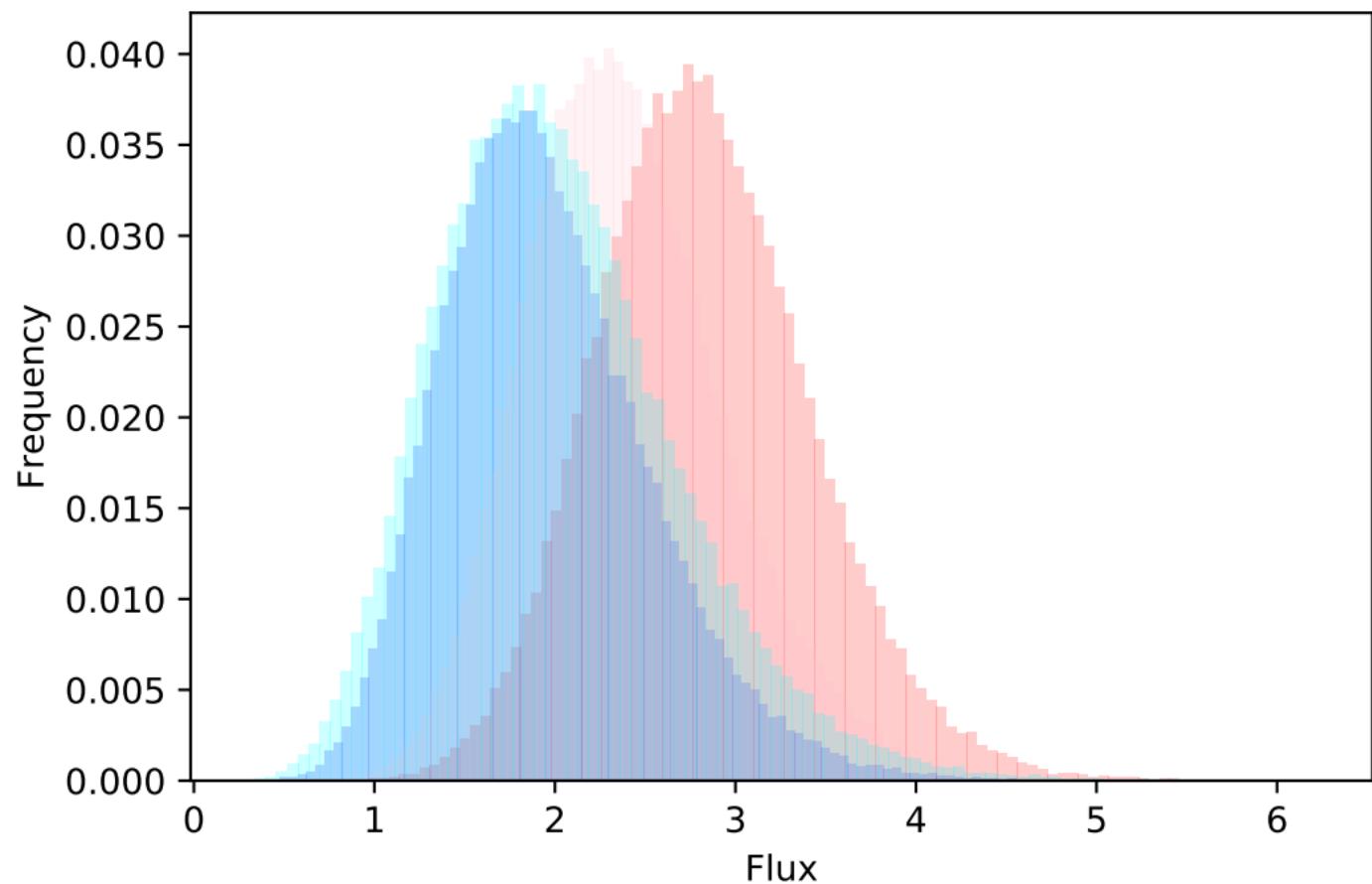
68 : A_DASH_DHL_m + CoA_m --> A_DASH_CoA_m + DHL_m
['3*AT3G52200', 'AT1G54220', 'AT3G13930']



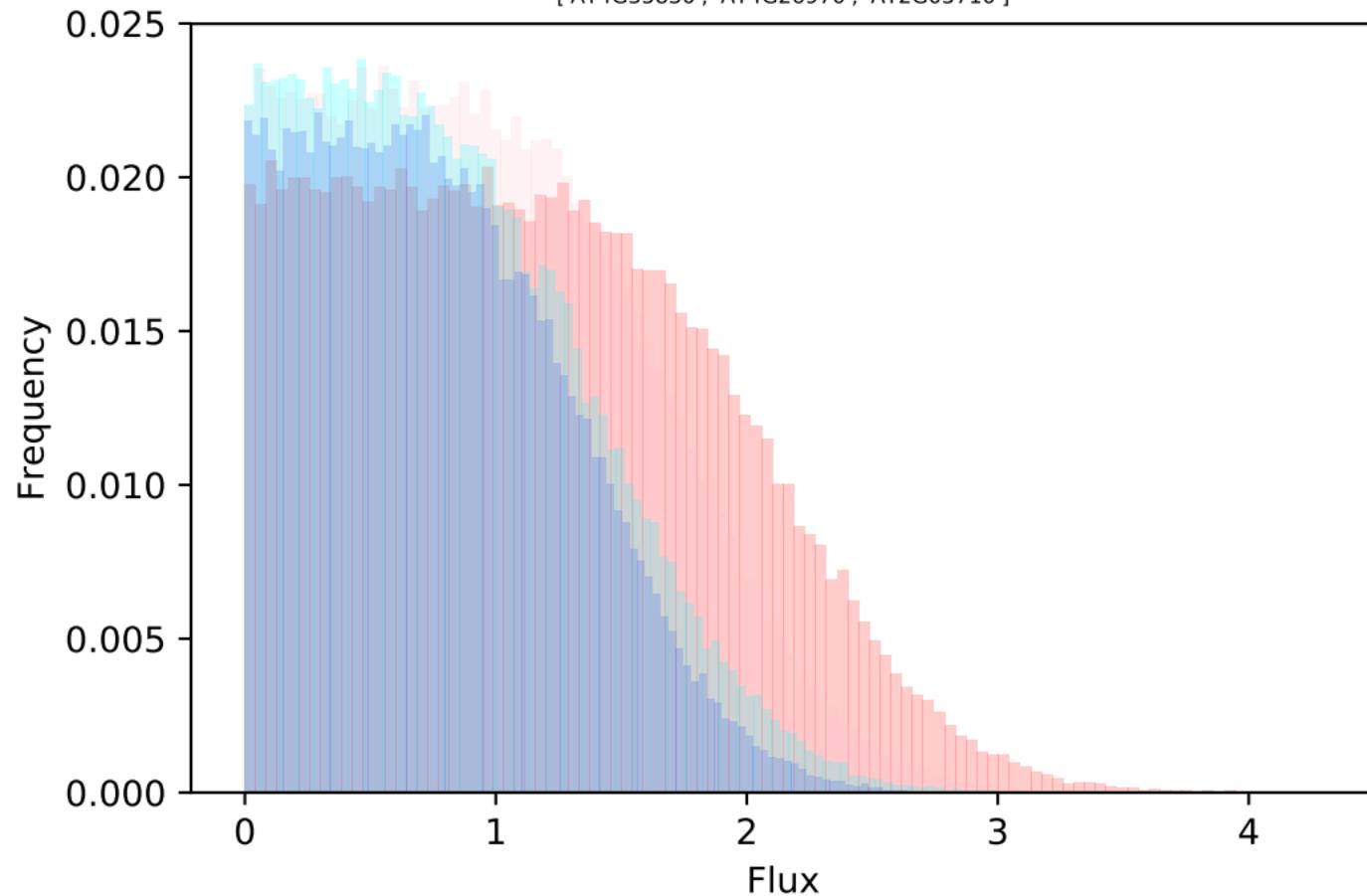
69 : DHL_m + NAD_m --> H_m + LPA_m + NADH_m
['2*AT1G48030', 'AT3G17240']



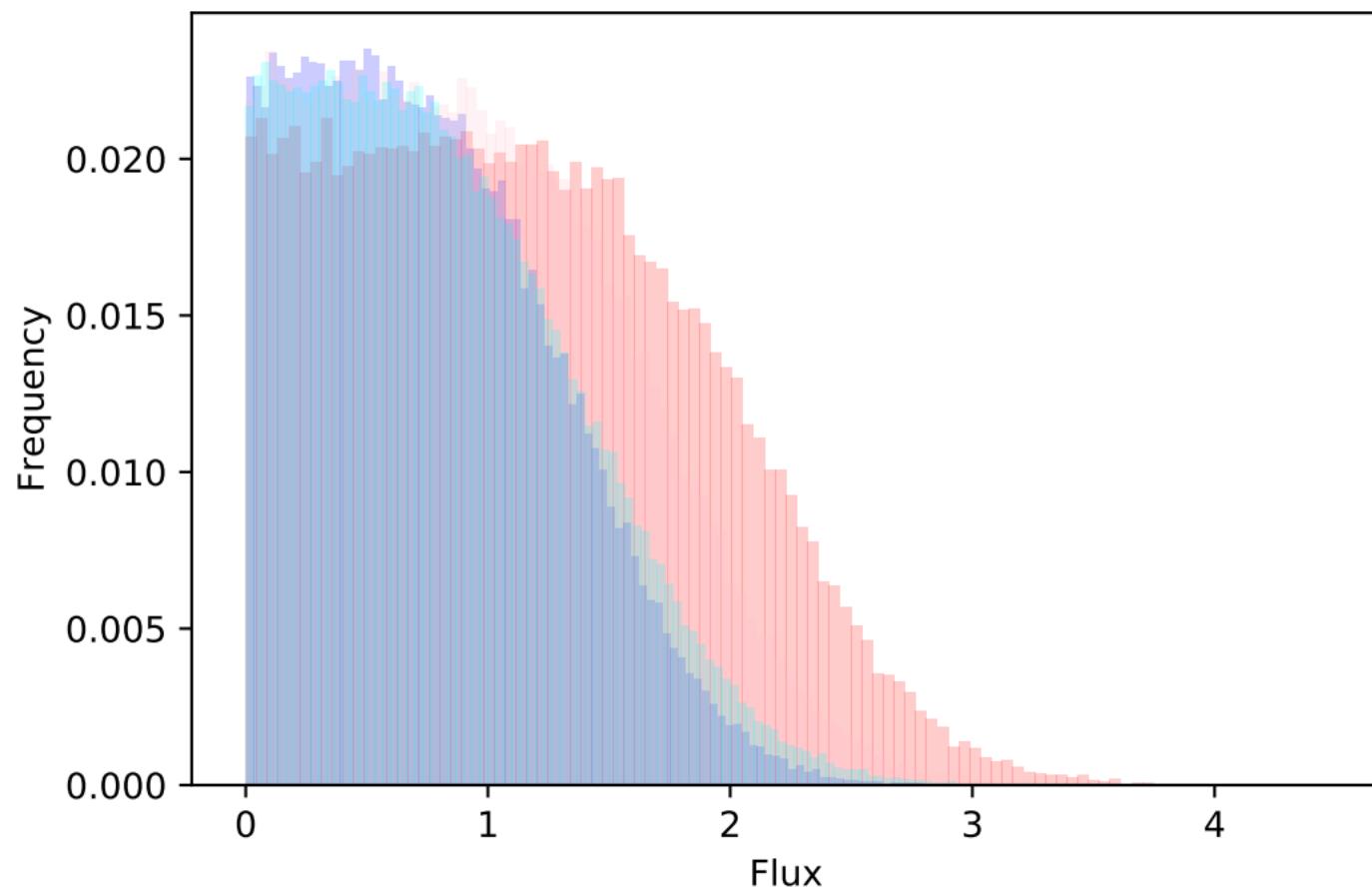
70 : A_DASH_CoA_m + H2O_m + OAA_m --> Cit_m + CoA_m + H_m
['AT2G44350', 'AT3G60100']



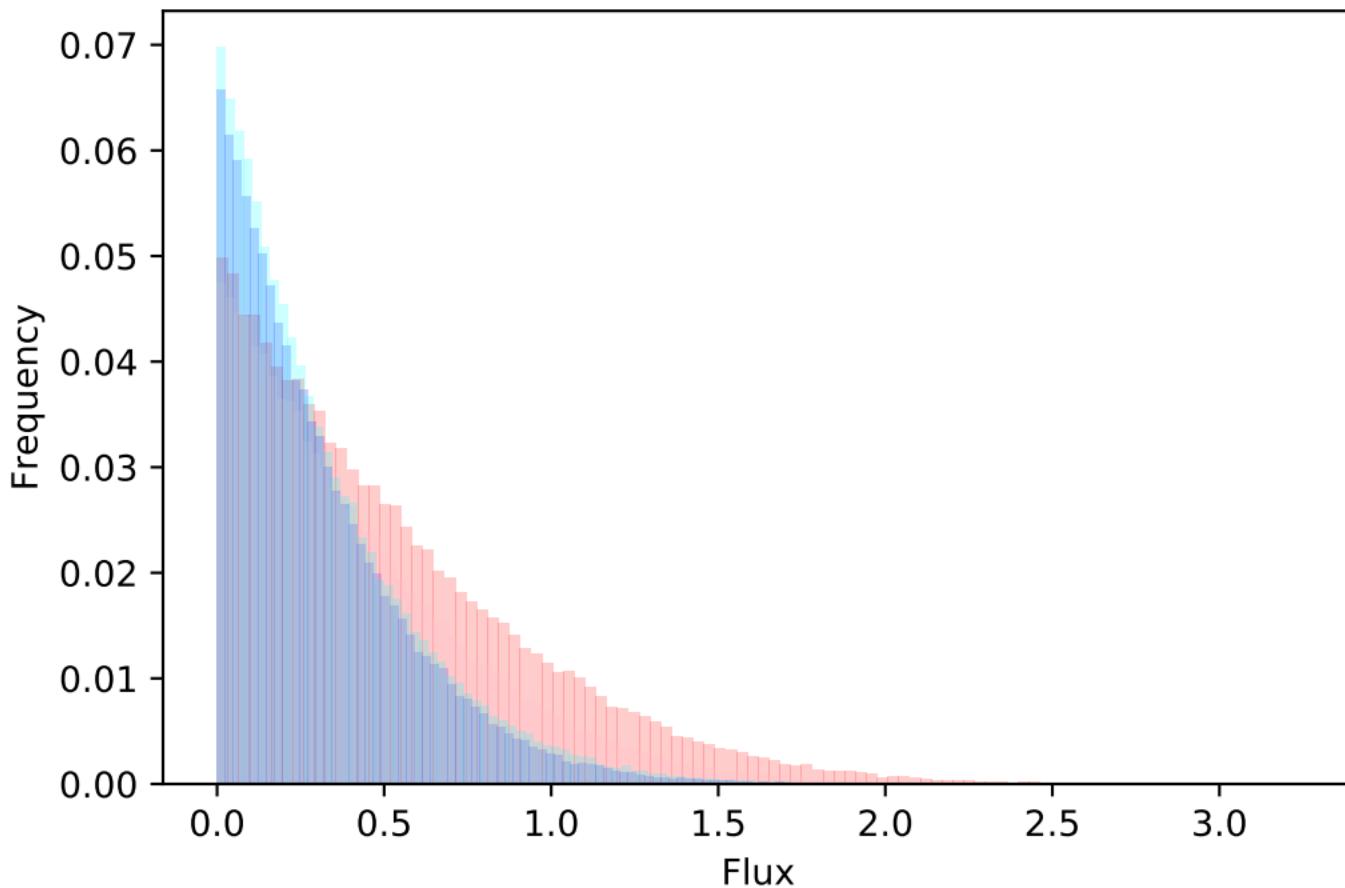
71 : Cit_m --> H2O_m + cACN_m
['AT4G35830', 'AT4G26970', 'AT2G05710']



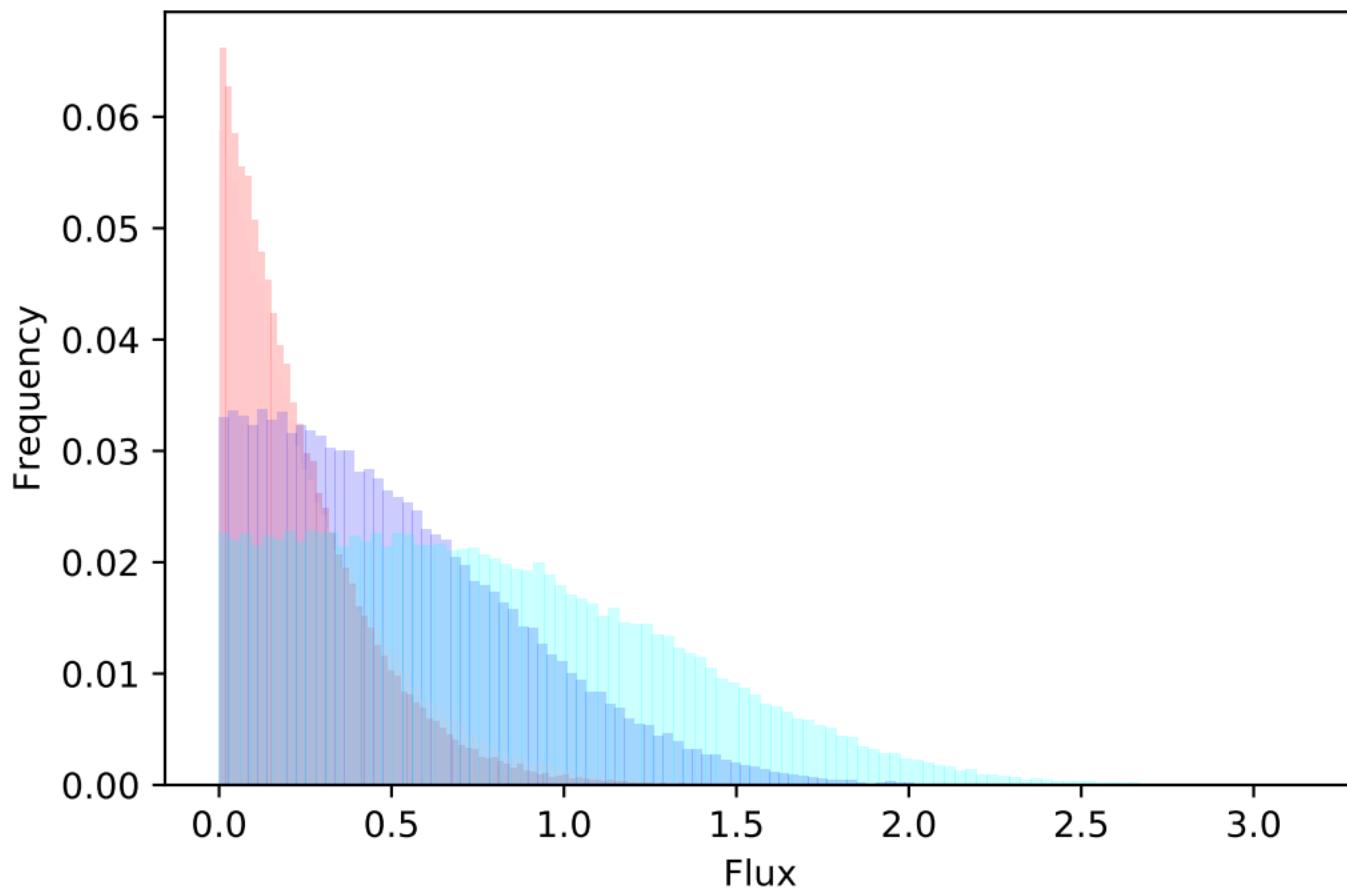
72 : H₂O_m + cACN_m --> iCit_m
['AT4G35830', 'AT4G26970', 'AT2G05710']



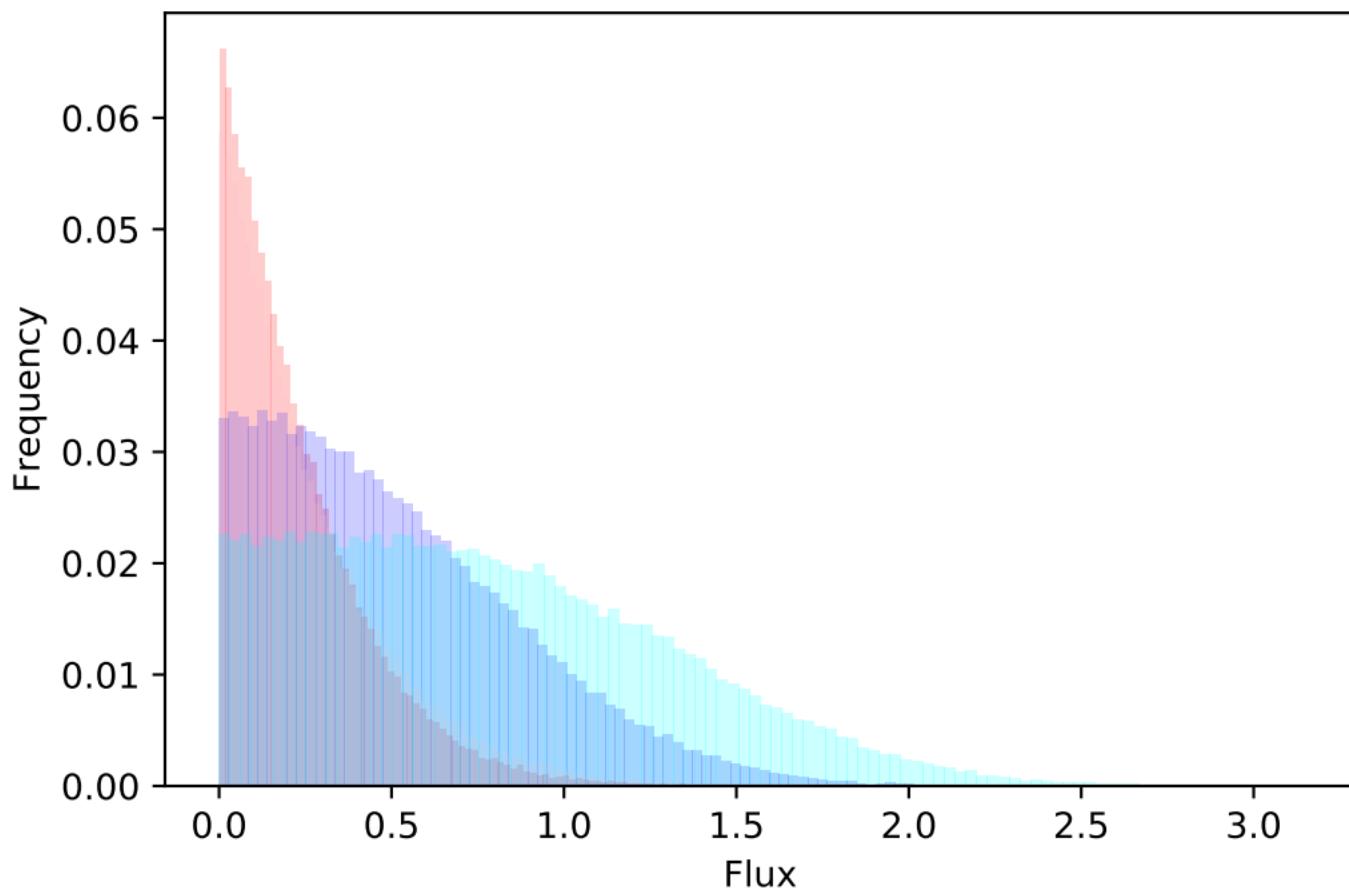
73 : NAD_m + iCit_m --> CO2_m + KG_m + NADH_m
['AT4G35260', 'AT3G09810', 'AT5G03290', 'AT2G17130', 'AT4G35650']



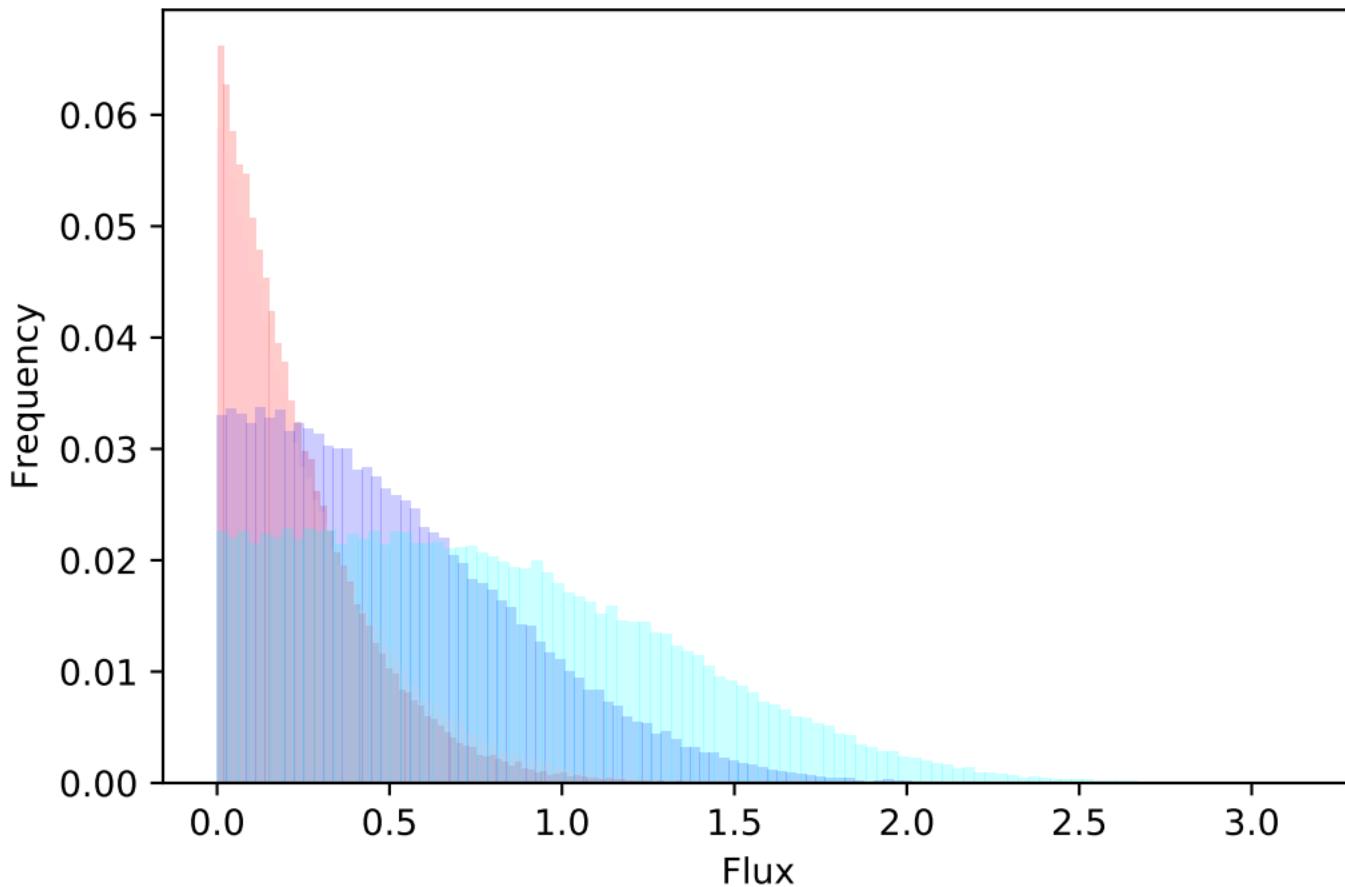
74 : H_m + KG_m + LPA_m --> CO2_m + S_DASH_DHL_m
['2*AT5G65750', 'AT3G55410']



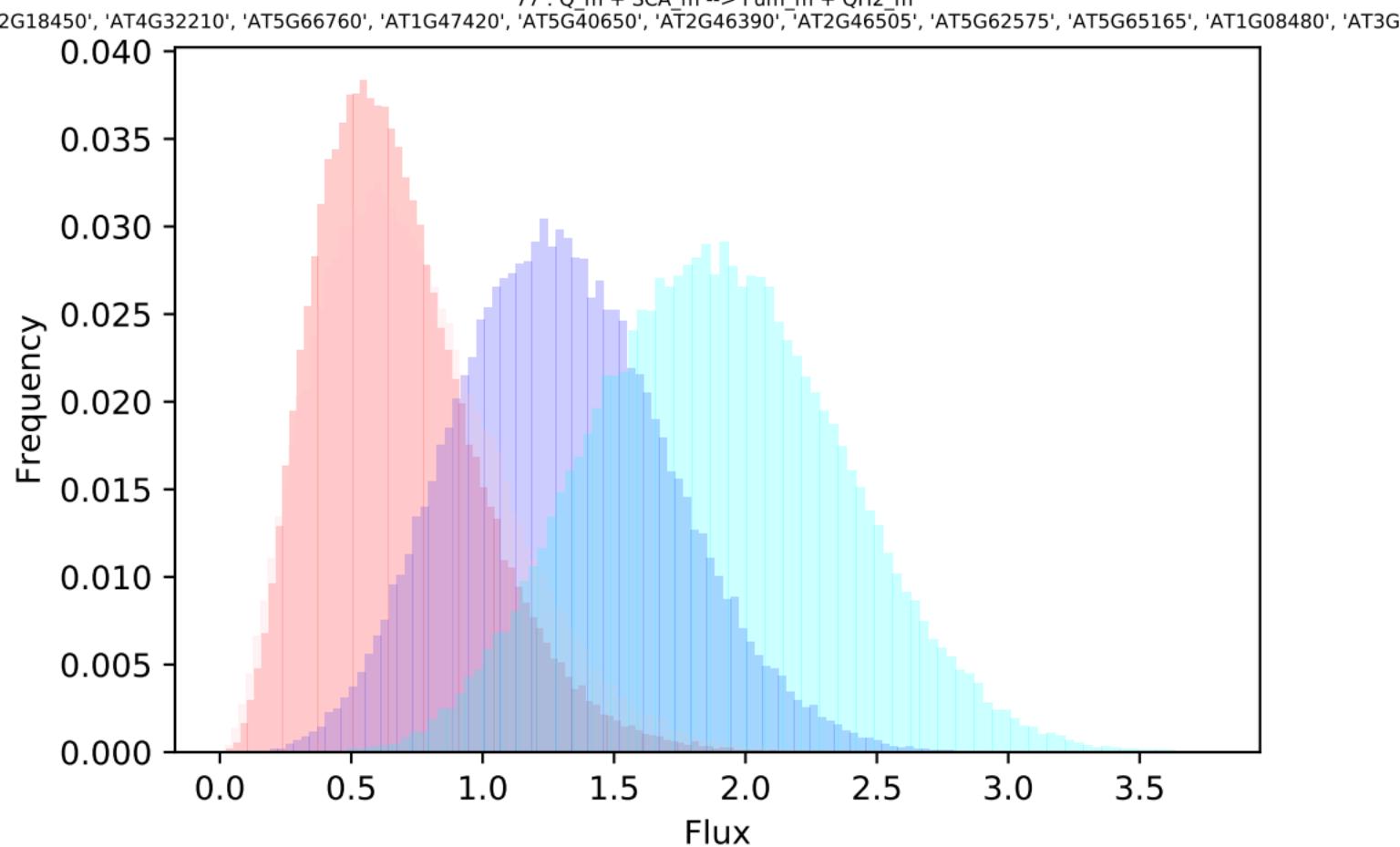
75 : CoA_m + S_DASH_DHL_m --> DHL_m + S_DASH_CoA_m
['AT4G26910', '3*AT5G55070']



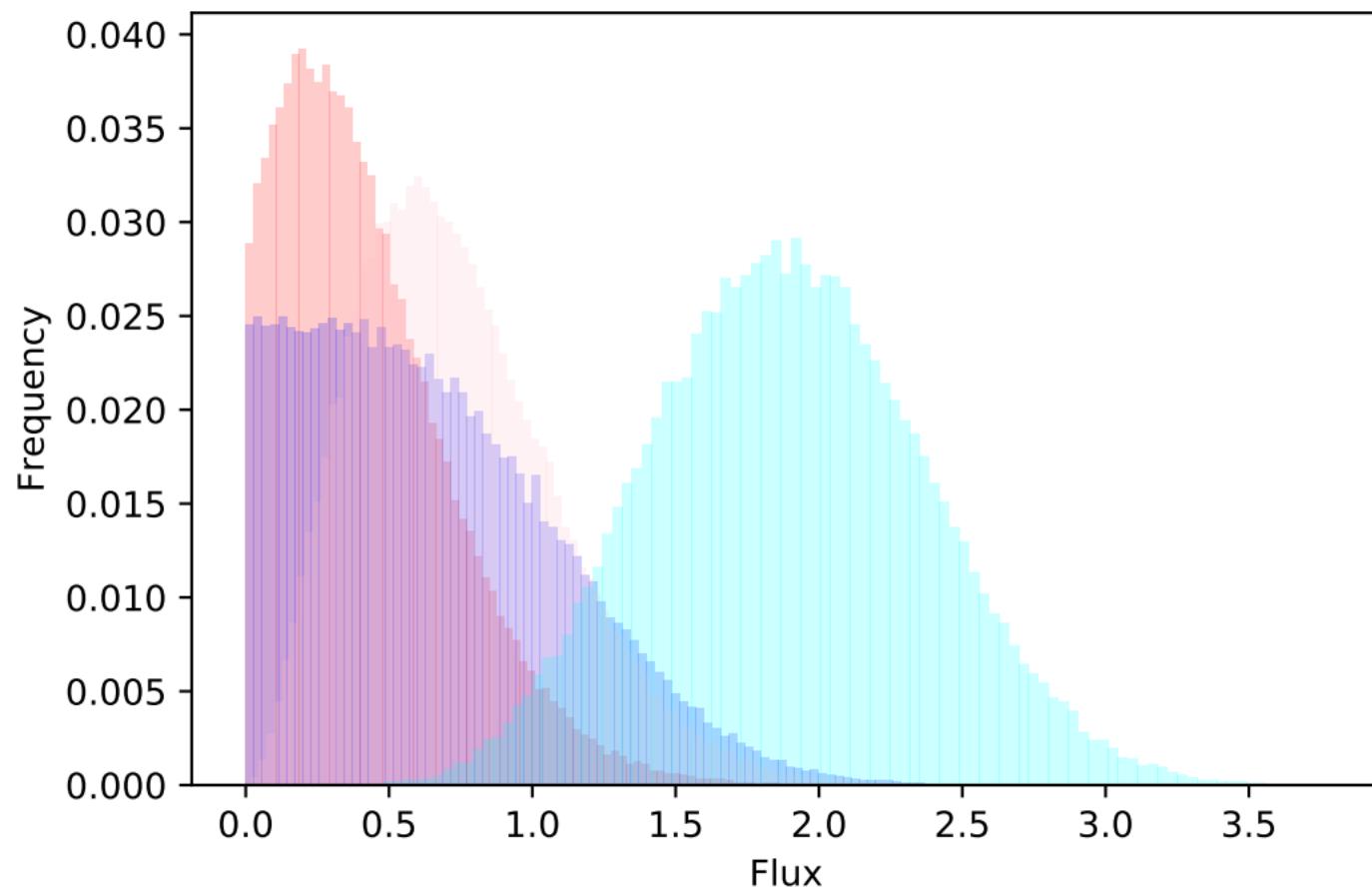
76 : ADP_m + Pi_m + S_DASH_CoA_m --> ATP_m + CoA_m + SCA_m
['AT5G23250', 'AT2G20420', 'AT5G08300']



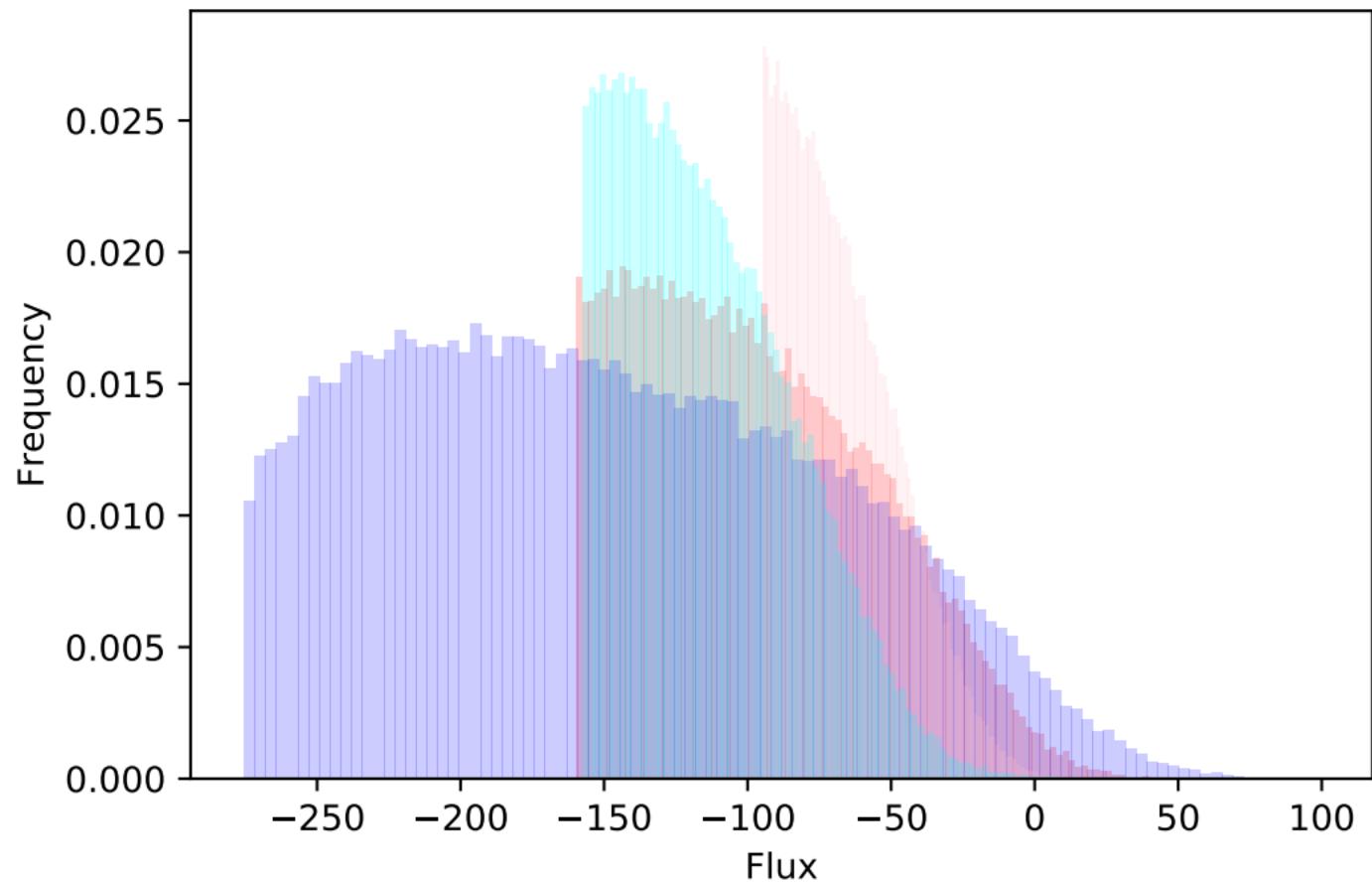
77 : Q_m + SCA_m --> Fum_m + QH2_m

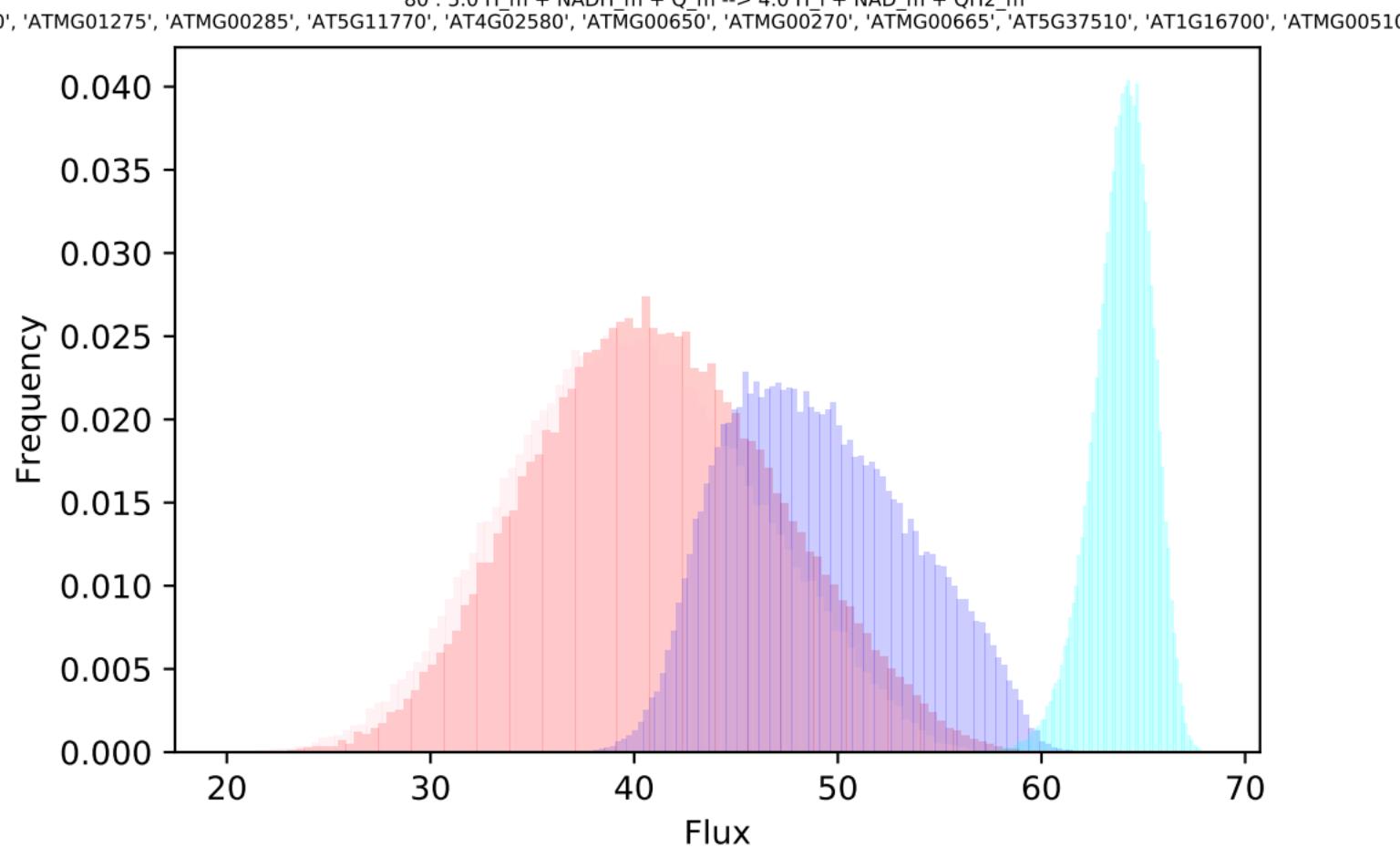
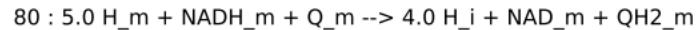


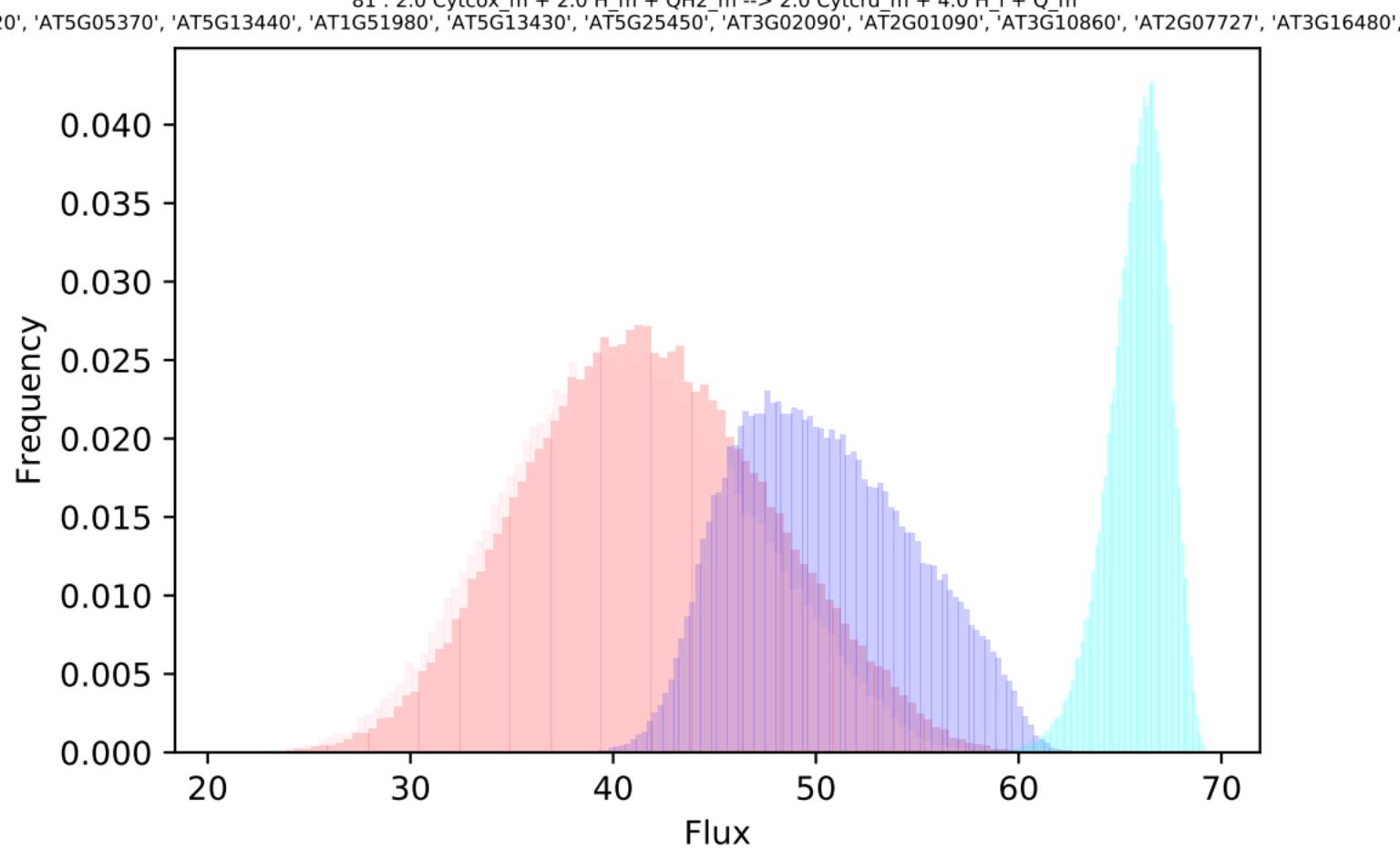
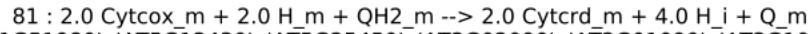
78 : Fum_m + H2O_m --> Mal_m
['AT5G50950', 'AT2G47510']

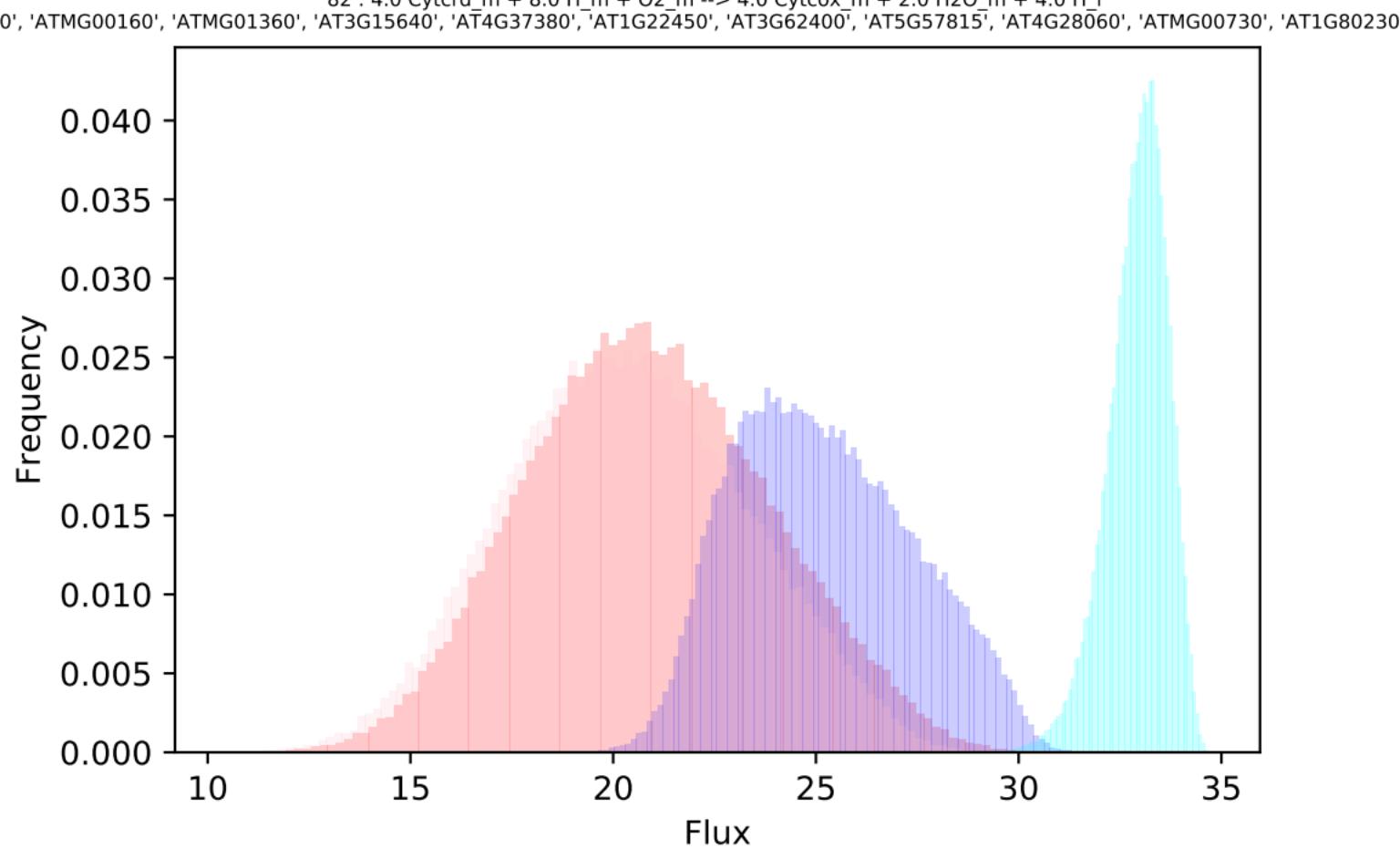
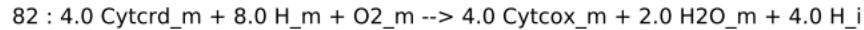


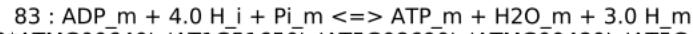
79 : Mal_m + NAD_m <=> H_m + NADH_m + OAA_m
['AT3G47520', 'AT1G53240', 'AT3G15020']



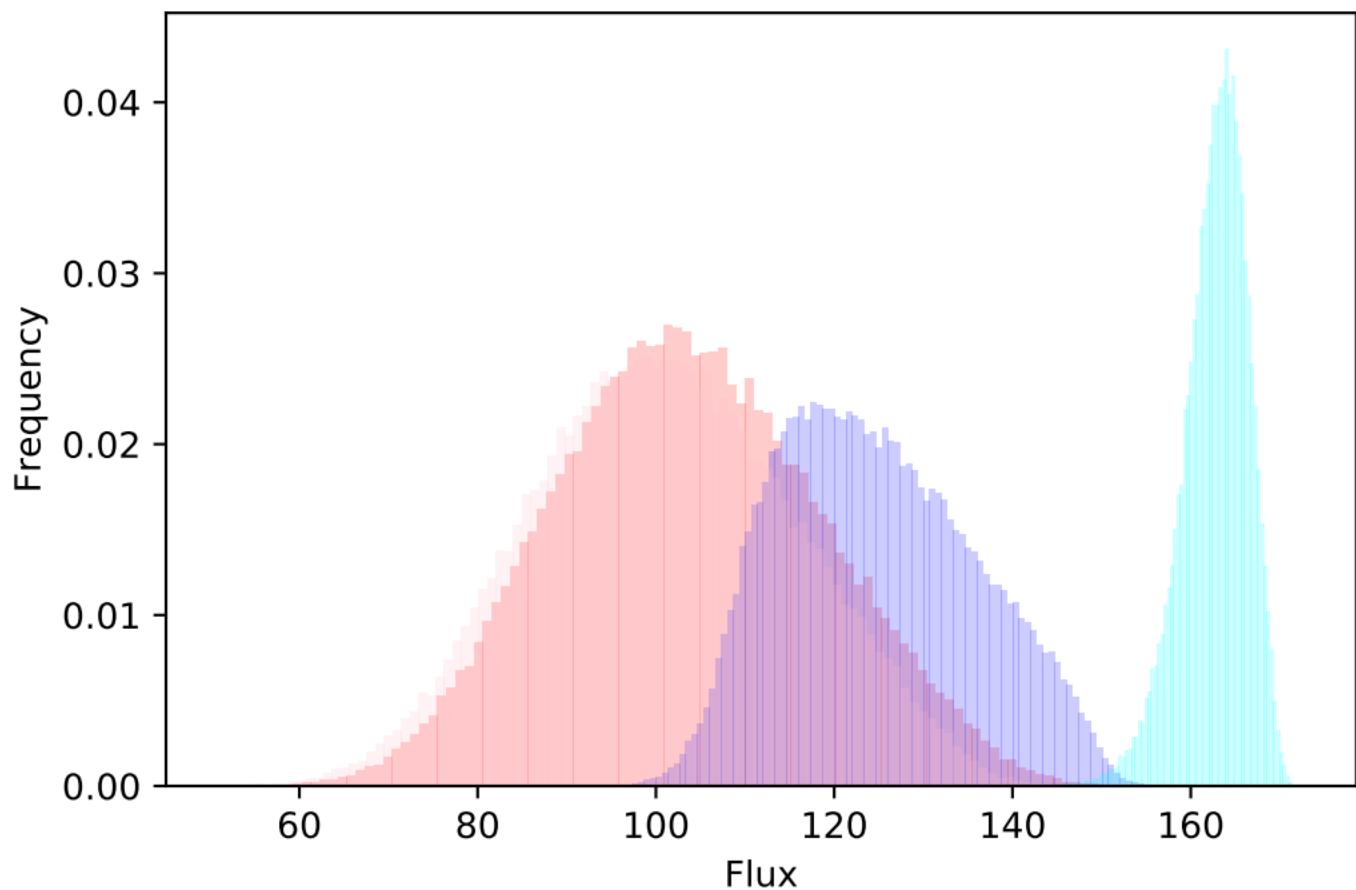




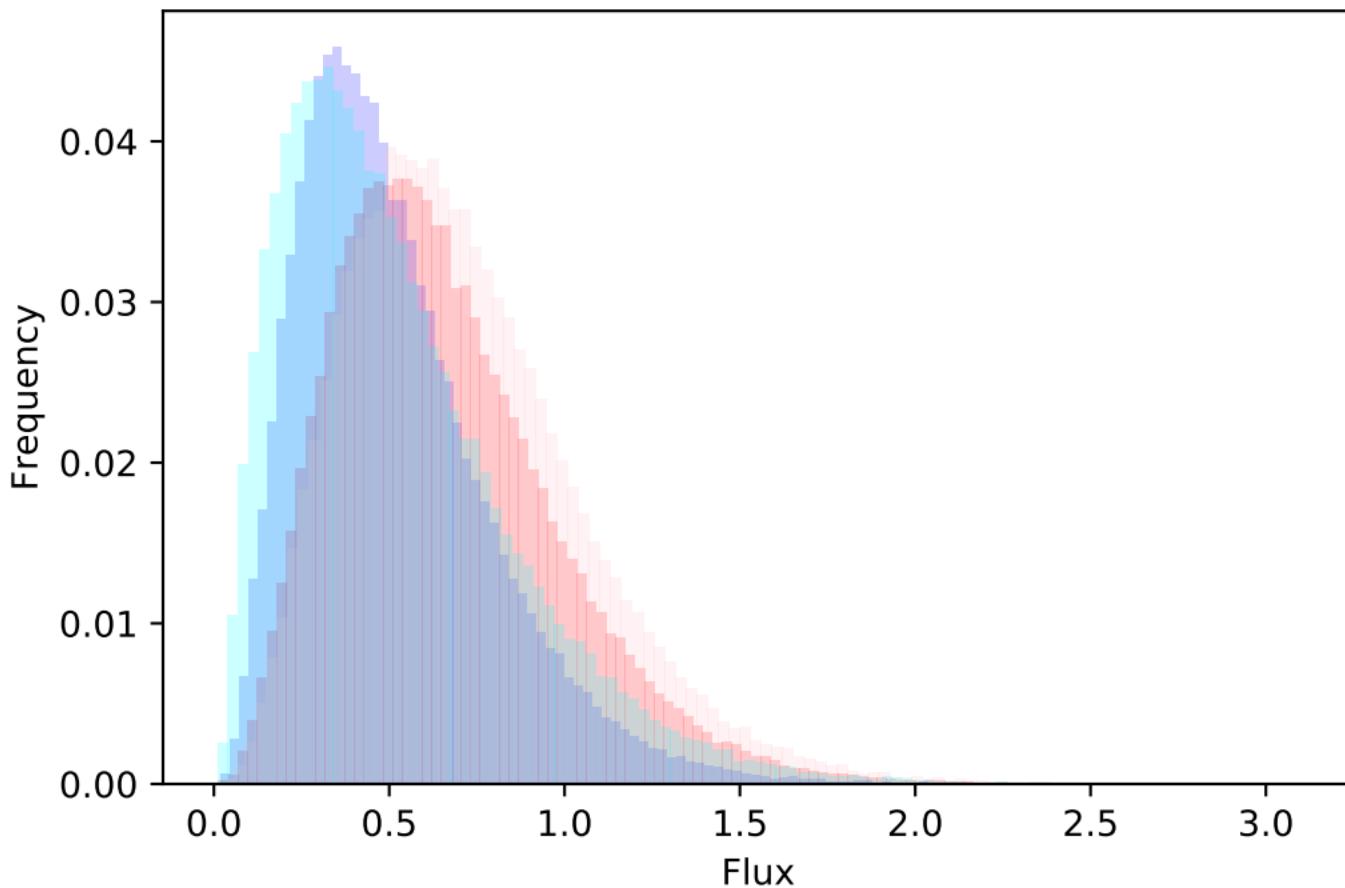




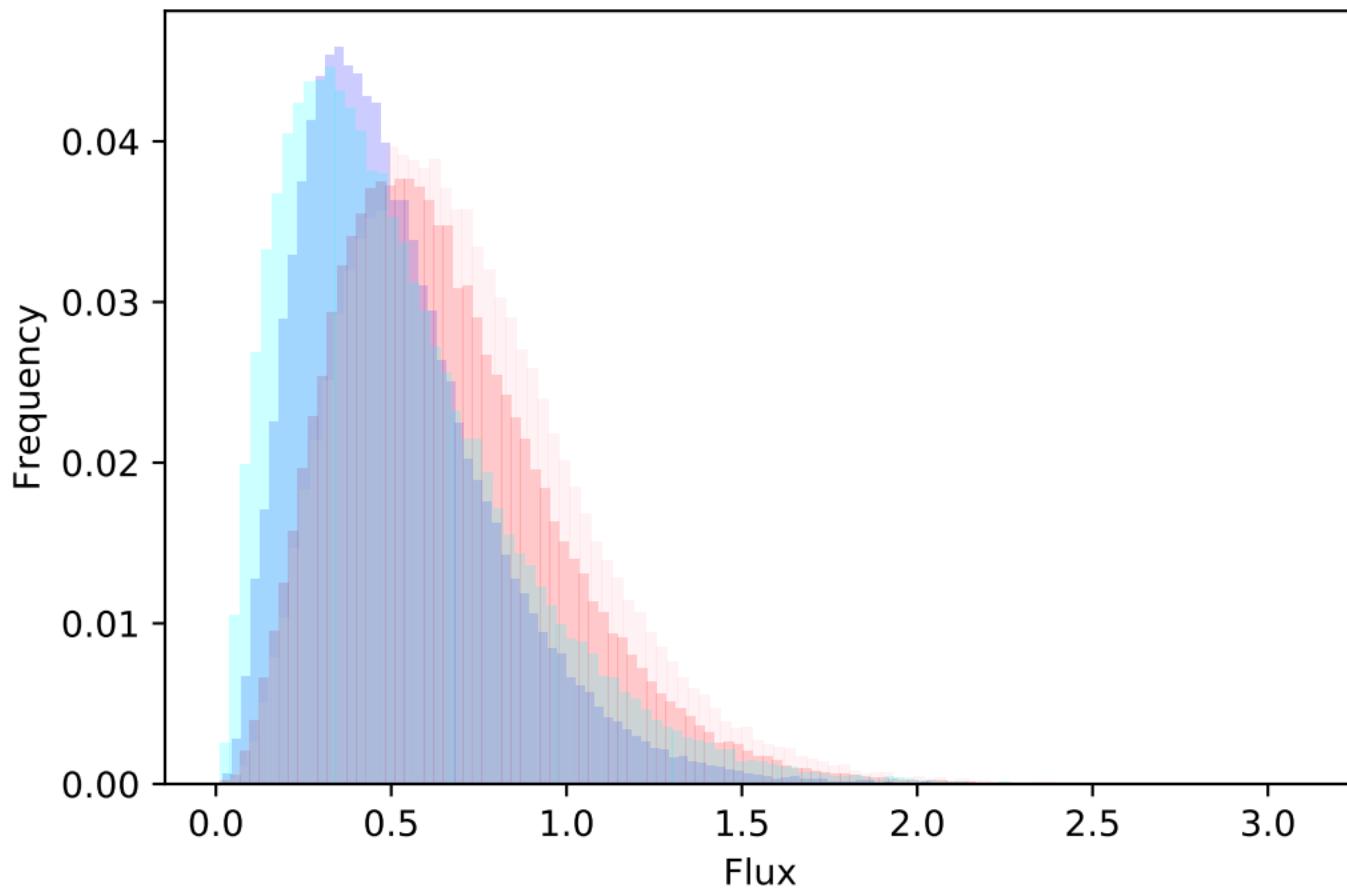
'00', '3*ATMG01190', '12*ATMG01080', '2*ATMG00640', 'AT1G51650', 'AT5G08690', 'ATMG00480', 'AT5G47030', '3*AT5G08670', 'ATMG00410',



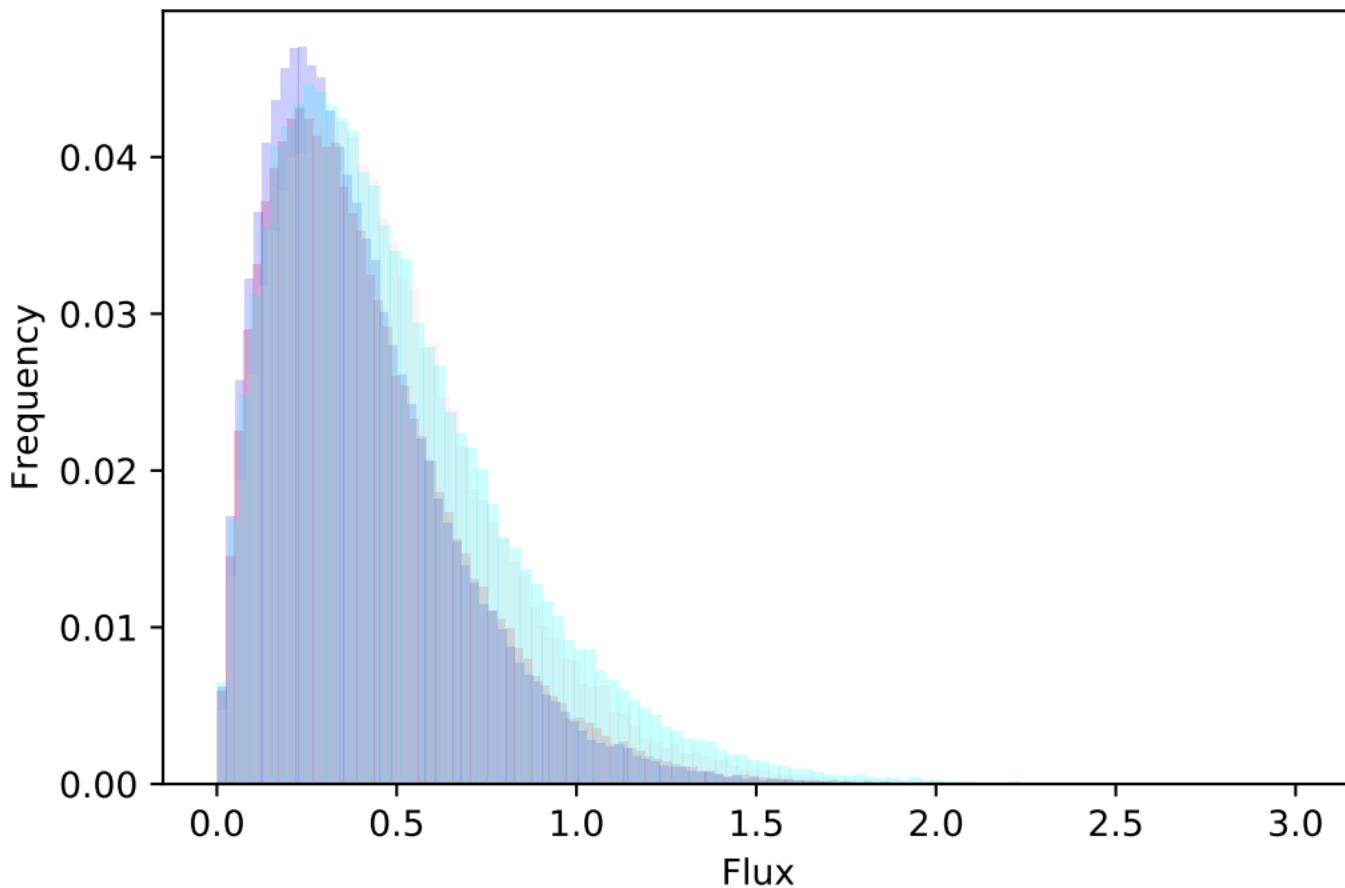
84 : O2_h + RuBP_h --> 2.0 H_h + PGA_h + PGCA_h
['AT1G67090', 'AT5G38410', '8*ATCG00490', '8*AT5G38430', 'AT5G38420']



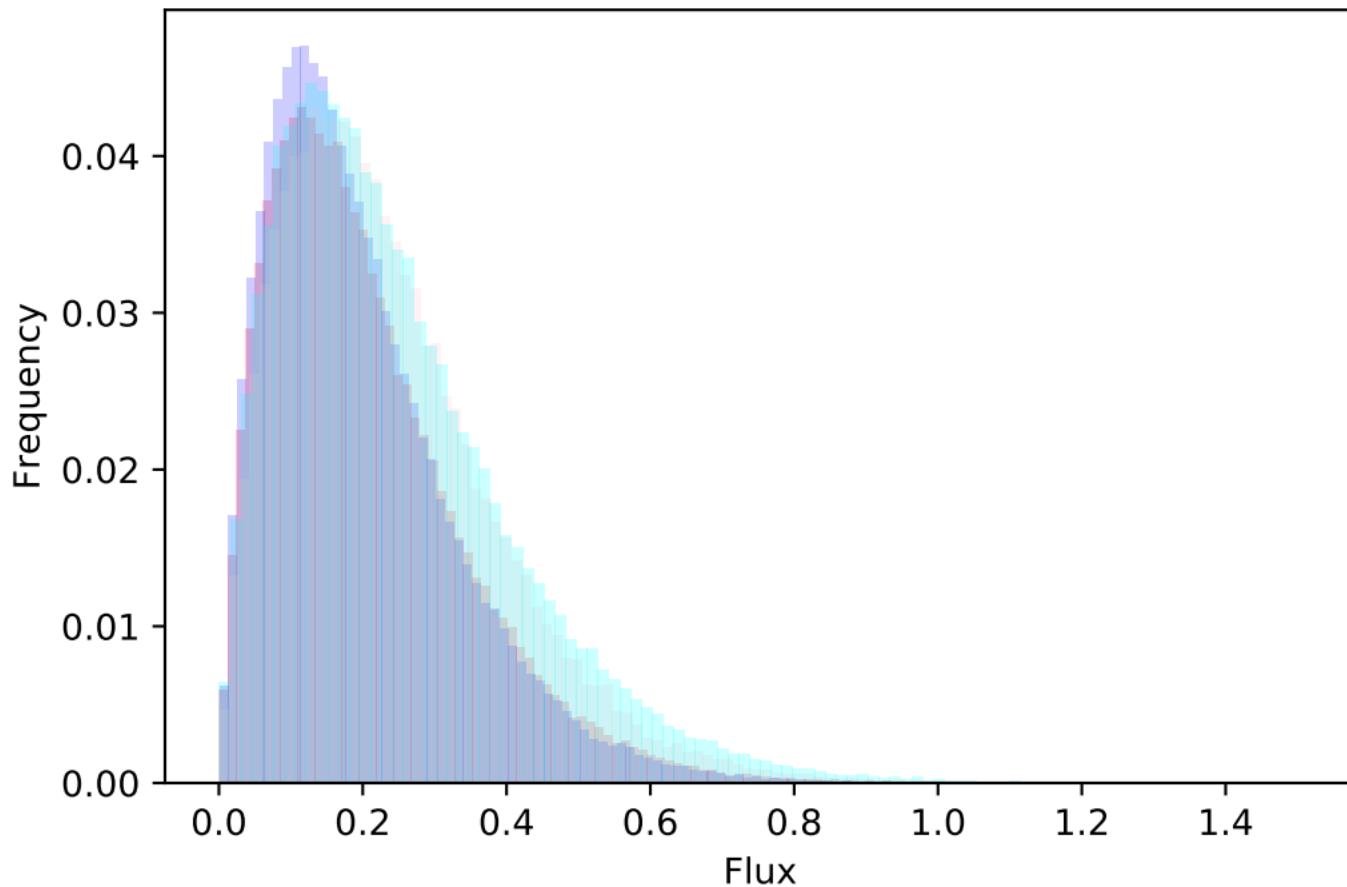
85 : H₂O_h + PGCA_h --> GCA_h + Pi_h
['AT5G36790', 'AT5G36700', 'AT5G47760']



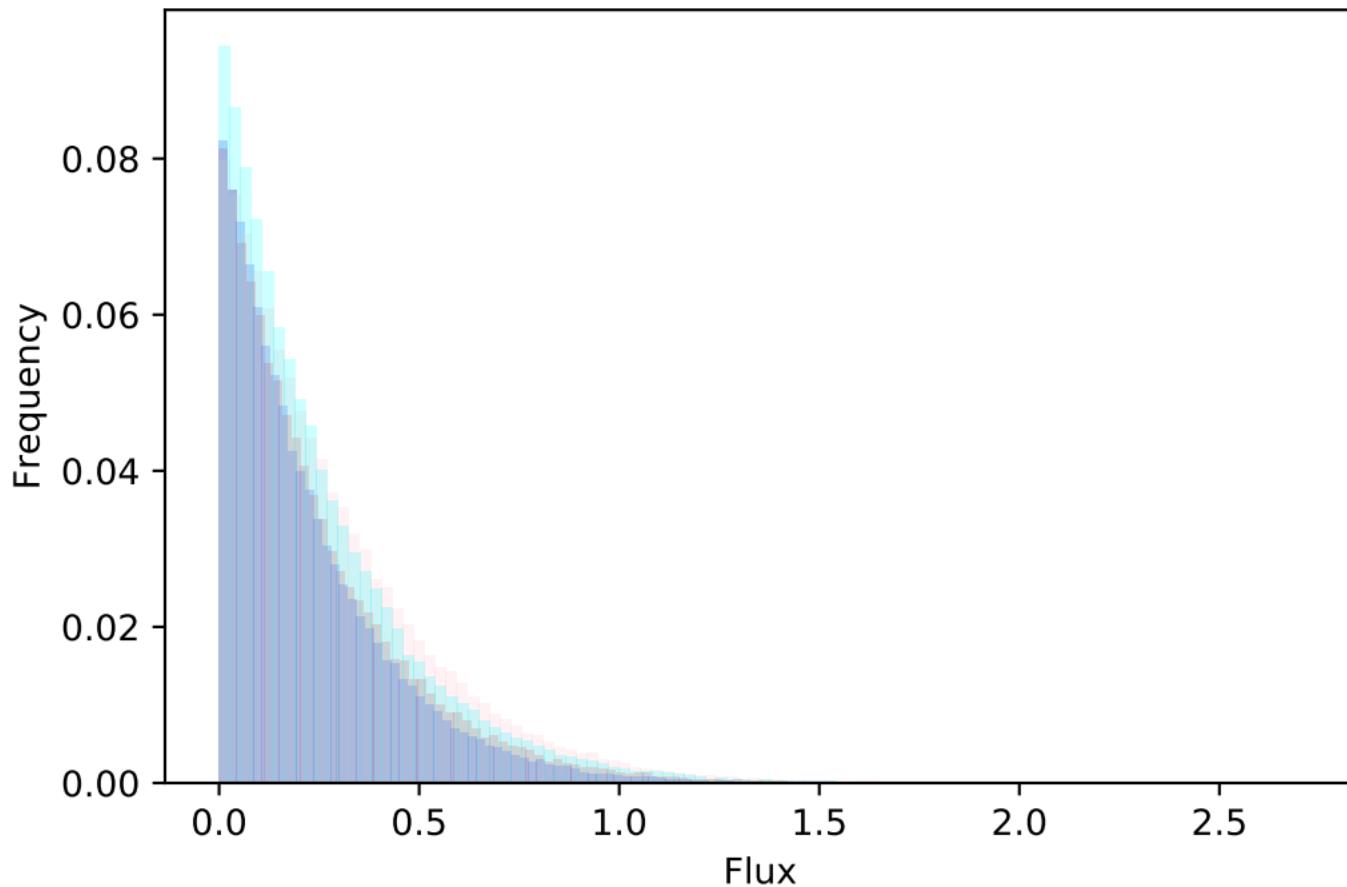
86 : GCA_p + O2_p --> GLX_p + H2O2_p
['AT3G14420', 'AT3G14415', 'AT3G14150', 'AT4G18360']



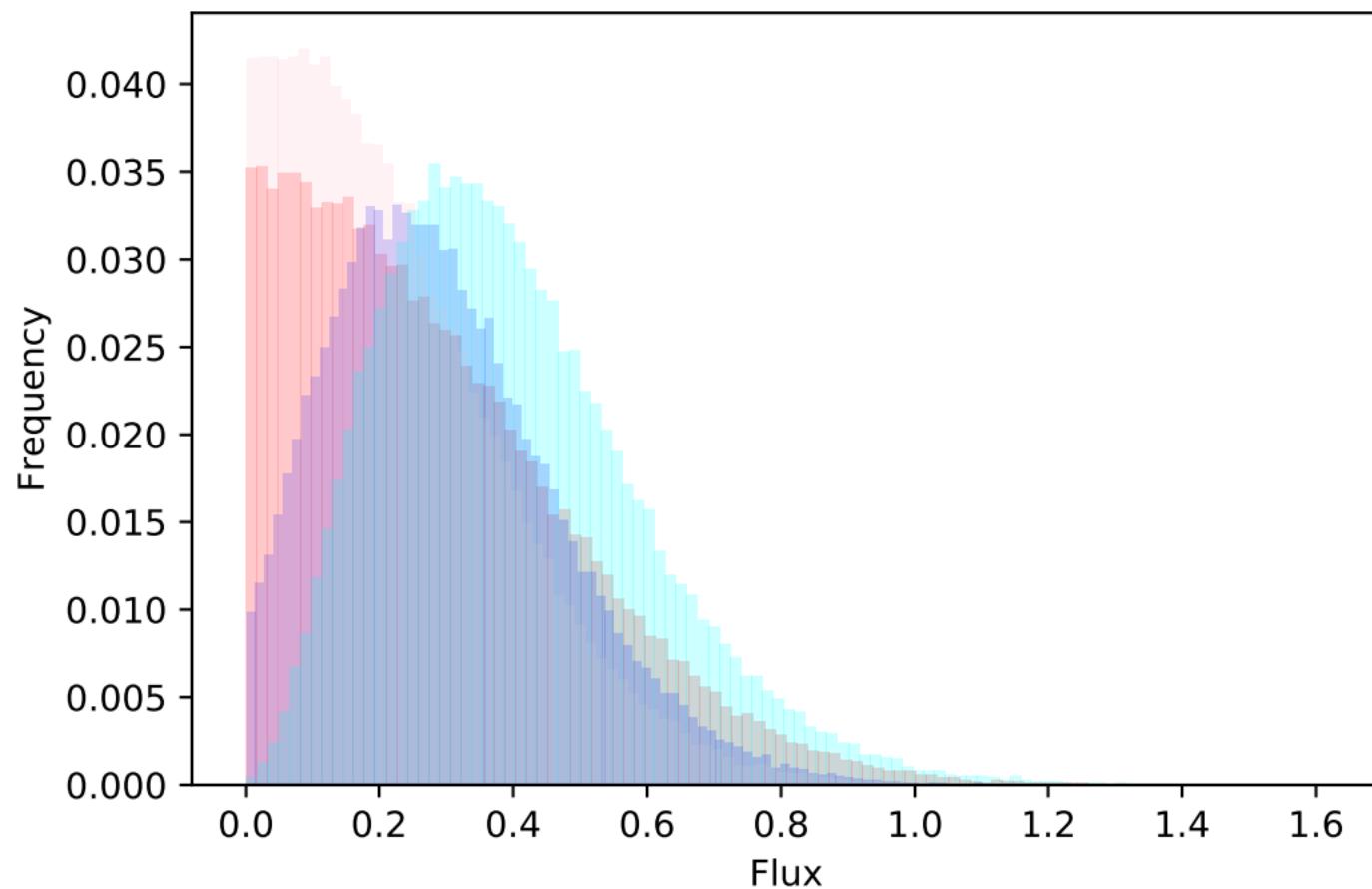
87 : 2.0 H2O2_p --> 2.0 H2O_p + O2_p
['AT1G20630', '4*AT1G20620', 'AT4G35090']



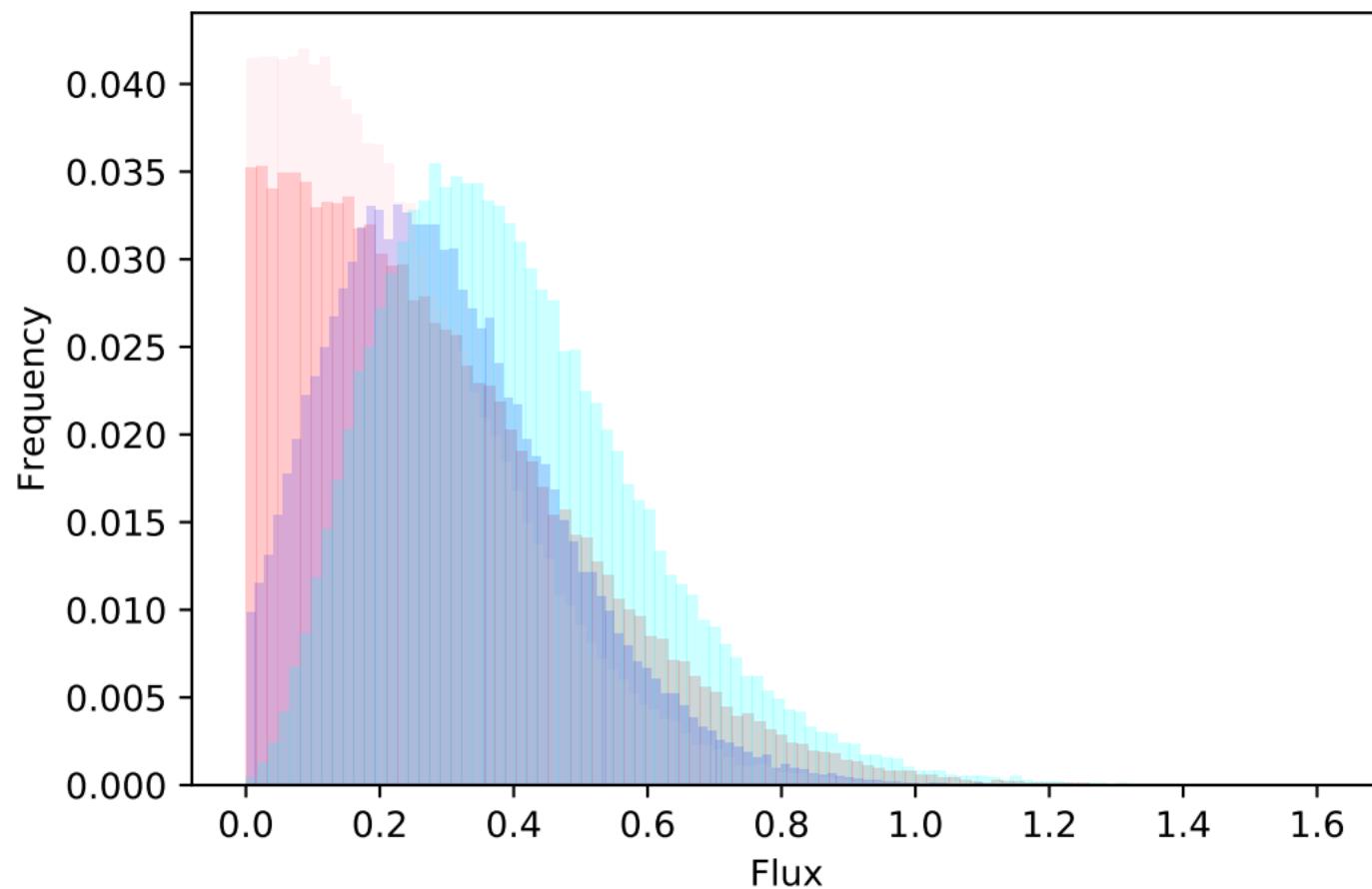
88 : GLX_p + Glu_p --> Gly_p + KG_p
['AT1G23310', 'AT1G70580']



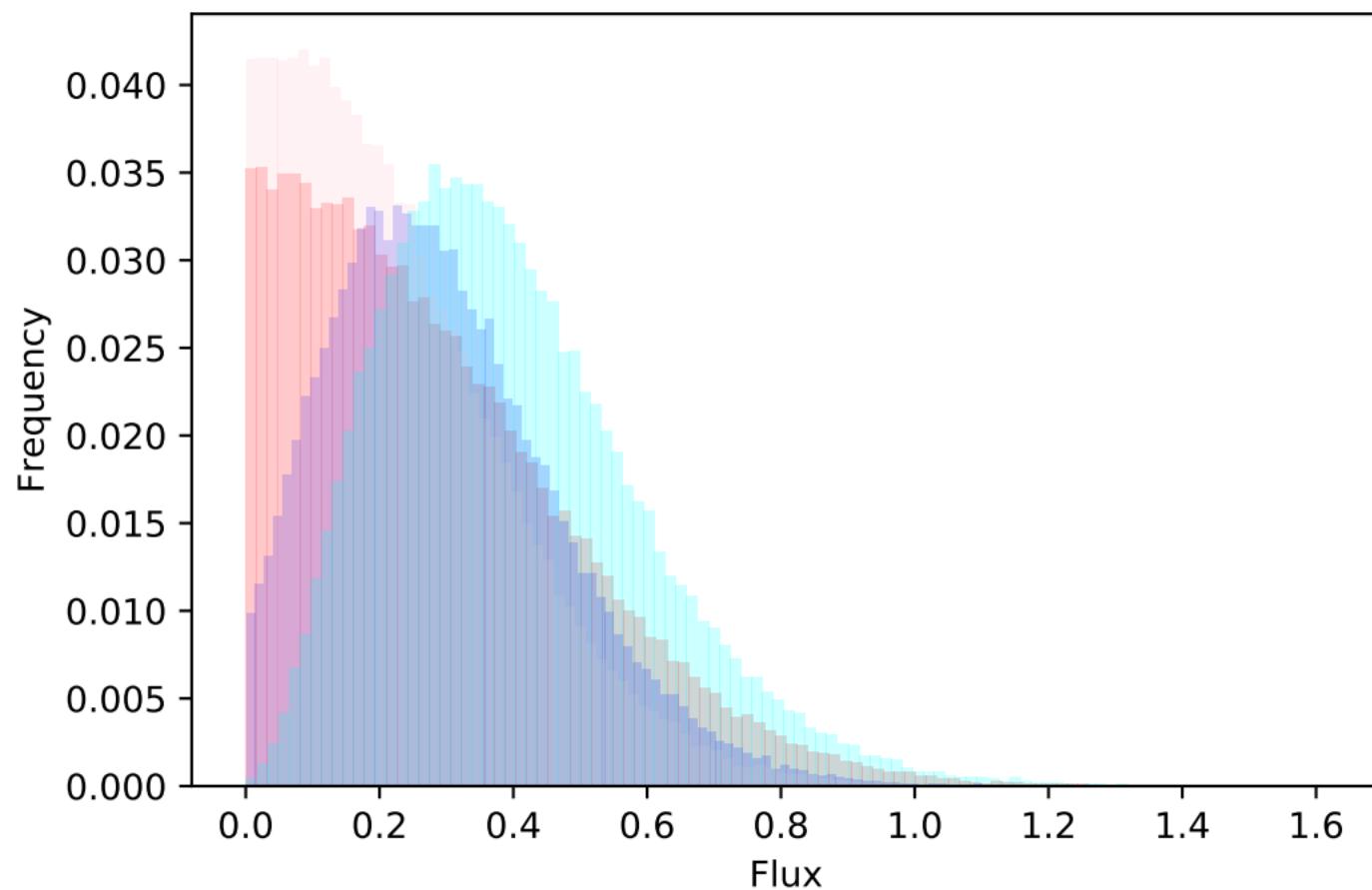
89 : Gly_m + H_m + LPL_m --> CO2_m + amDHP_m
['2*AT4G33010', 'AT2G26080']



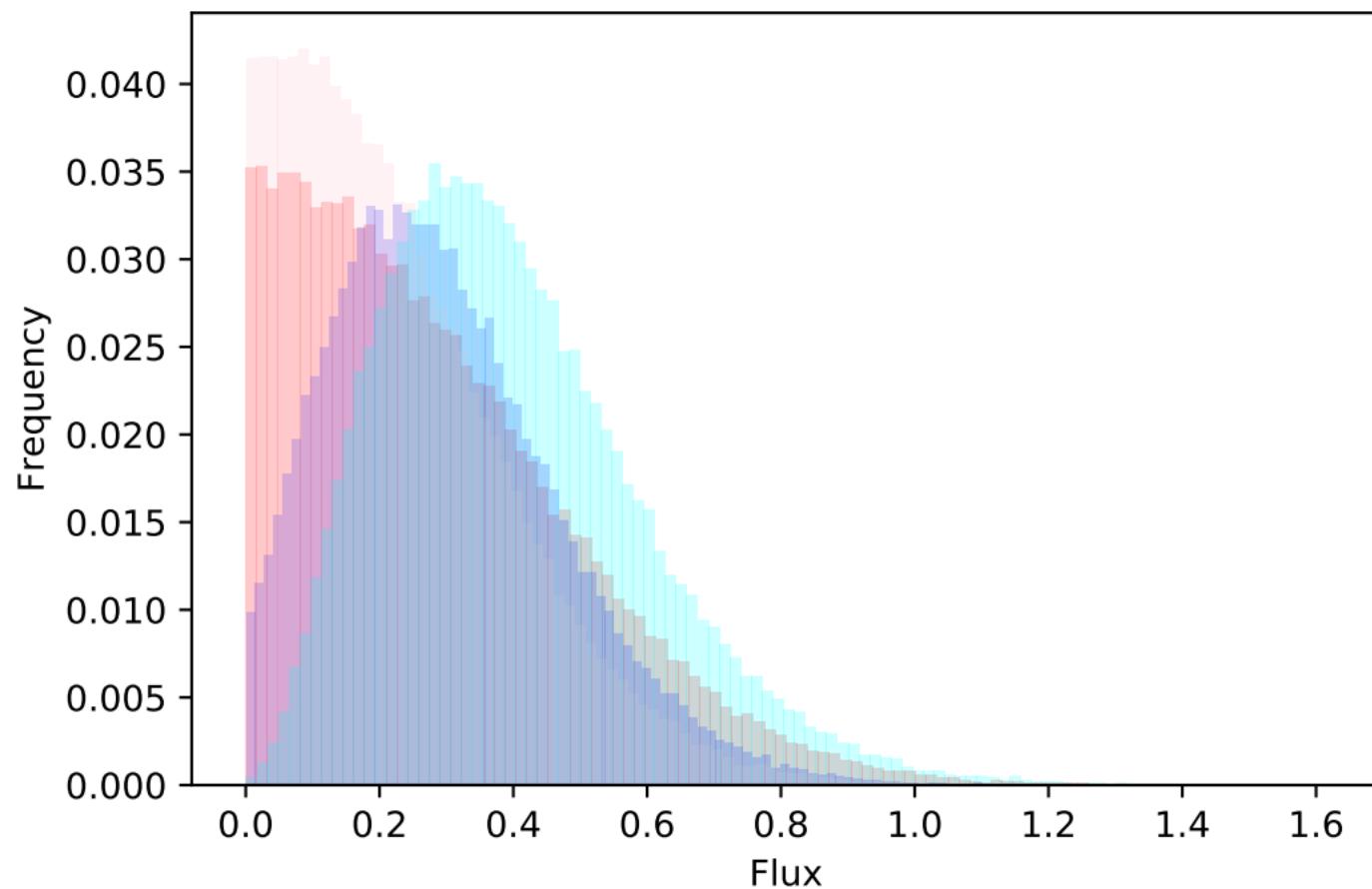
90 : THF_m + amDHP_m --> DHP_m + M_DASH_THF_m + NH4_m
['AT1G11860']



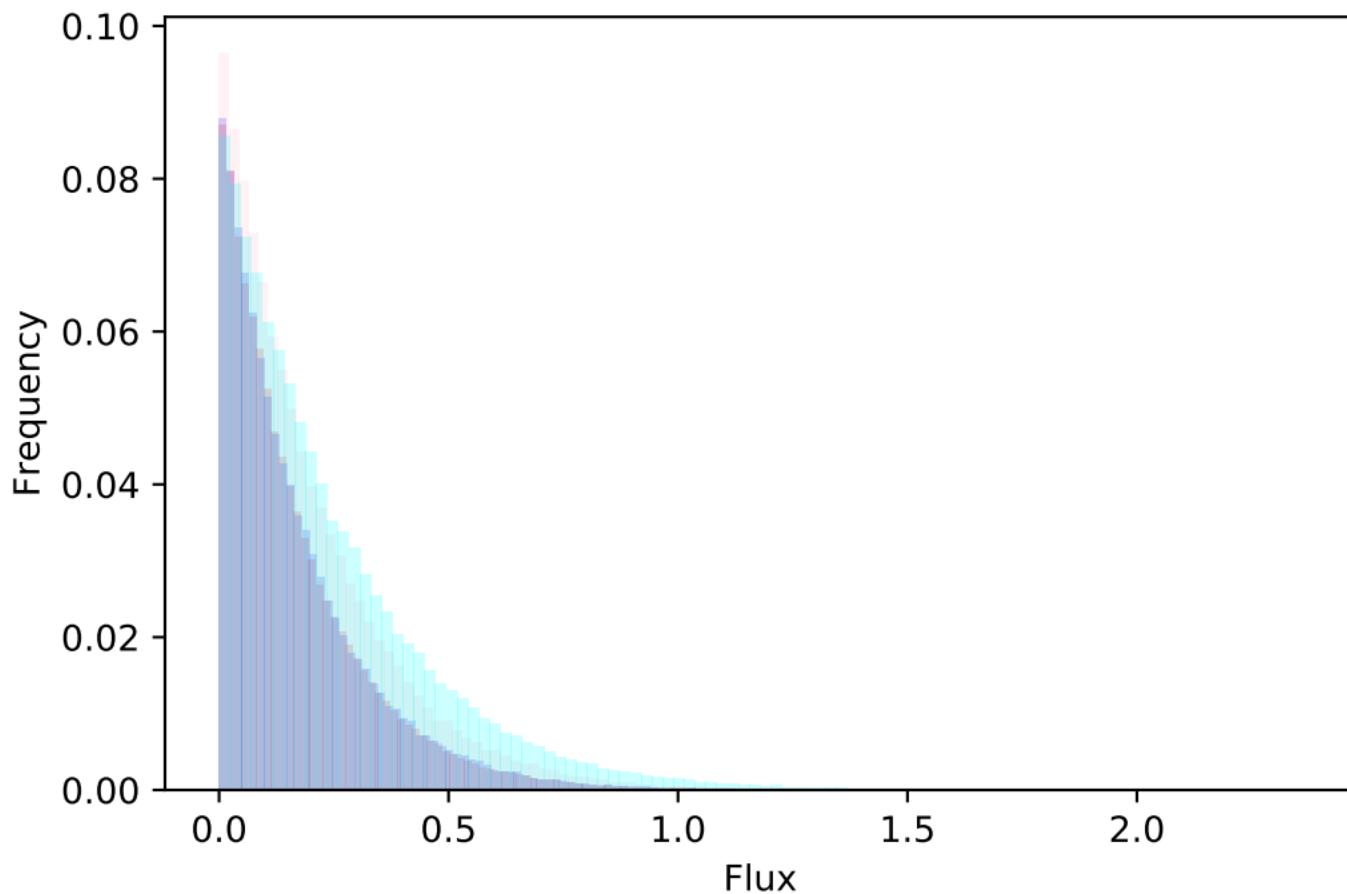
91 : DHP_m + NAD_m --> H_m + LPL_m + NADH_m
['2*AT1G48030', 'AT3G17240']



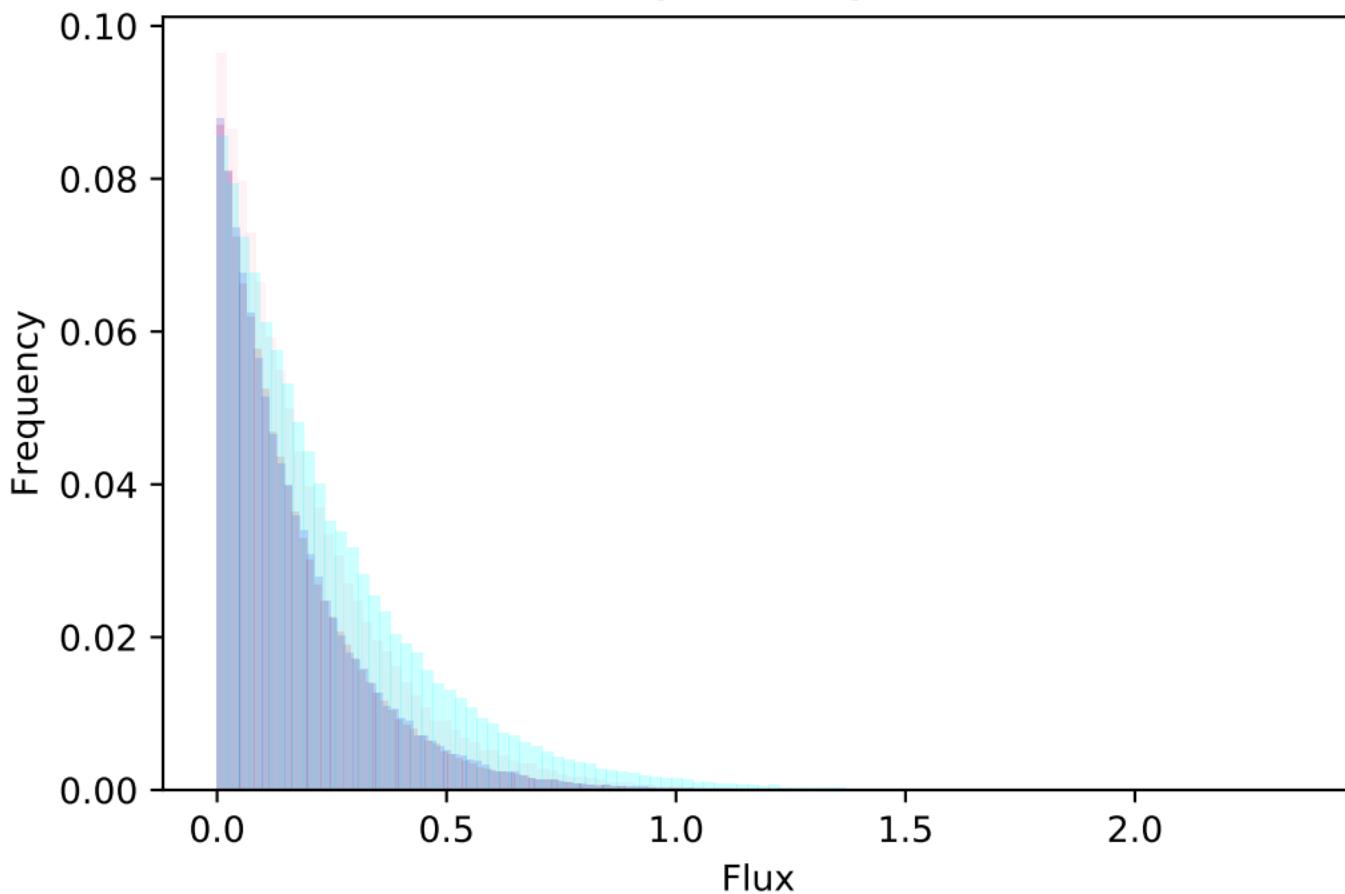
92 : Gly_m + H2O_m + M_DASH_THF_m <=> Ser_m + THF_m
['AT5G26780', '4*AT4G37930']



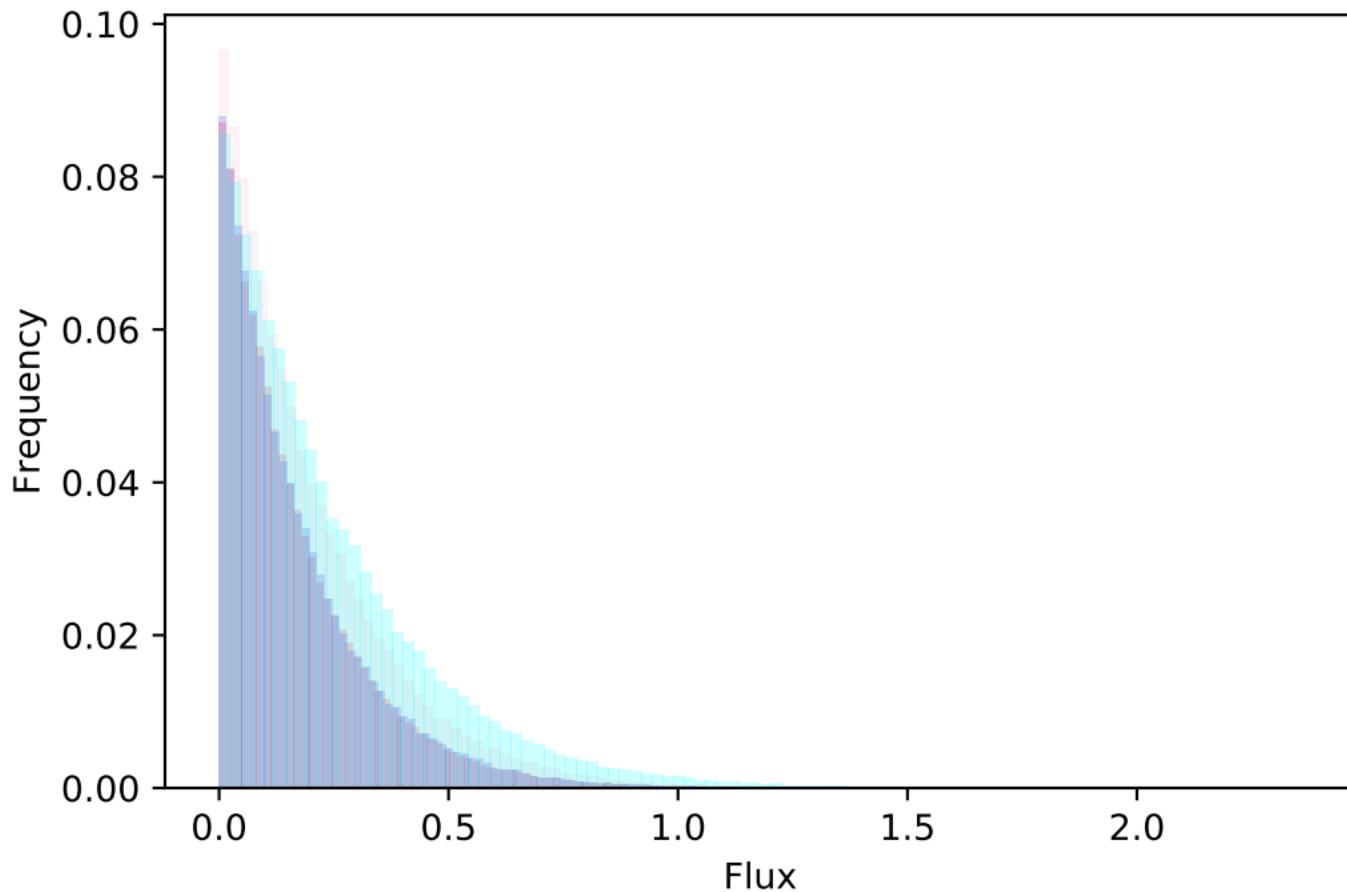
93 : GLX_p + Ser_p --> Gly_p + HPR_p
['2*AT2G13360']

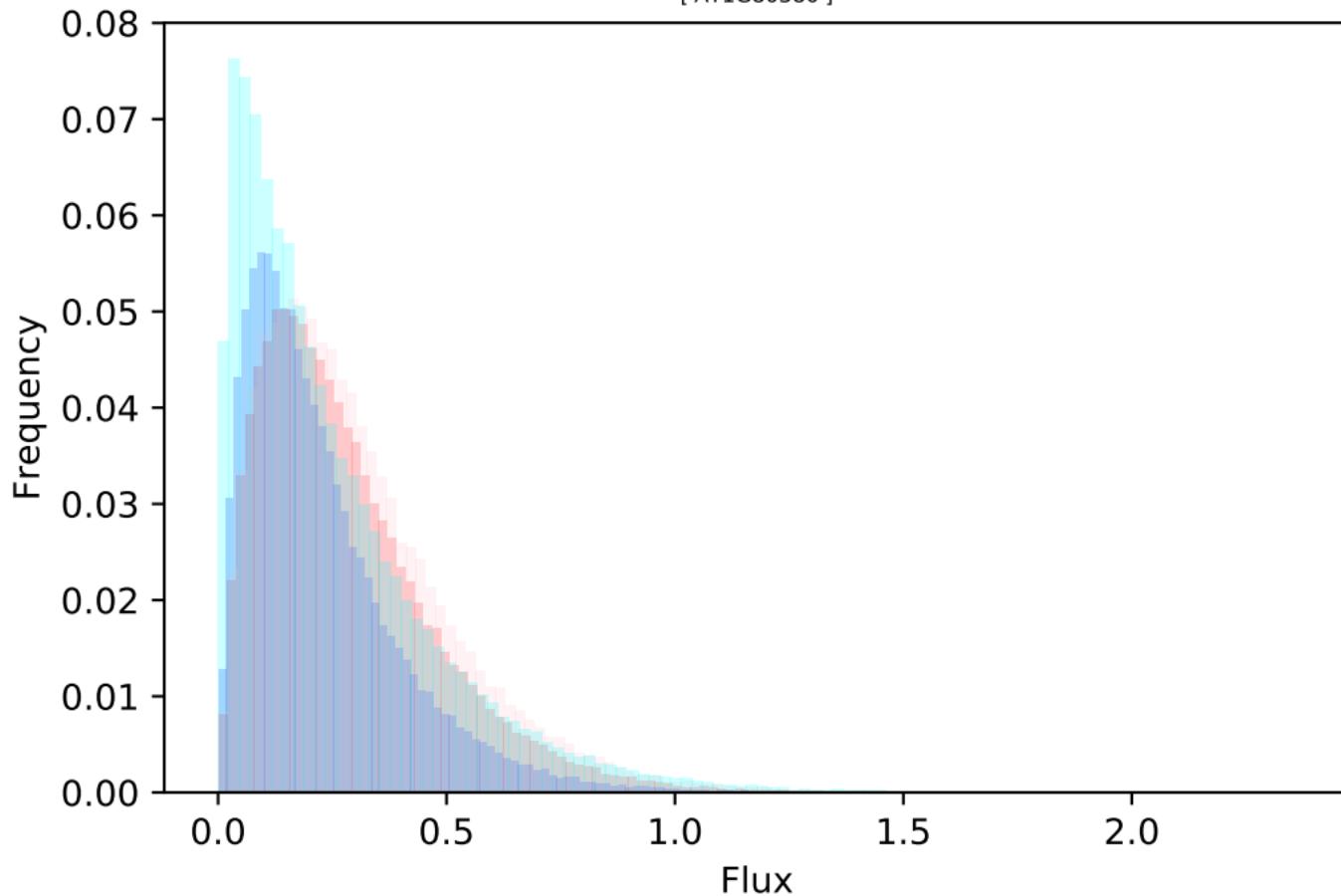
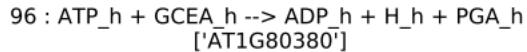


94 : HPR_p + H_p + NADH_p --> GCEA_p + NAD_p
['AT1G68010']

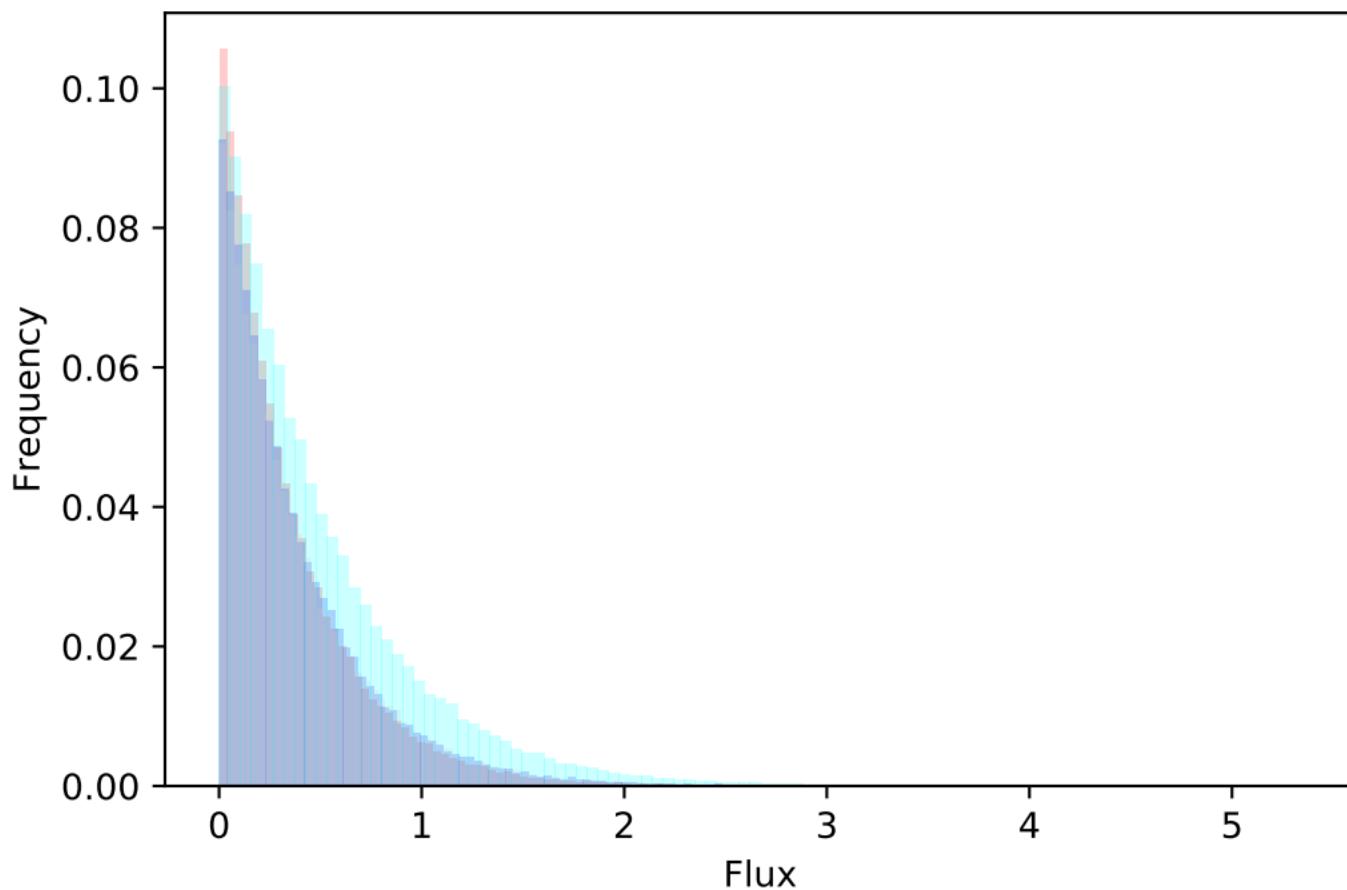


95 : Mal_p + NAD_p <=> H_p + NADH_p + OAA_p
['AT2G22780', 'AT5G09660']

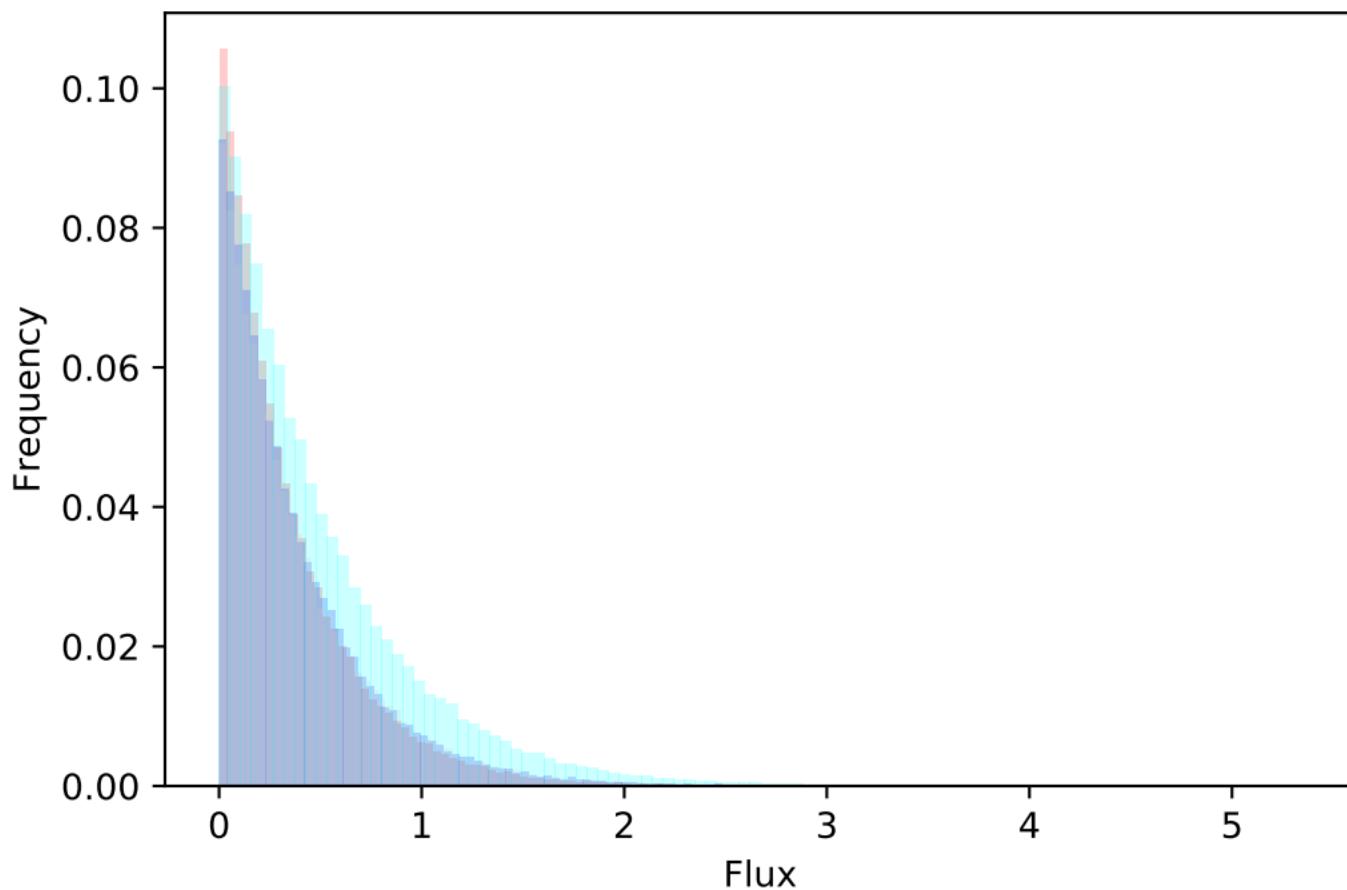




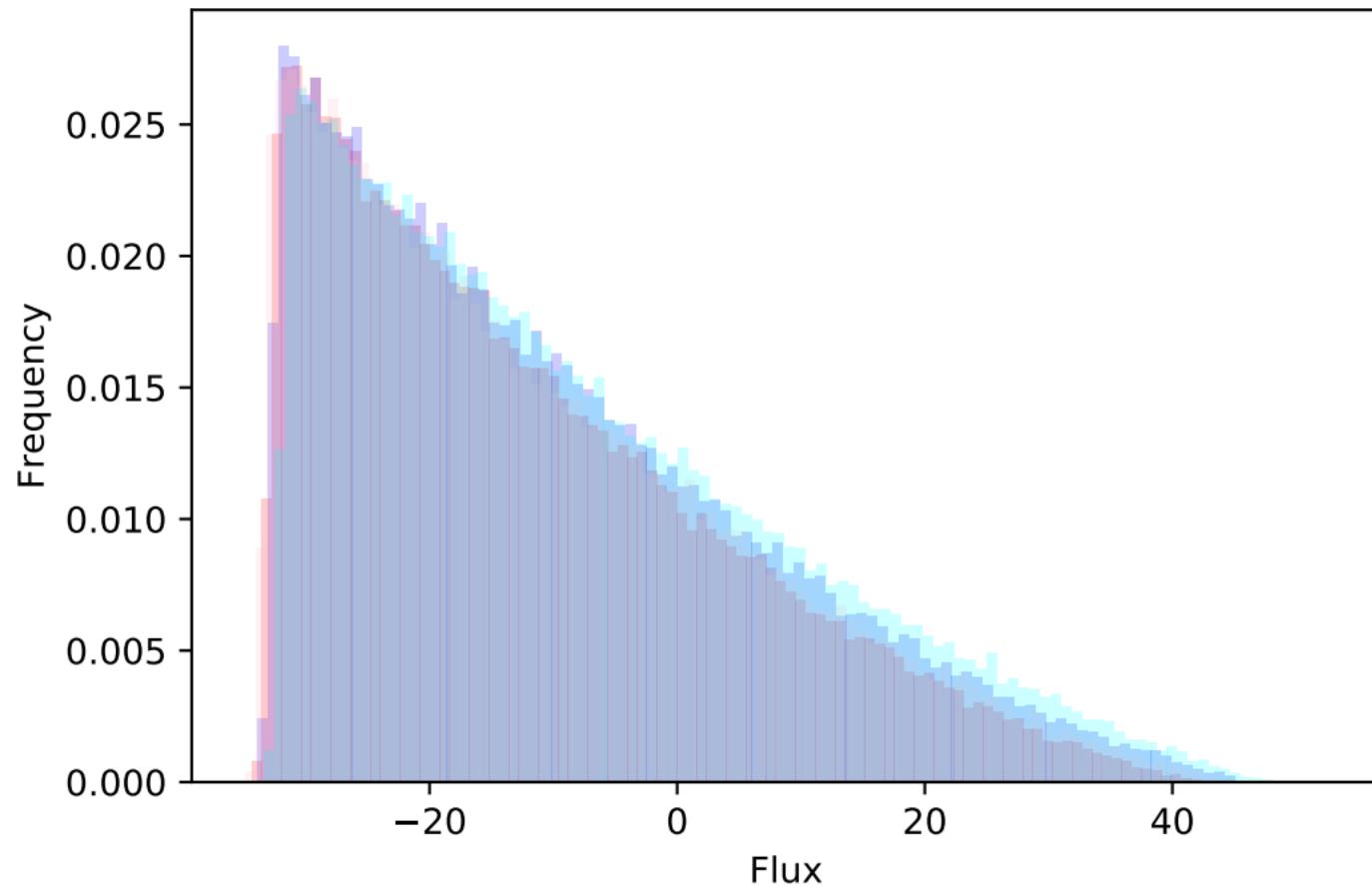
97 : G6P_h + NADP_h --> GLP_h + H_h + NADPH_h
['AT3G27300', 'AT5G35790', 'AT1G24280', 'AT1G09420', 'AT5G13110']



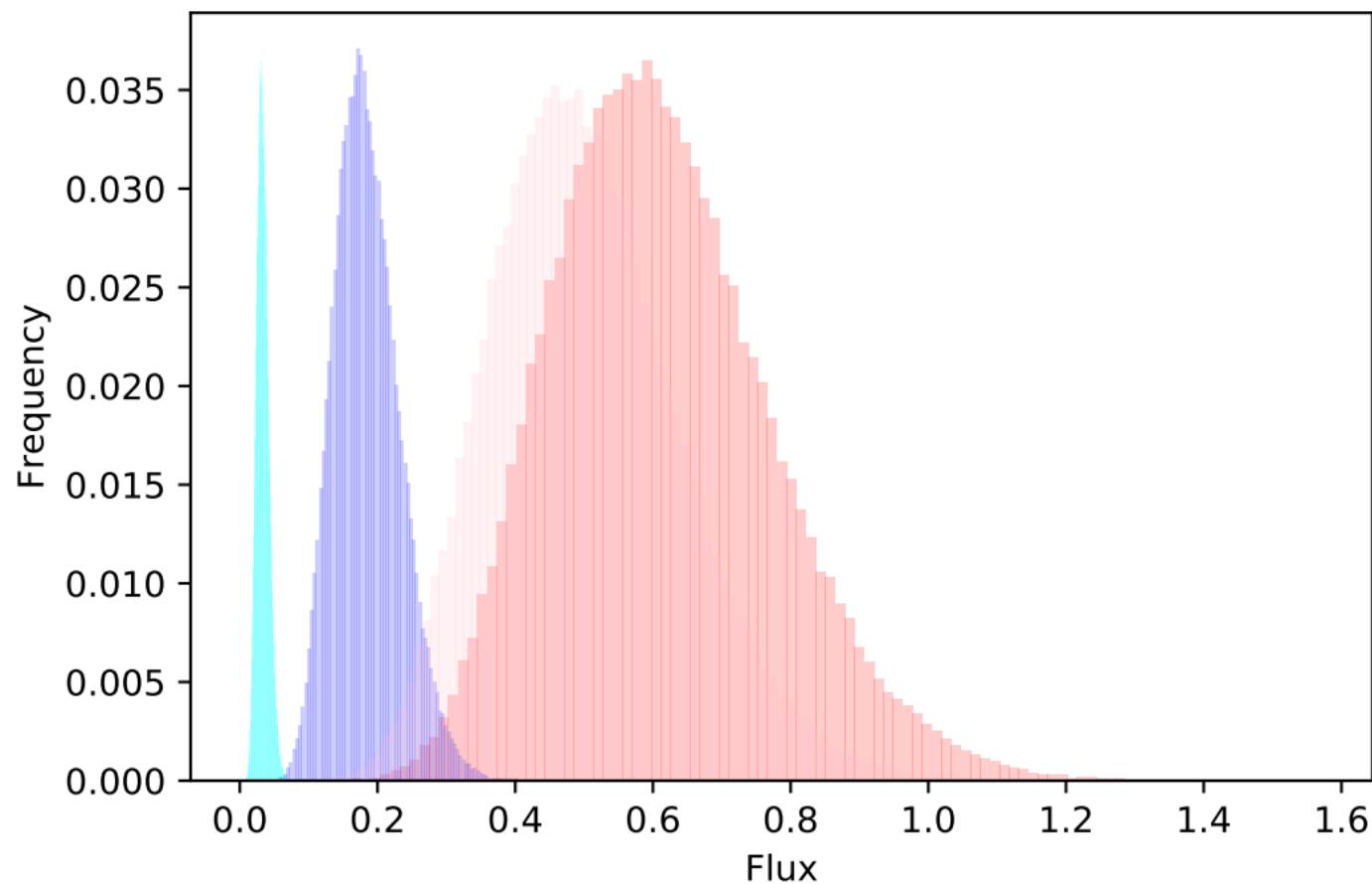
98 : GLP_h + H2O_h --> 6PG_h + H_h
['AT5G24420', 'AT1G13700', 'AT5G24400', 'AT5G24410', 'AT3G49360']



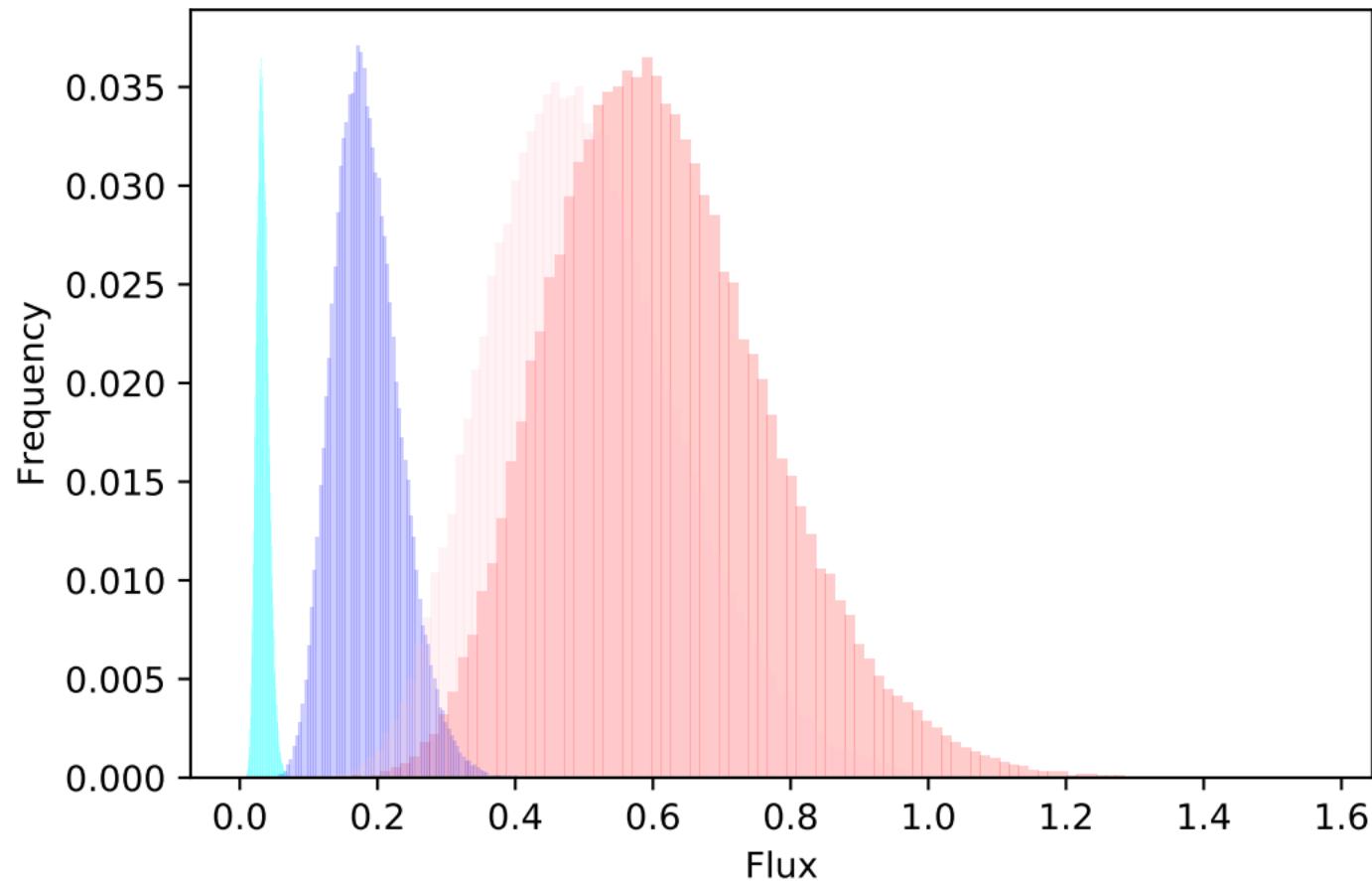
101 : GAP_h + S7P_h <=> E4P_h + F6P_h
['AT1G12230', 'AT5G13420']



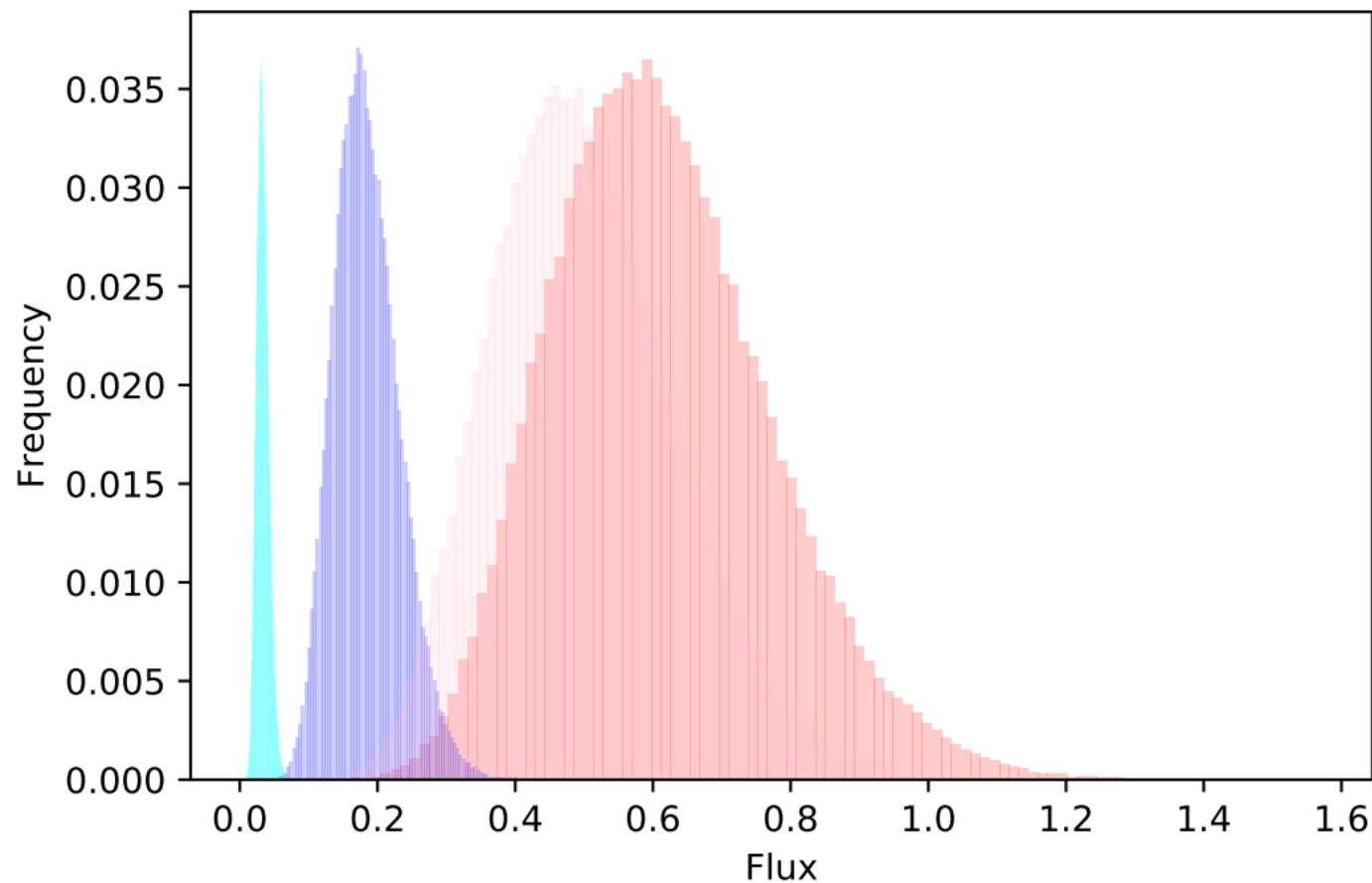
102 : E4P_h + H2O_h + PEP_h --> DAHP_h + Pi_h
['AT4G39980', 'AT1G22410', 'AT4G33510']



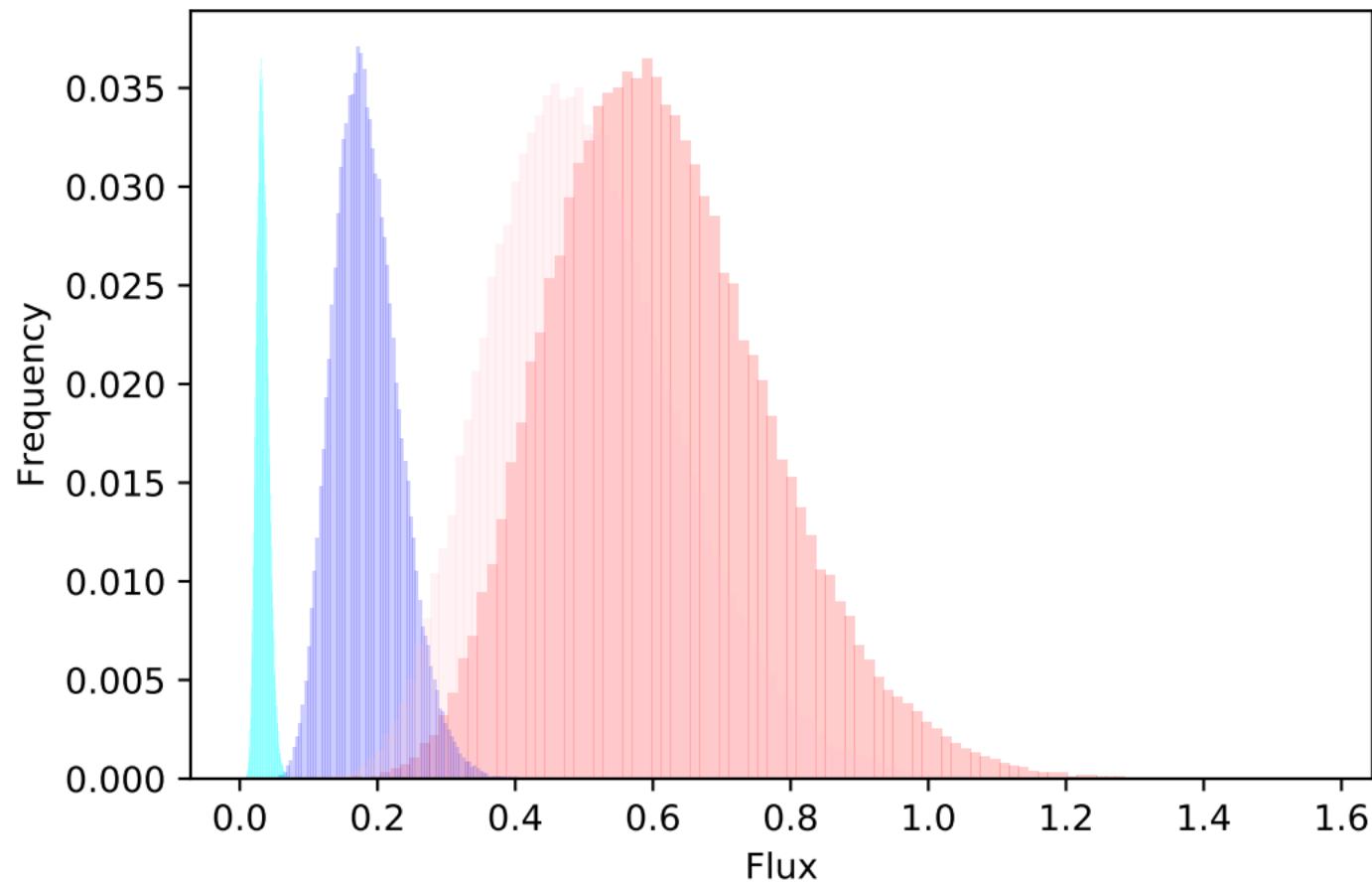
103 : DAHP_h --> DHQ_h + Pi_h
['AT5G66120']



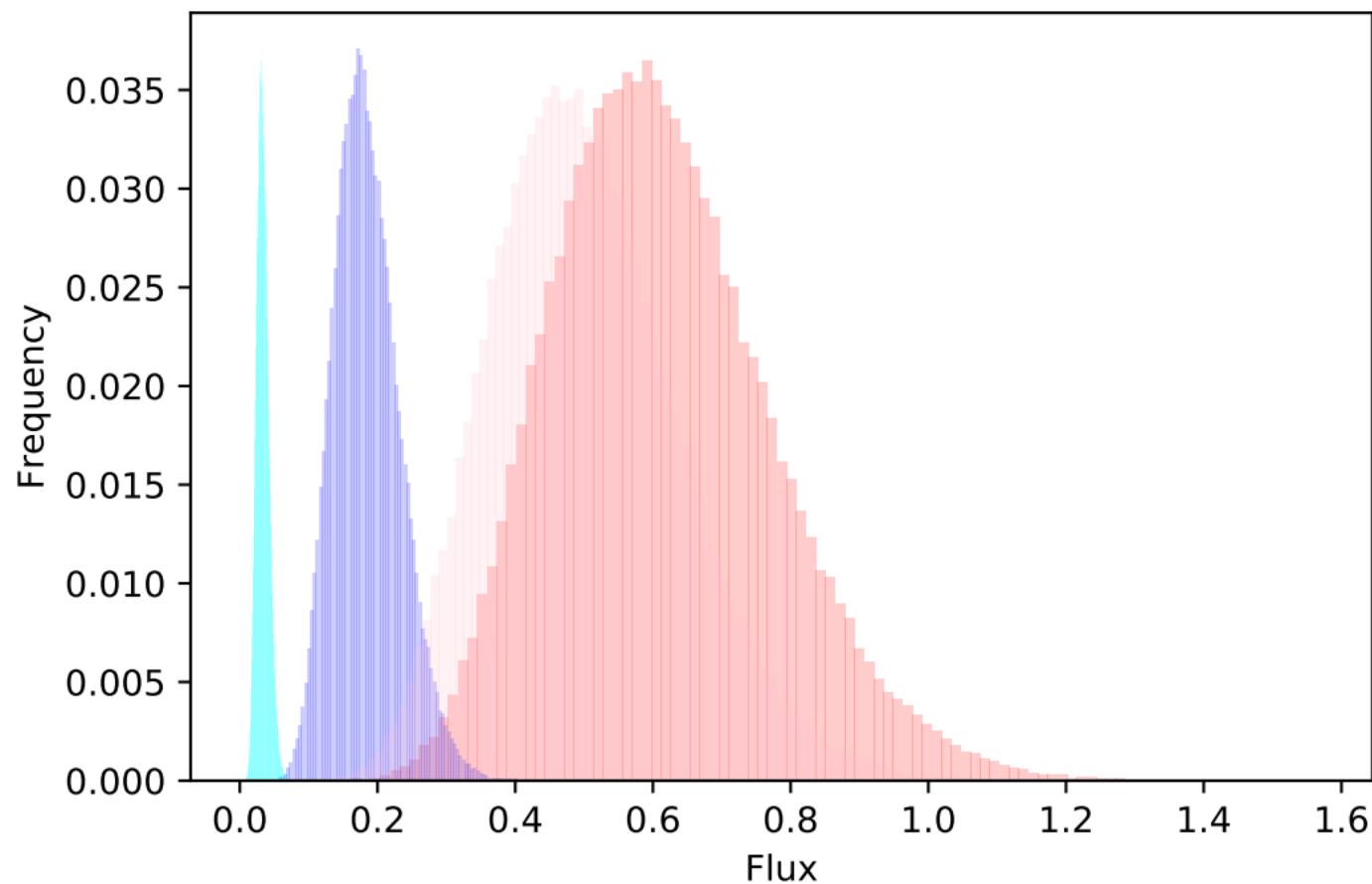
104 : DHQ_h --> DHS_h + H2O_h
['AT3G06350']



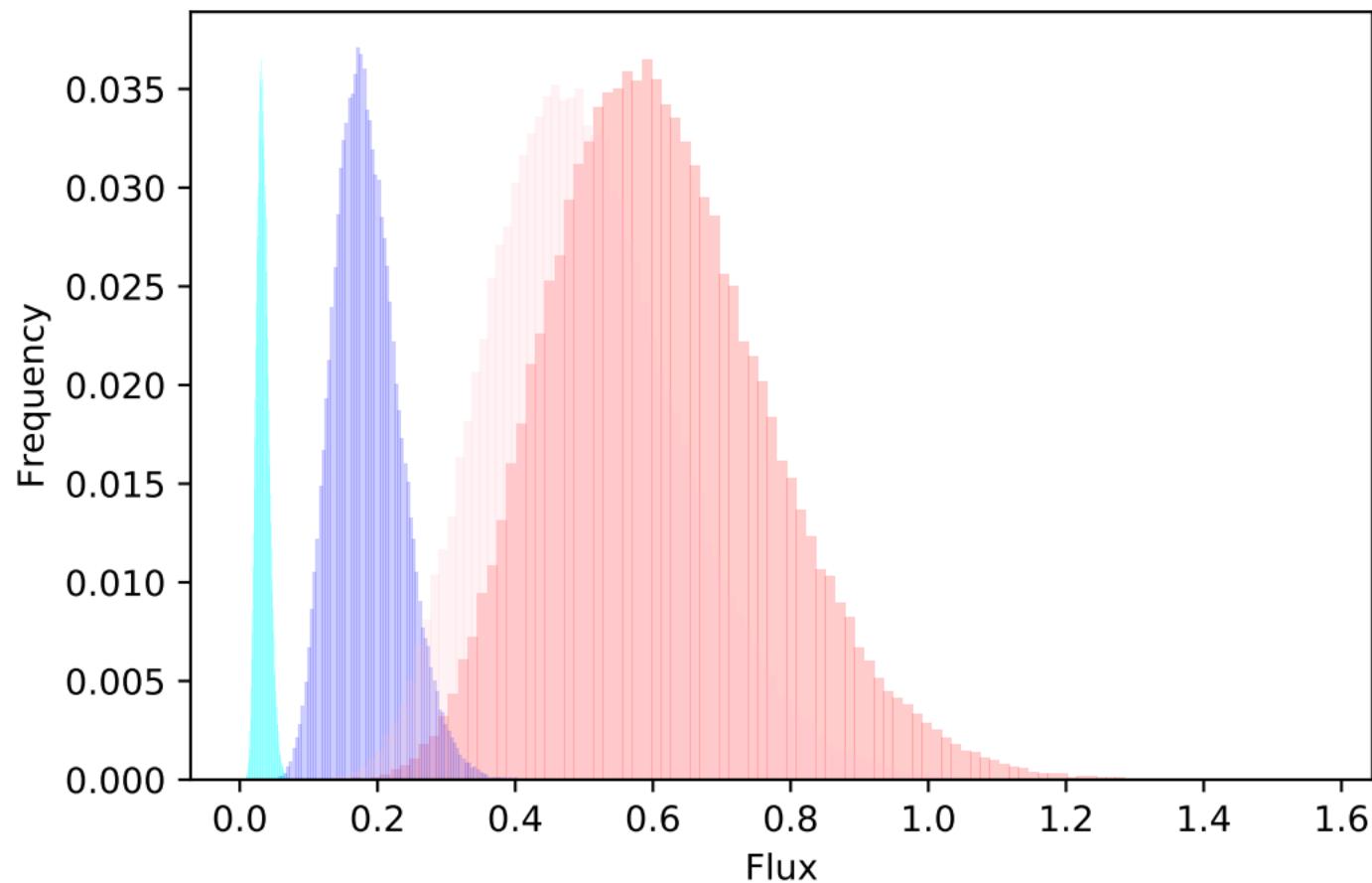
105 : DHS_h + H_h + NADPH_h --> NADP_h + SA_h
['AT3G06350']



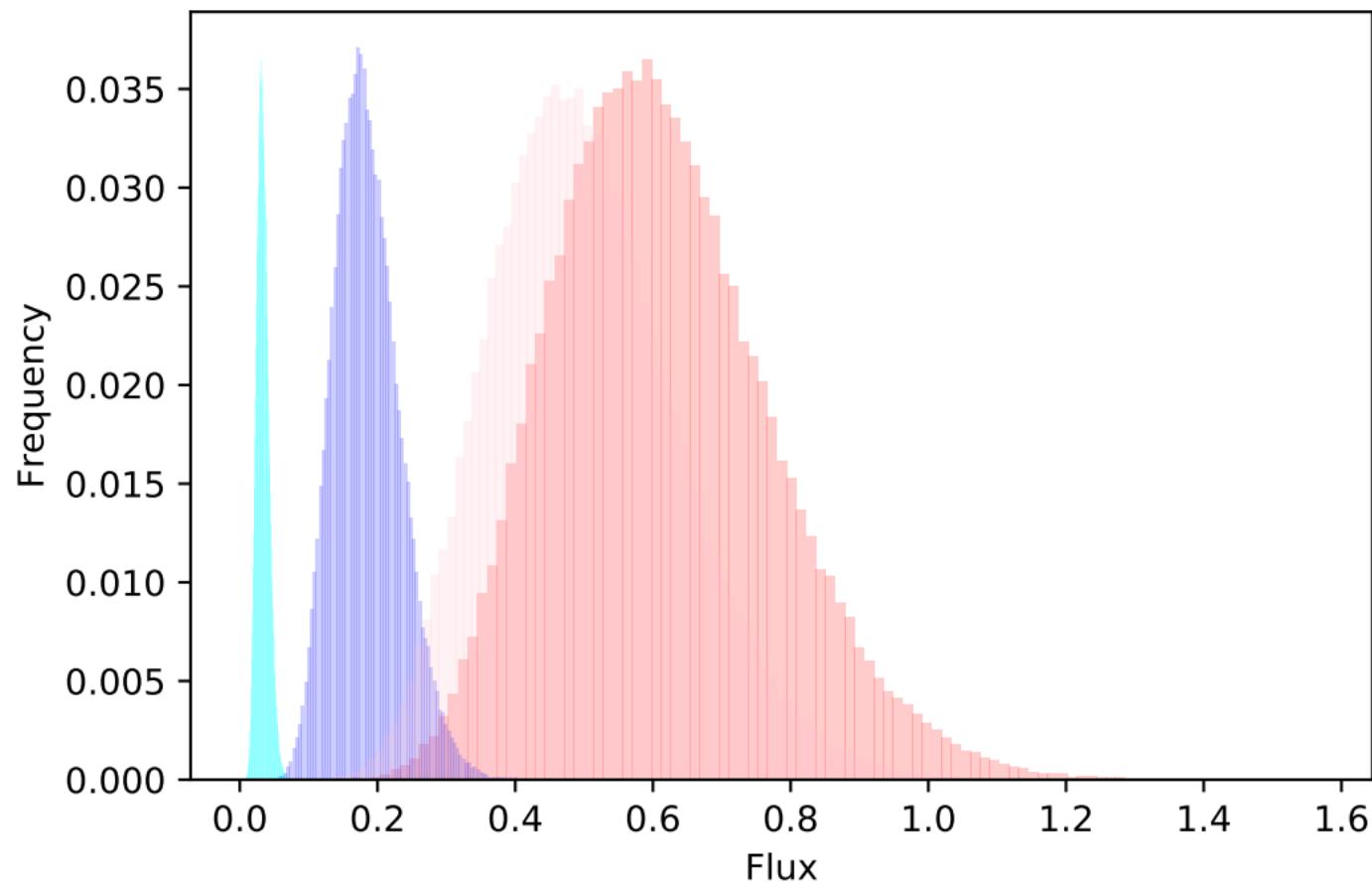
106 : ATP_h + SA_h --> ADP_h + H_h + S3P_h
['AT2G21940', 'AT4G39540']



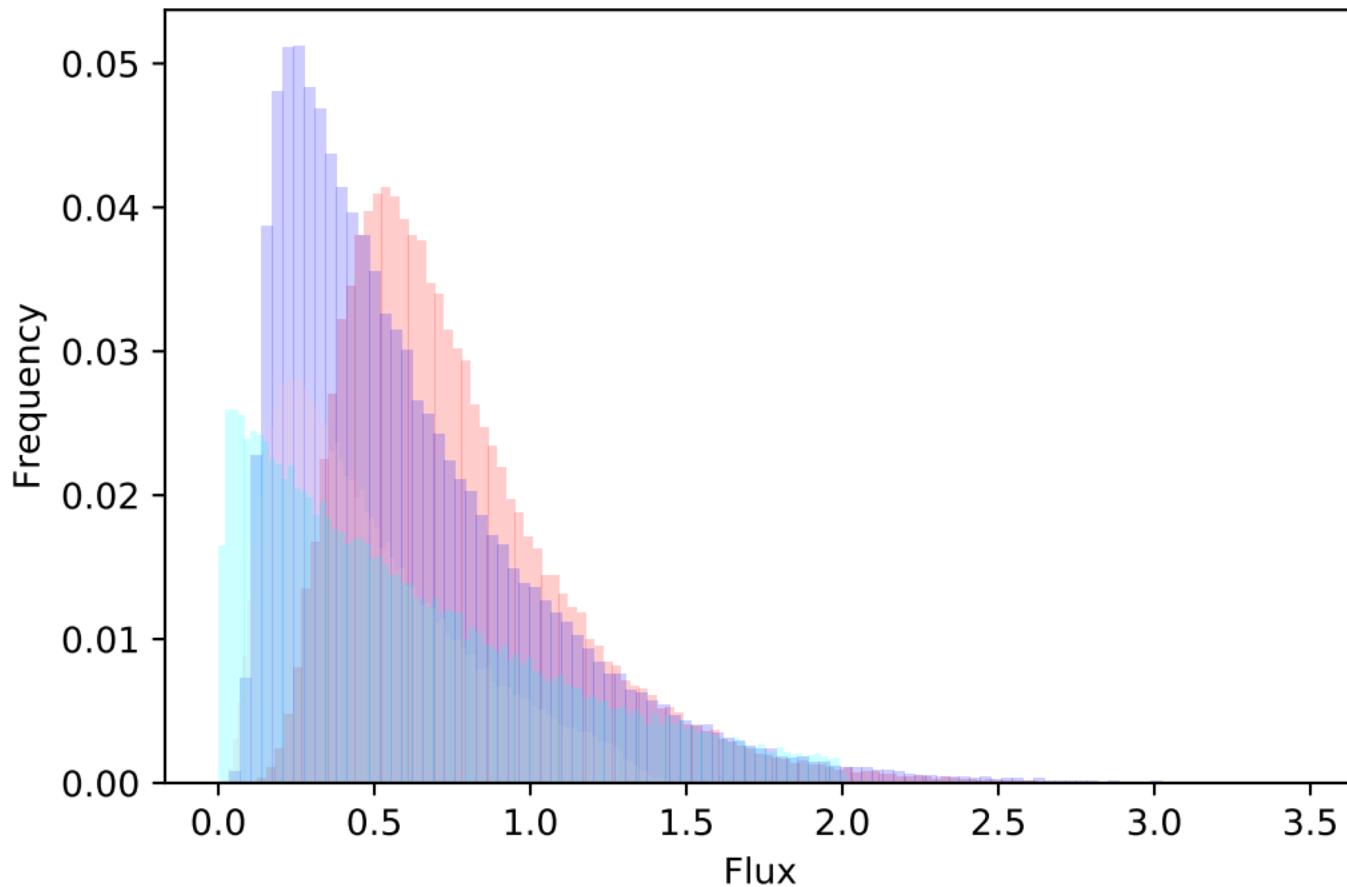
107 : PEP_h + S3P_h --> EPSP_h + Pi_h
['AT1G48860', 'AT2G45300']

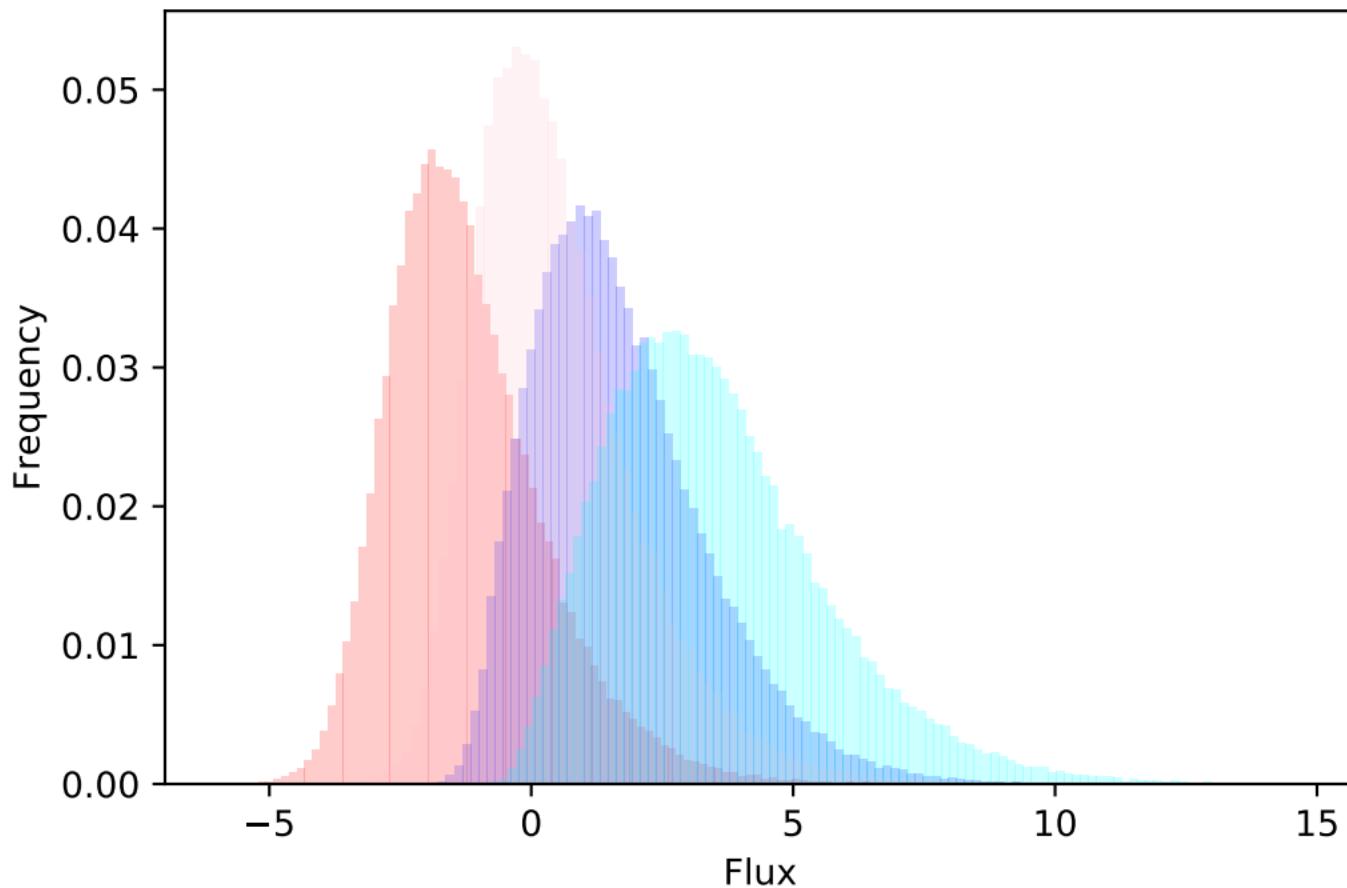


108 : EPSP_h --> CHR_h + Pi_h
['AT1G48850']

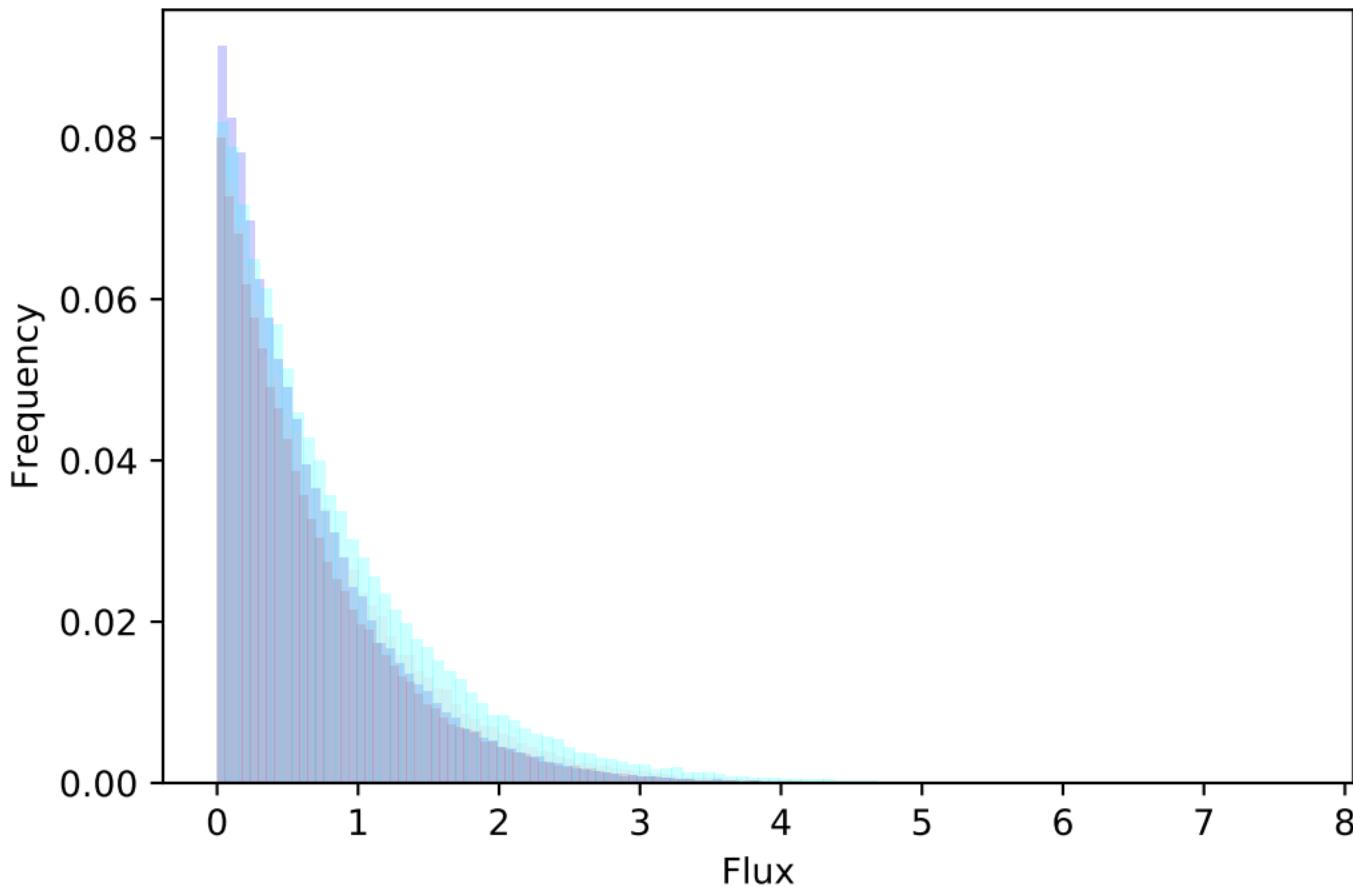


109 : ATP_h + R5P_h --> AMP_h + H_h + PRPP_h
['AT1G10700', 'AT2G35390', 'AT1G32380', 'AT2G44530']

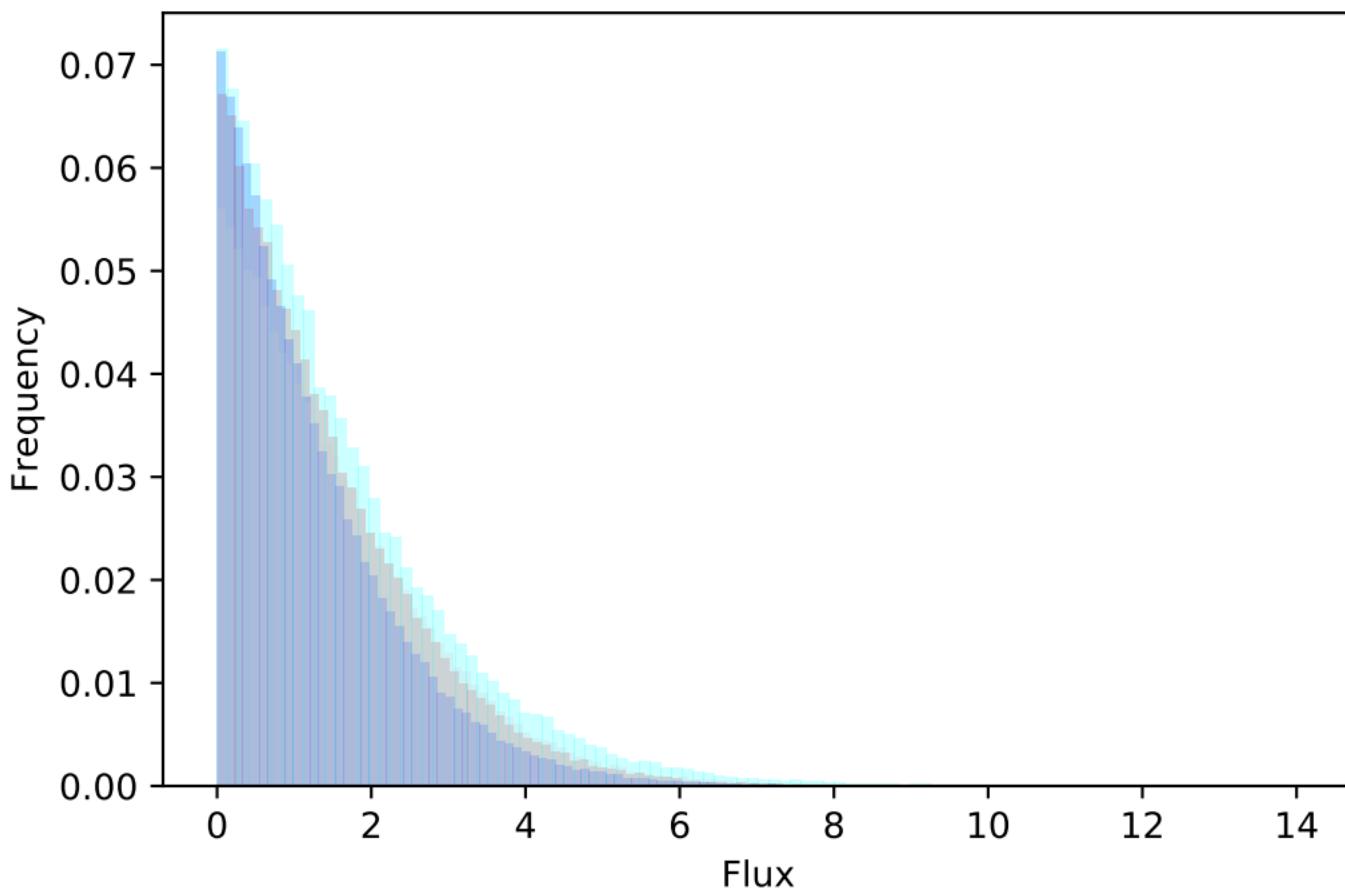




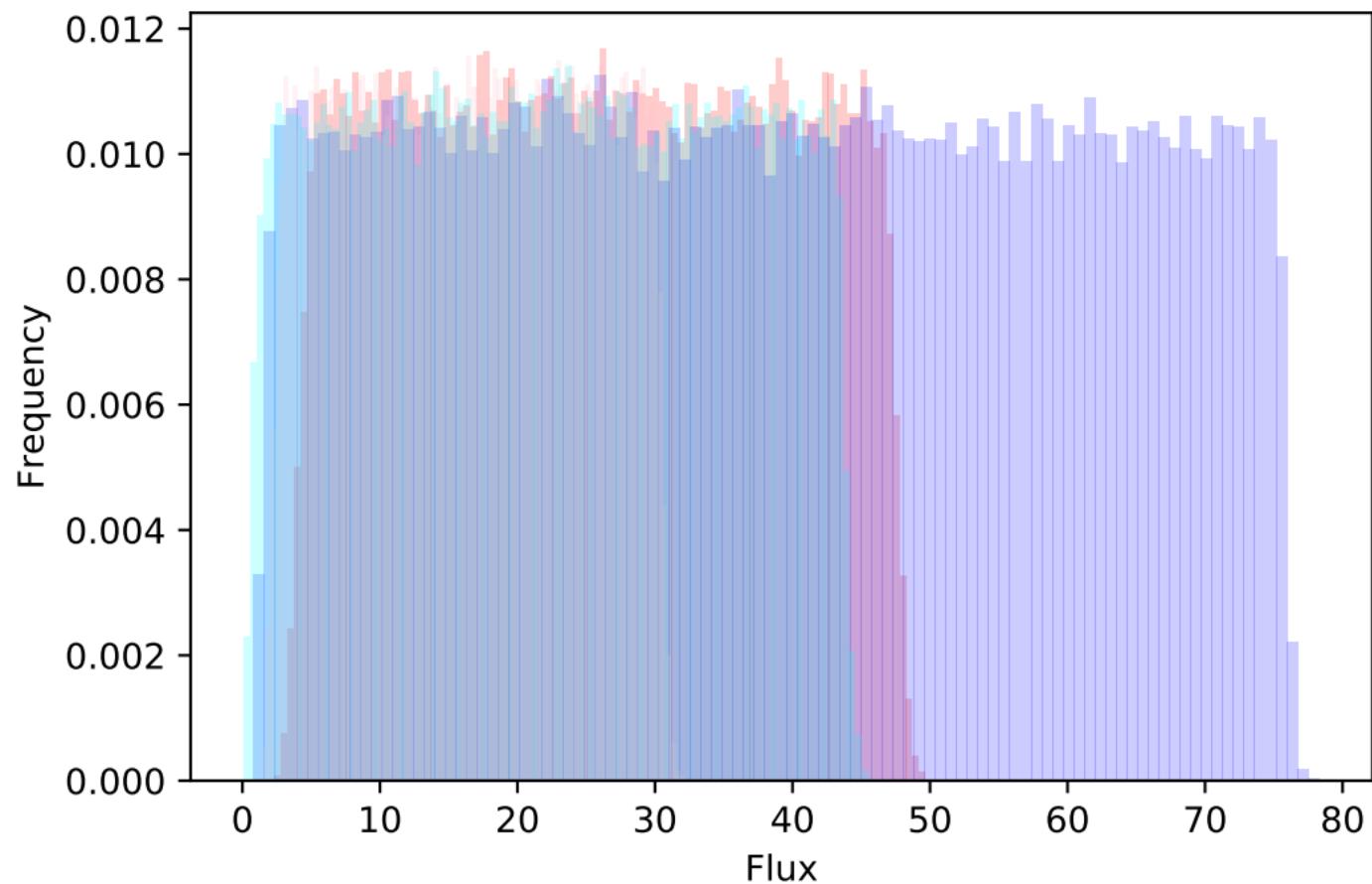
111 : H_c + Mal_c + NADP_c --> CO2_c + NADPH_c + Pyr_c
['4*AT2G19900', 'AT5G25880', 'AT5G11670']



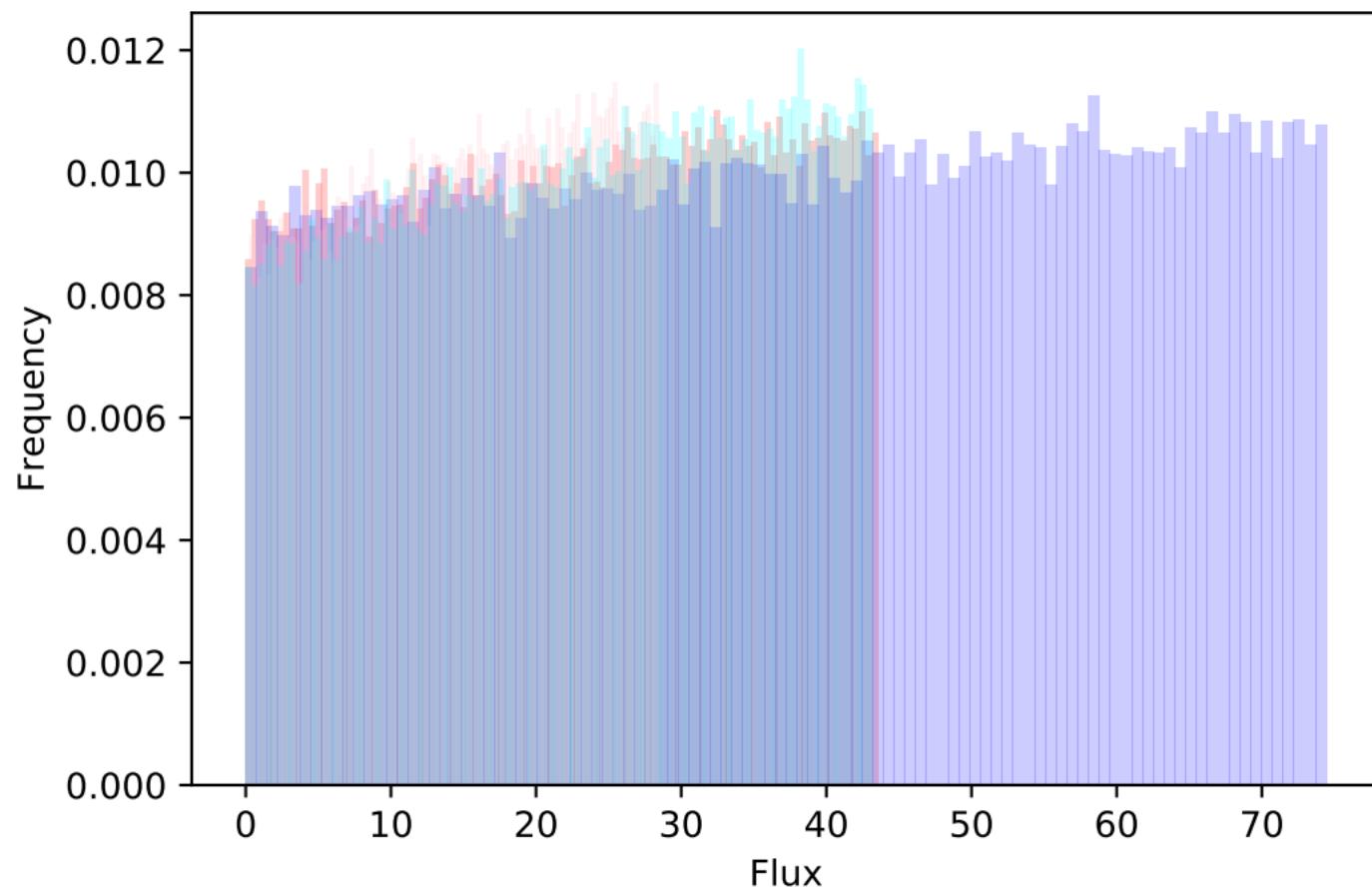
112 : Mal_h + NADP_h --> CO2_h + NADPH_h + Pyr_h
['AT1G79750', '4*AT5G11670', 'AT5G25880']



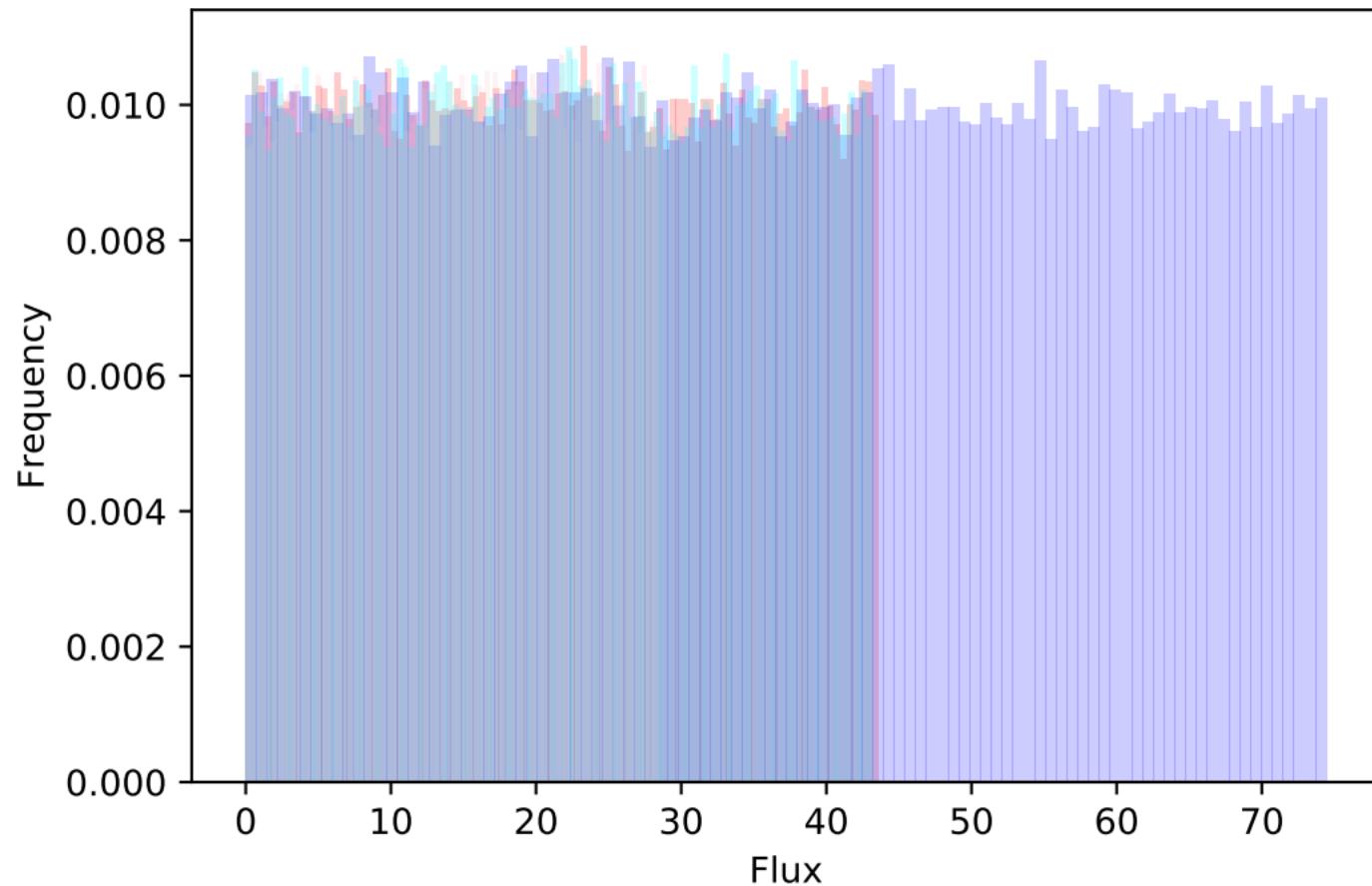
113 : Mal_h + NAD_h <=> H_h + NADH_h + OAA_h
['AT1G04410', 'AT2G22780', 'AT5G09660', 'AT1G53240', 'AT3G47520']



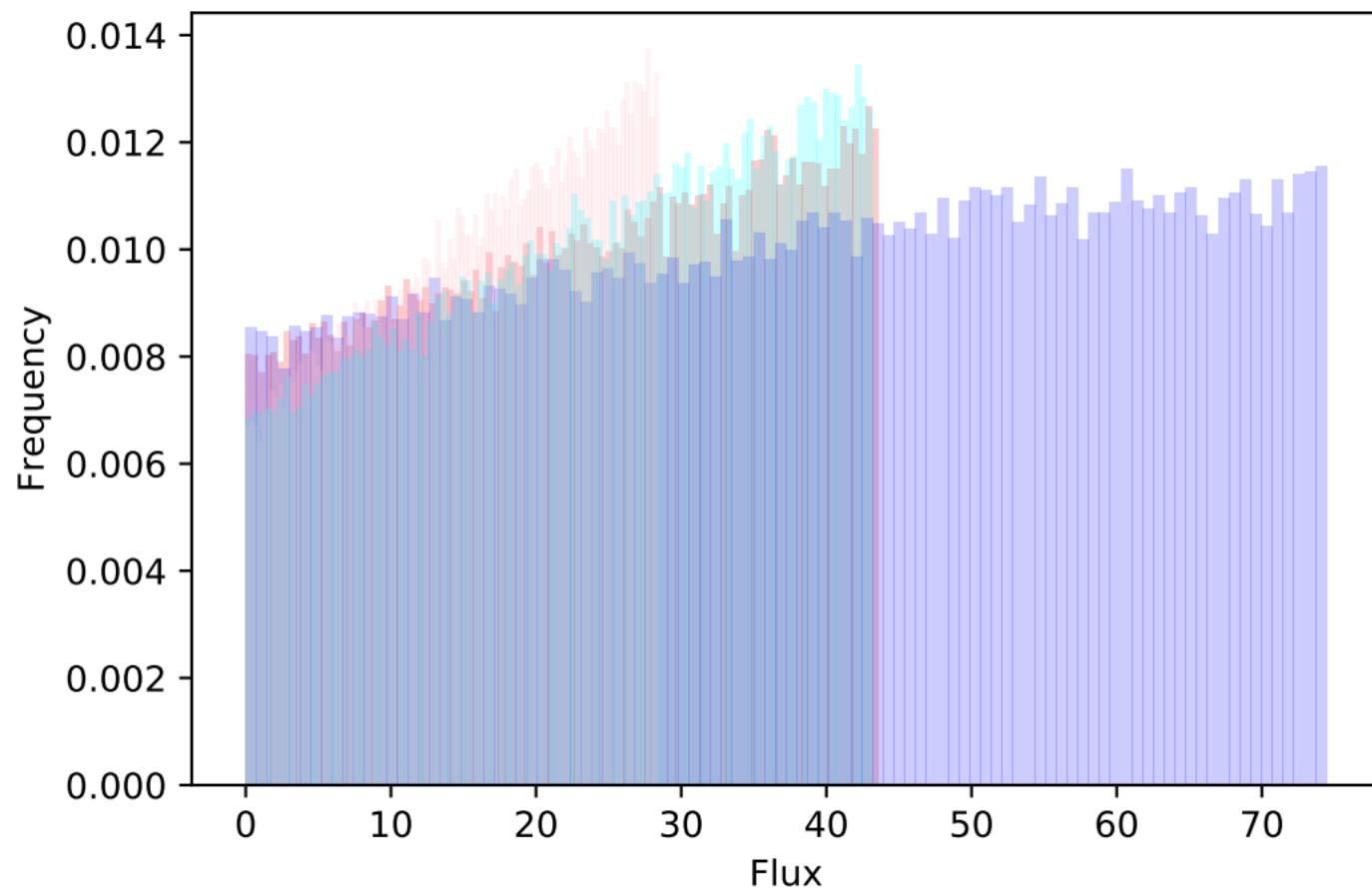
114 : NADPH_c + OAA_c --> Mal_c + NADP_c
['AT5G58330']



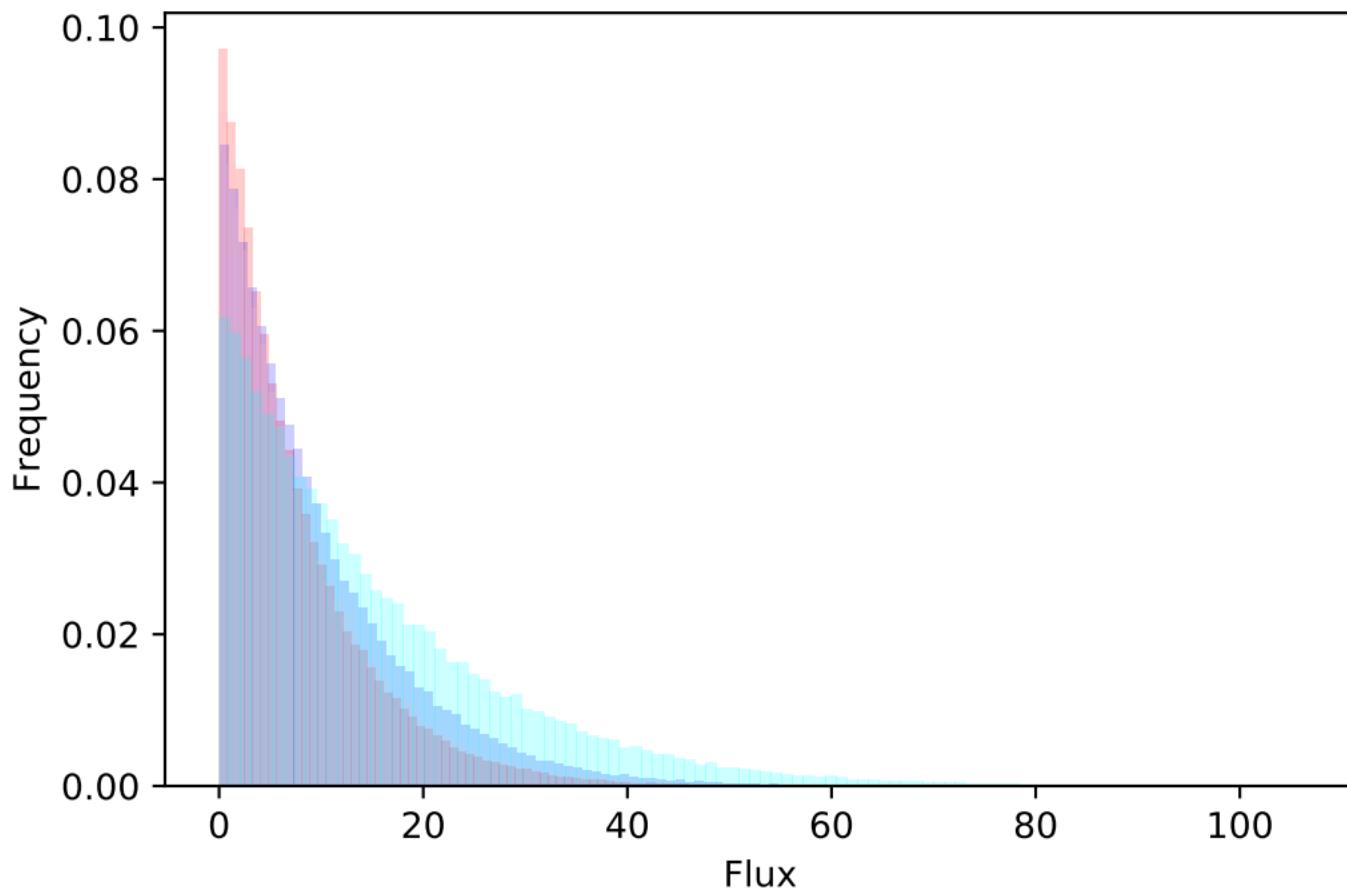
115 : H_h + NADPH_h + OAA_h --> Mal_h + NADP_h
['AT5G58330']



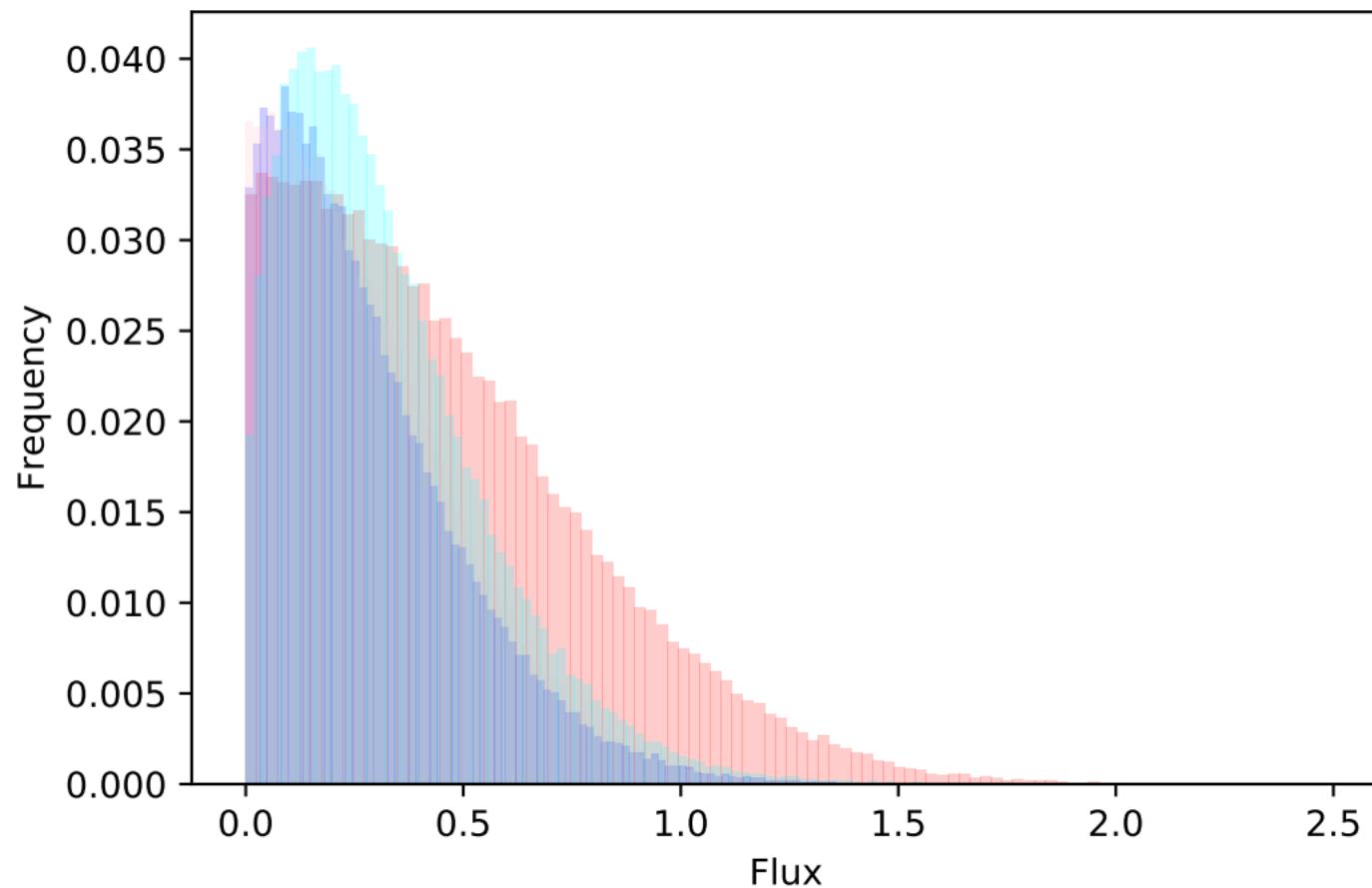
116 : H_m + NADPH_m + OAA_m --> Mal_m + NADP_m
['AT5G58330']



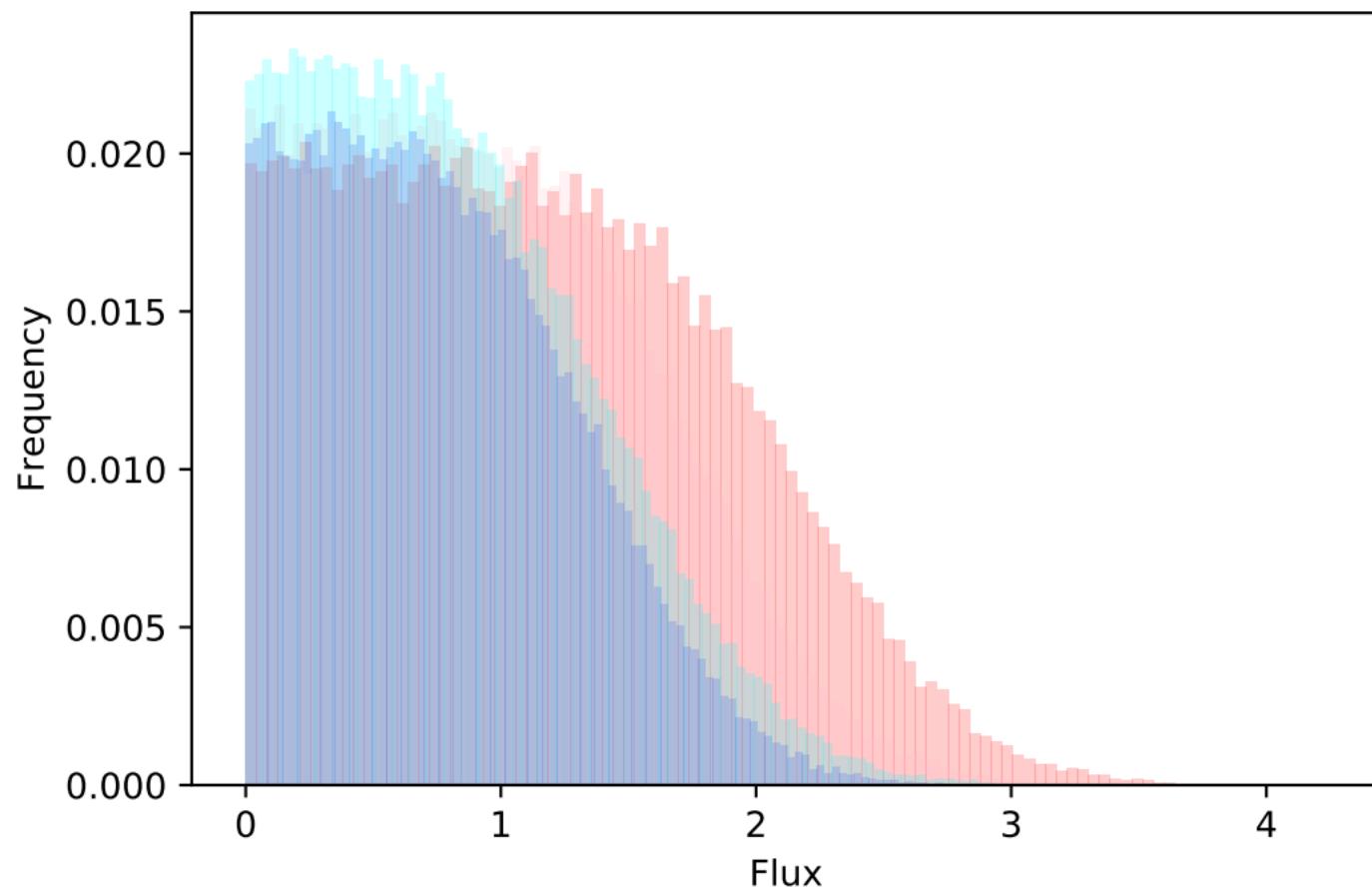
117 : A_DASH_CoA_c + H2O_c + OAA_c --> Cit_c + CoA_c + H_c
['AT2G42790', 'AT3G58750']



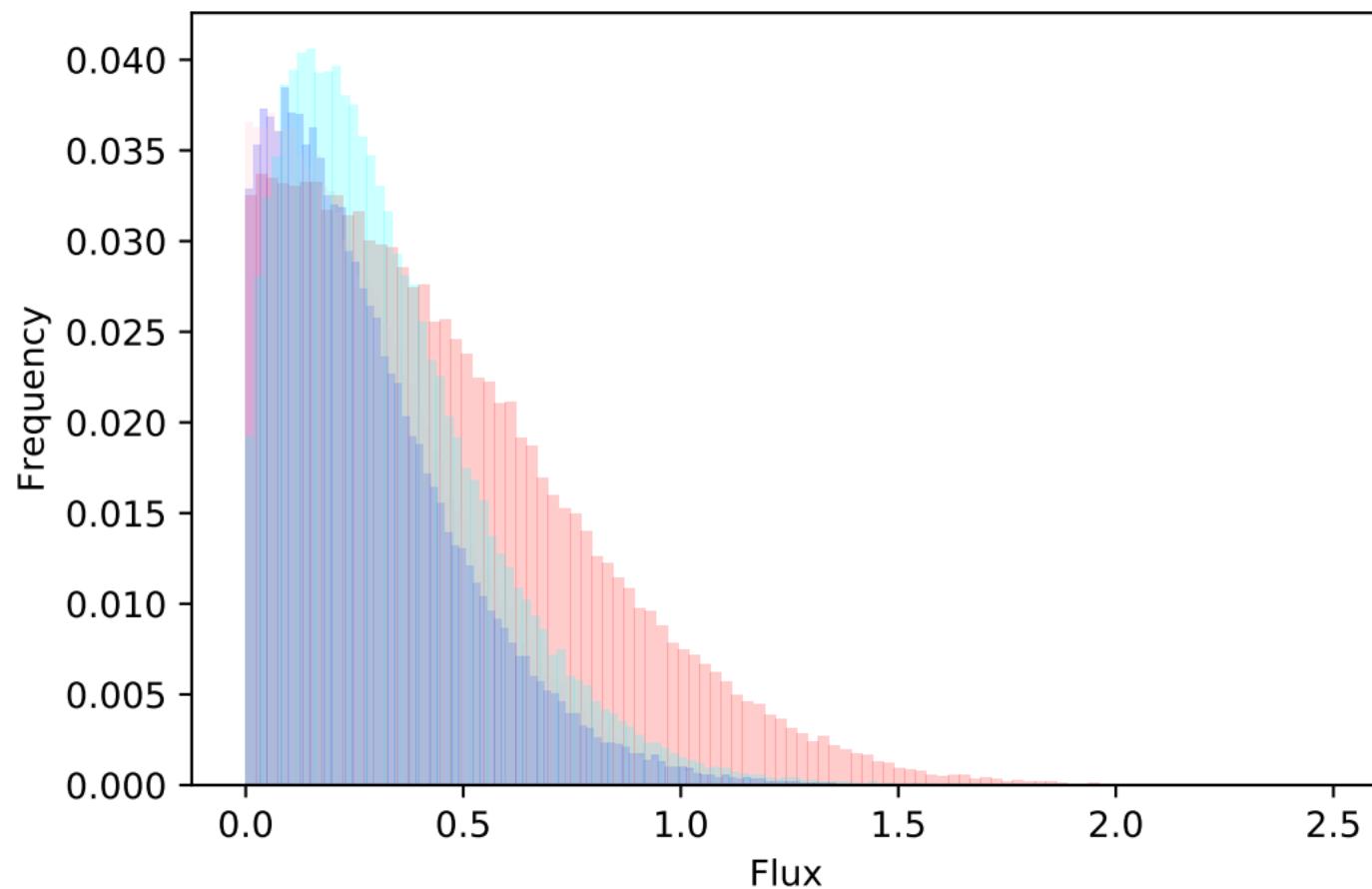
118 : A_DASH_CoA_h + H2O_h + OAA_h --> Cit_h + CoA_h + H_h
['AT2G44350']



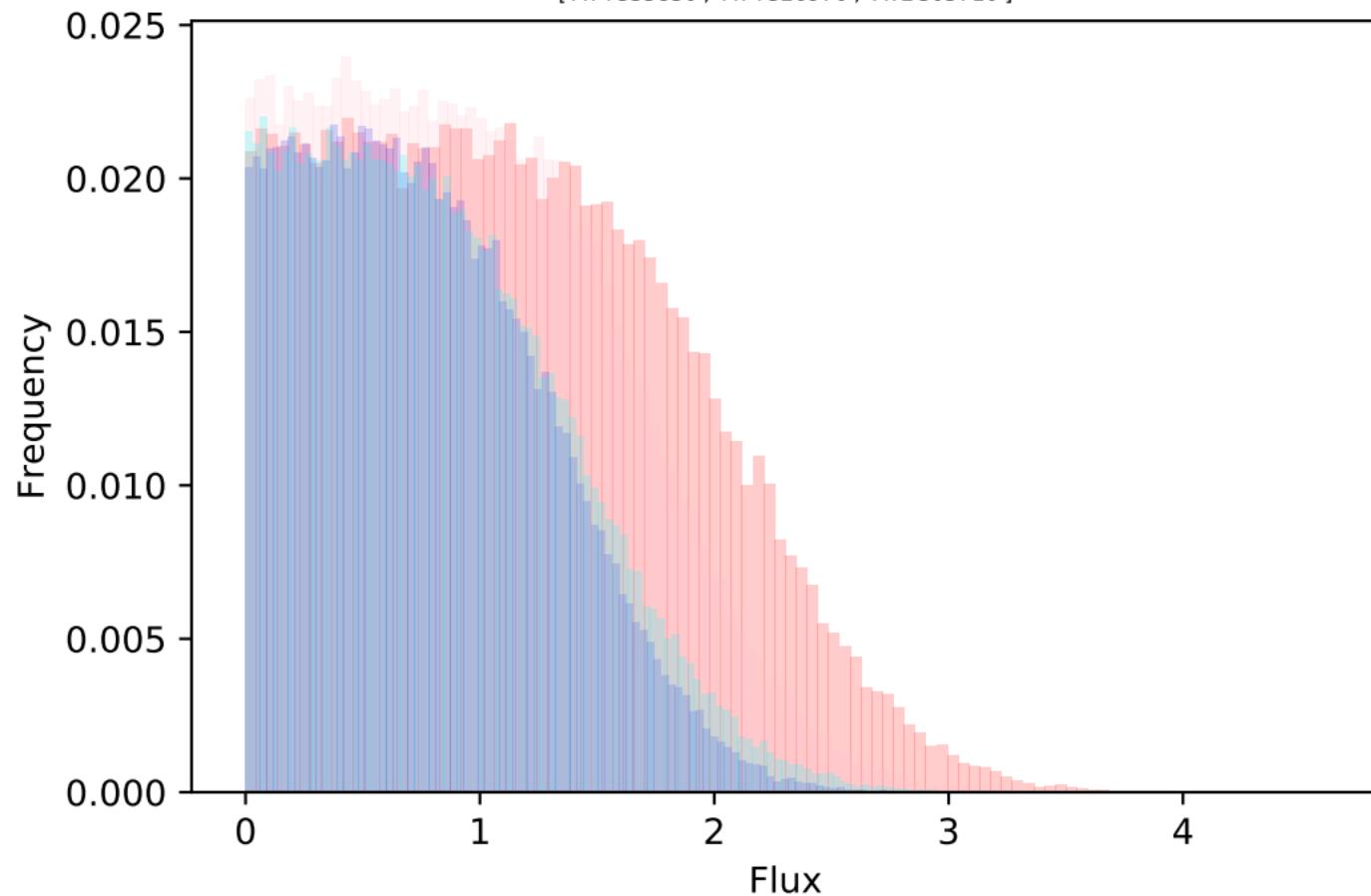
119 : Cit_c --> H2O_c + cACN_c
['AT4G35830', 'AT4G26970', 'AT2G05710']



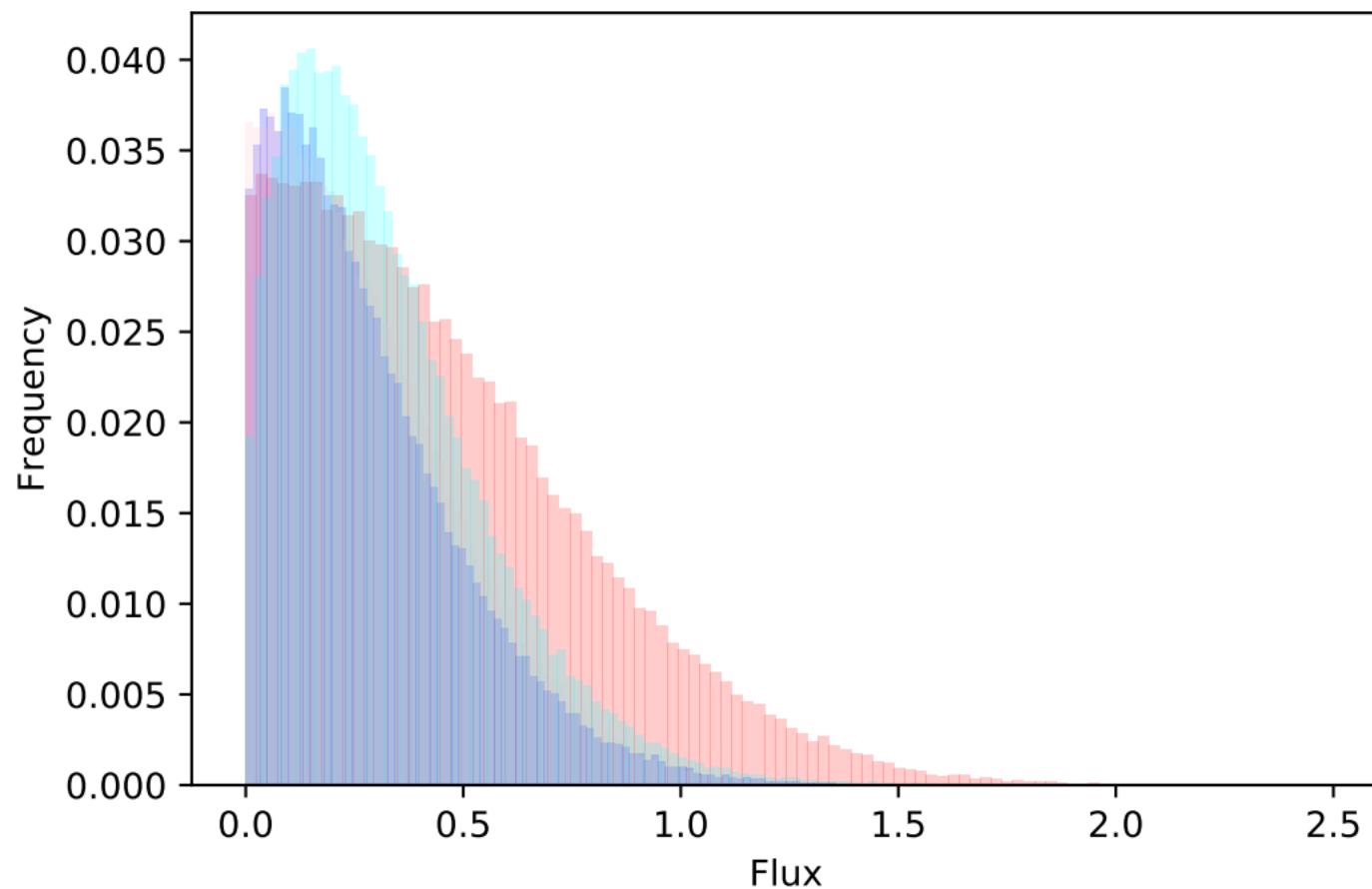
120 : Cit_h --> H2O_h + cACN_h
['AT2G05710', 'AT4G26970']



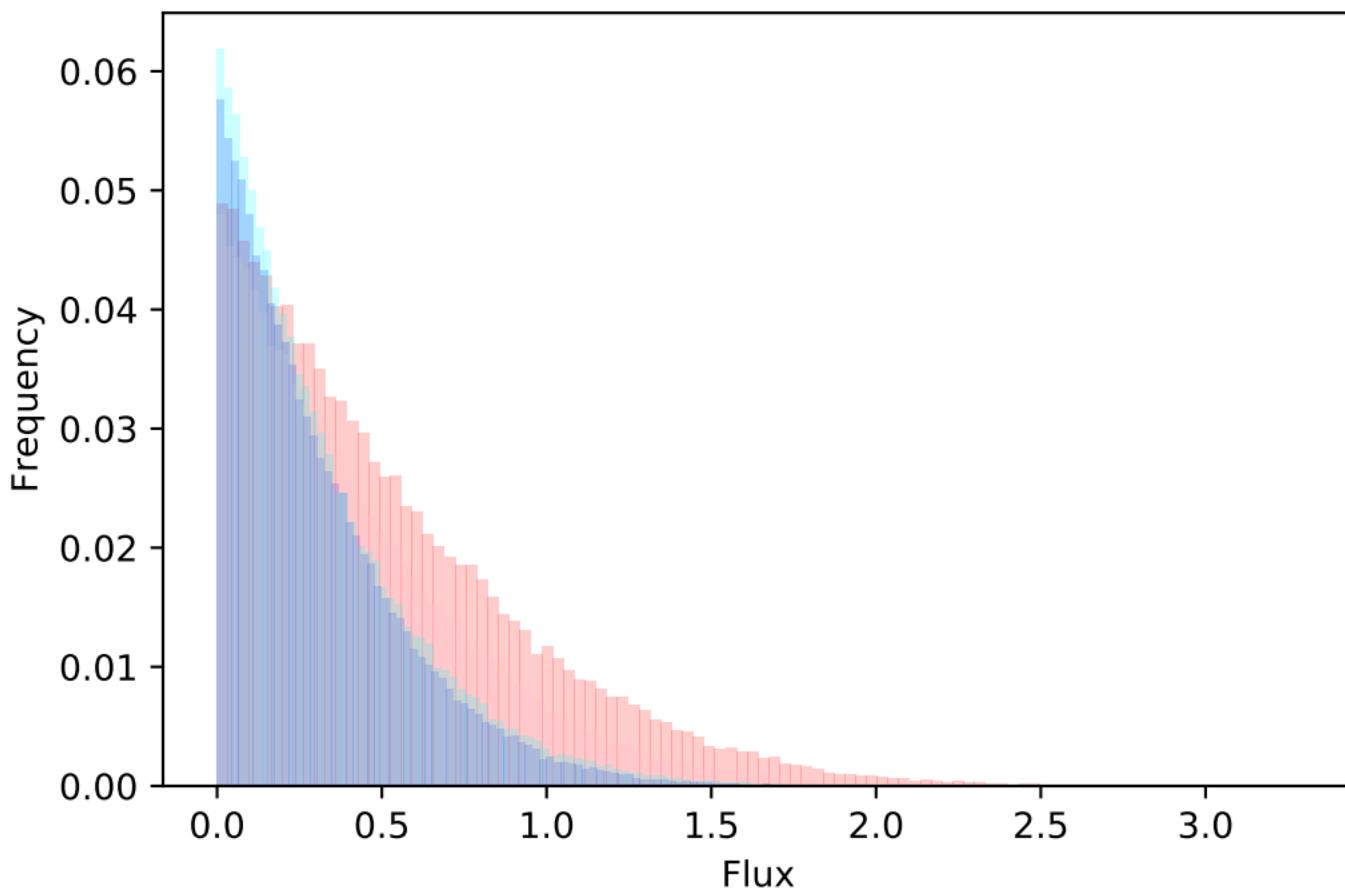
121 : H₂O_c + cACN_c --> iCit_c
['AT4G35830', 'AT4G26970', 'AT2G05710']



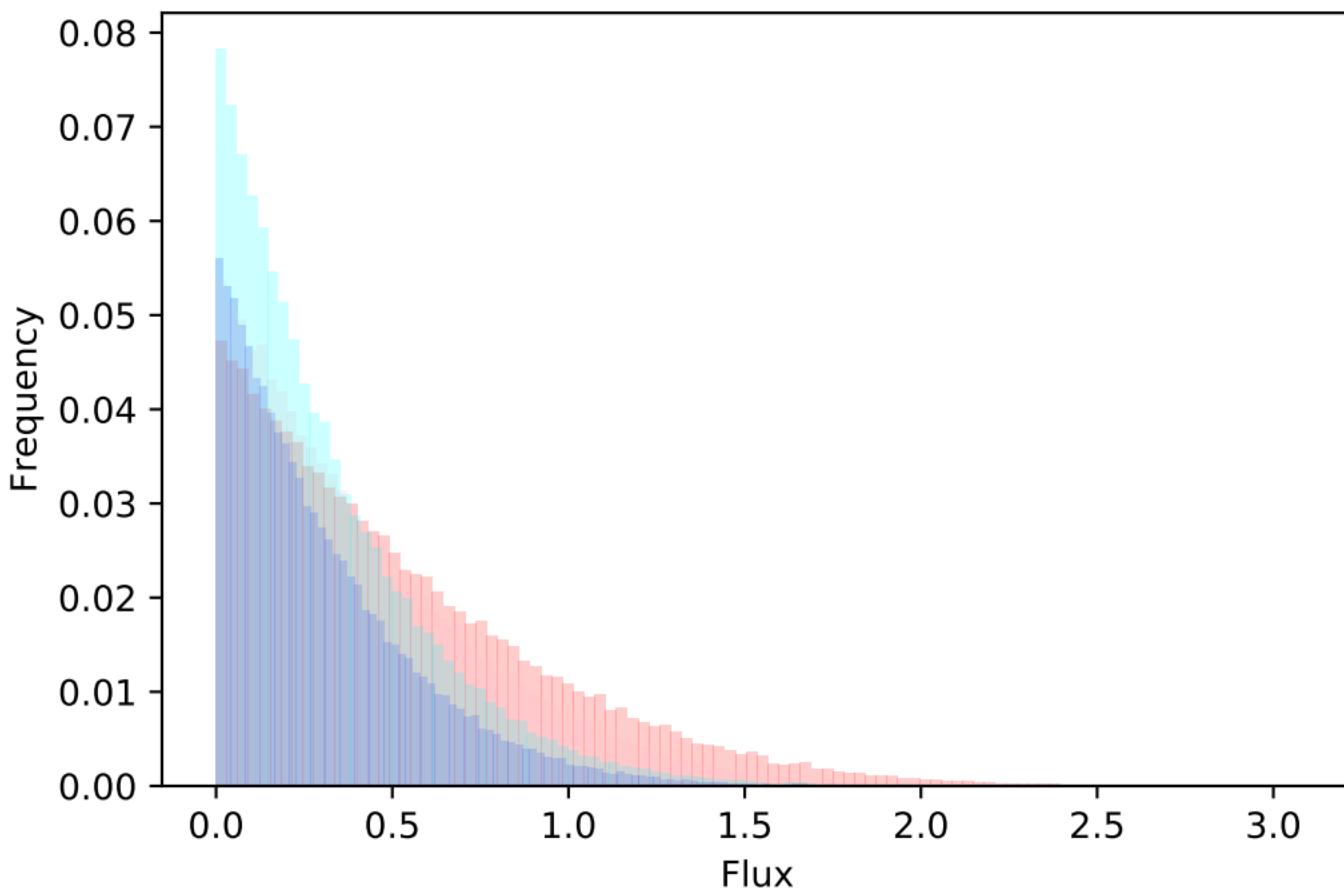
122 : H₂O_h + cACN_h --> iCit_h
['AT2G05710', 'AT4G26970']



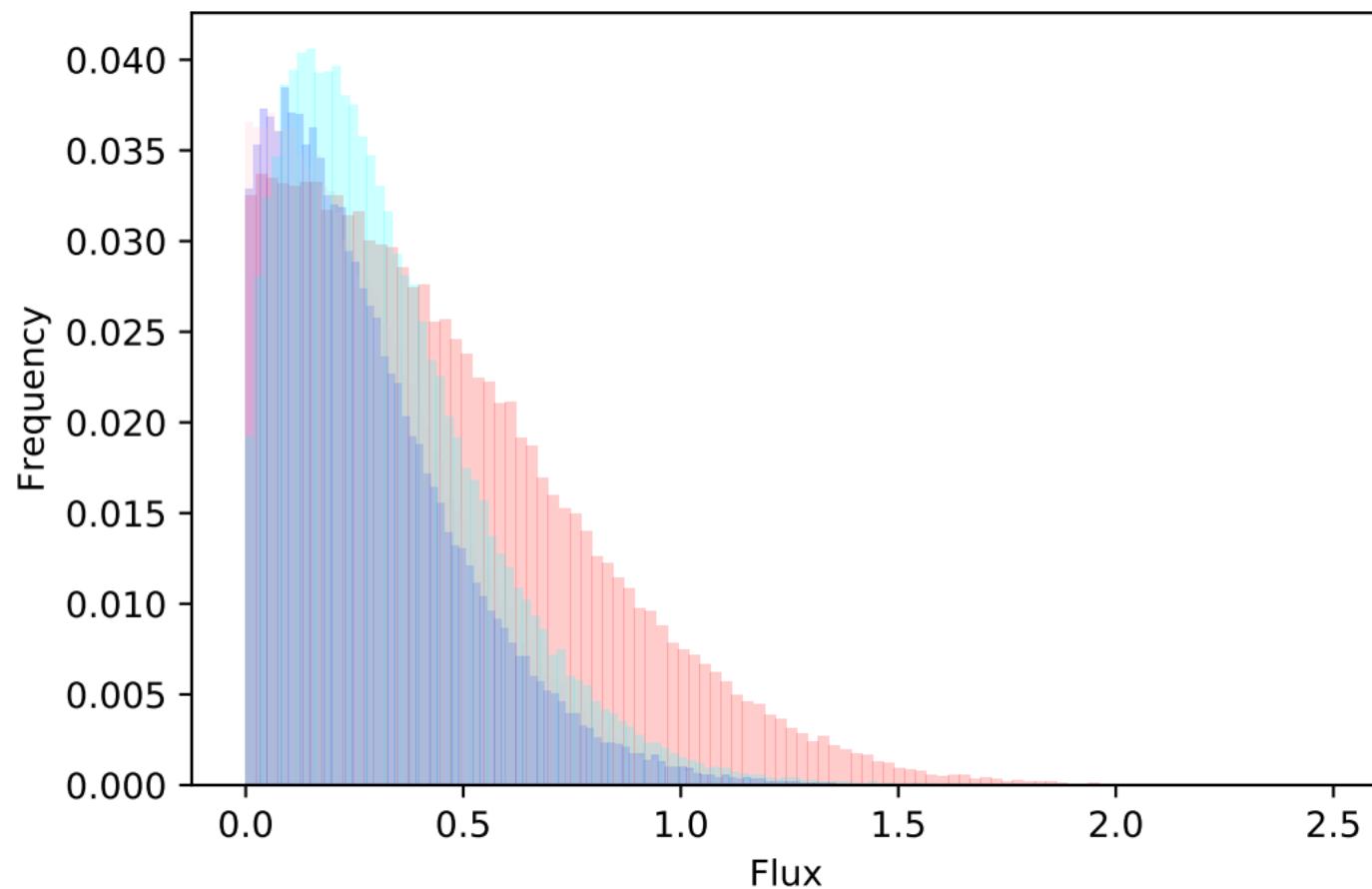
123 : H_c + NAD_c + iCit_c --> CO2_c + KG_c + NADH_c
['AT1G32480']



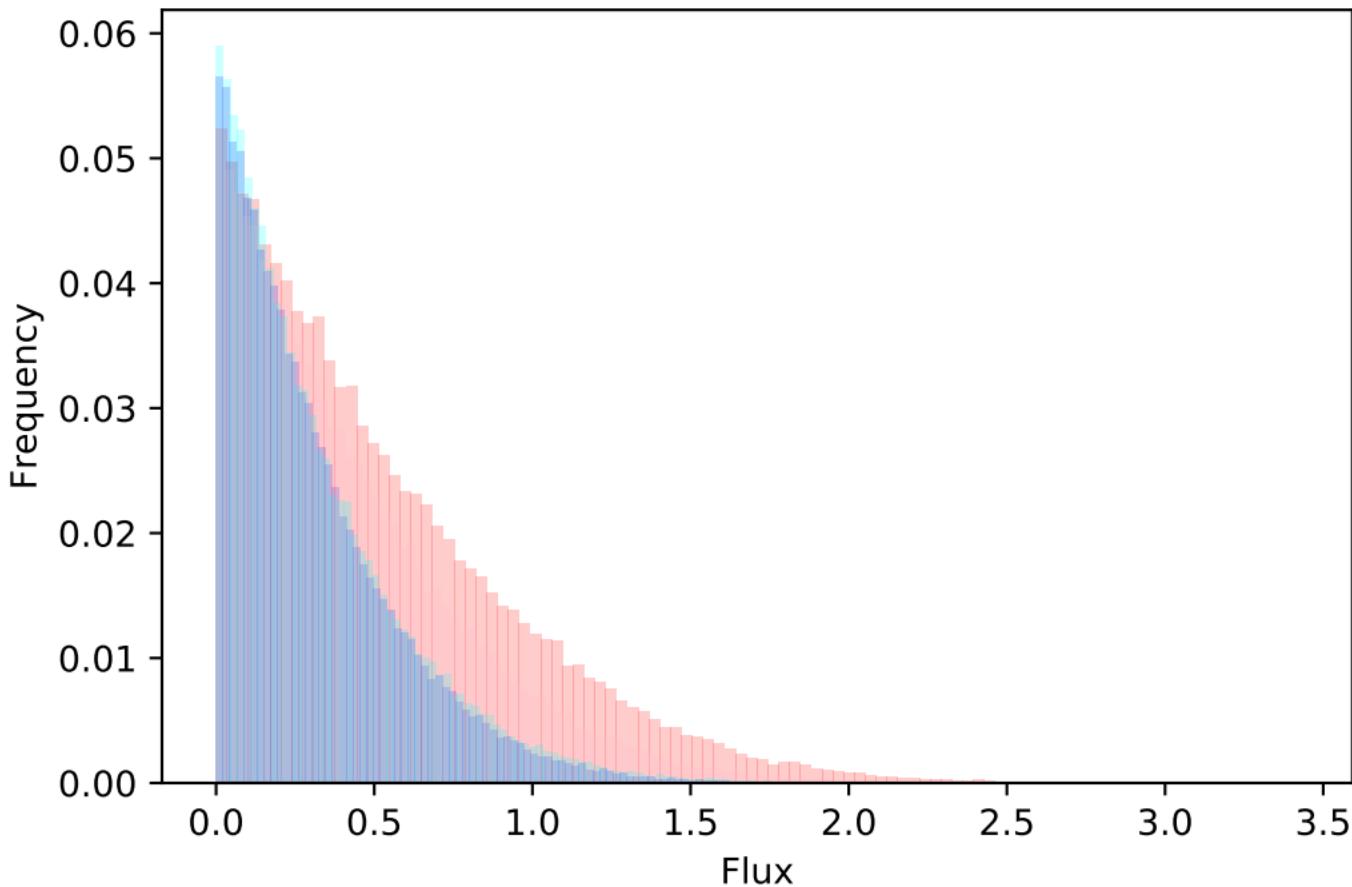
124 : H_c + NADP_c + iCit_c --> CO2_c + KG_c + NADPH_c
['AT1G65930']



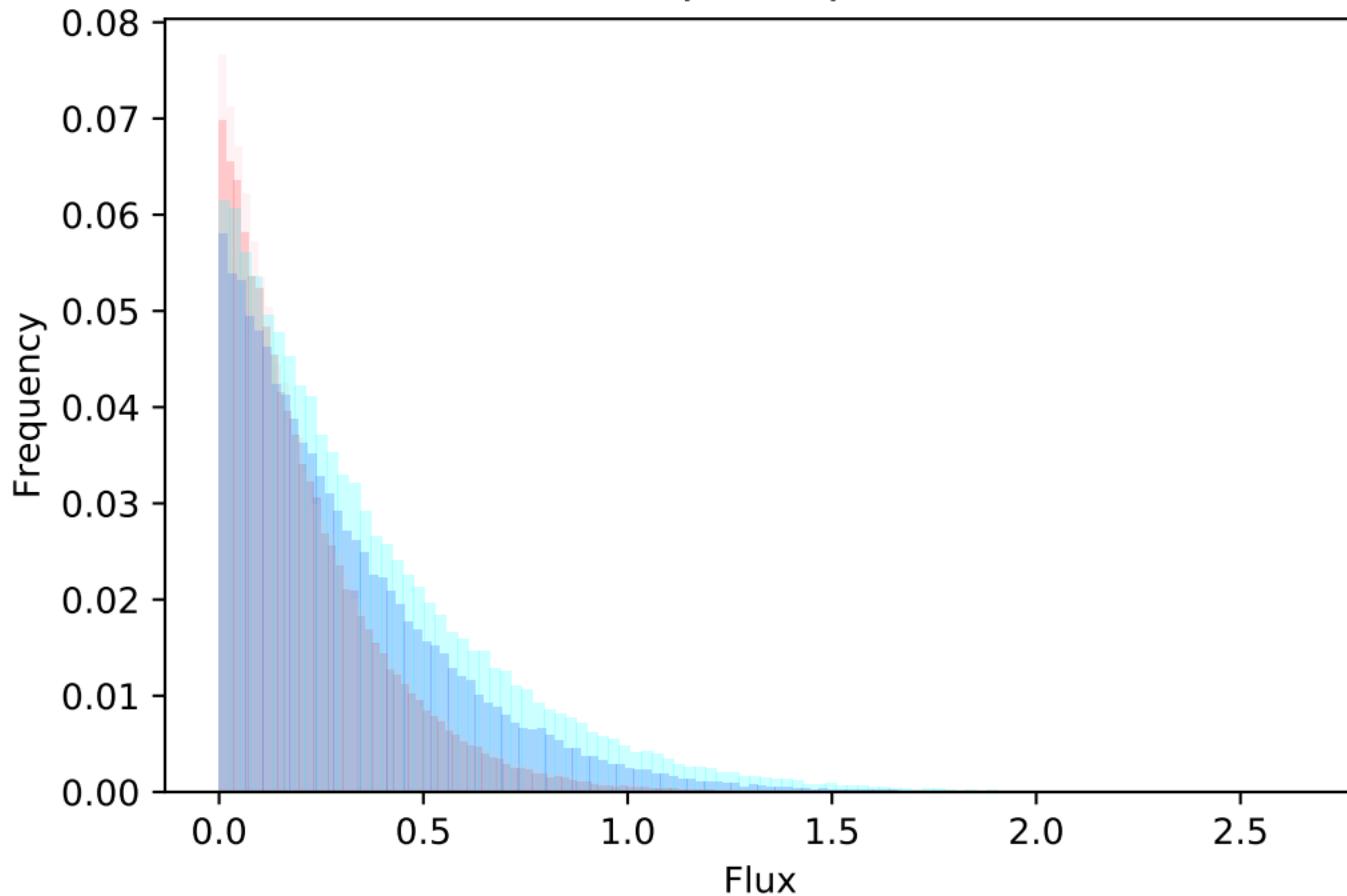
125 : NADP_h + iCit_h --> CO2_h + KG_h + NADPH_h
['AT5G14590', 'AT1G54340', 'AT1G65930']



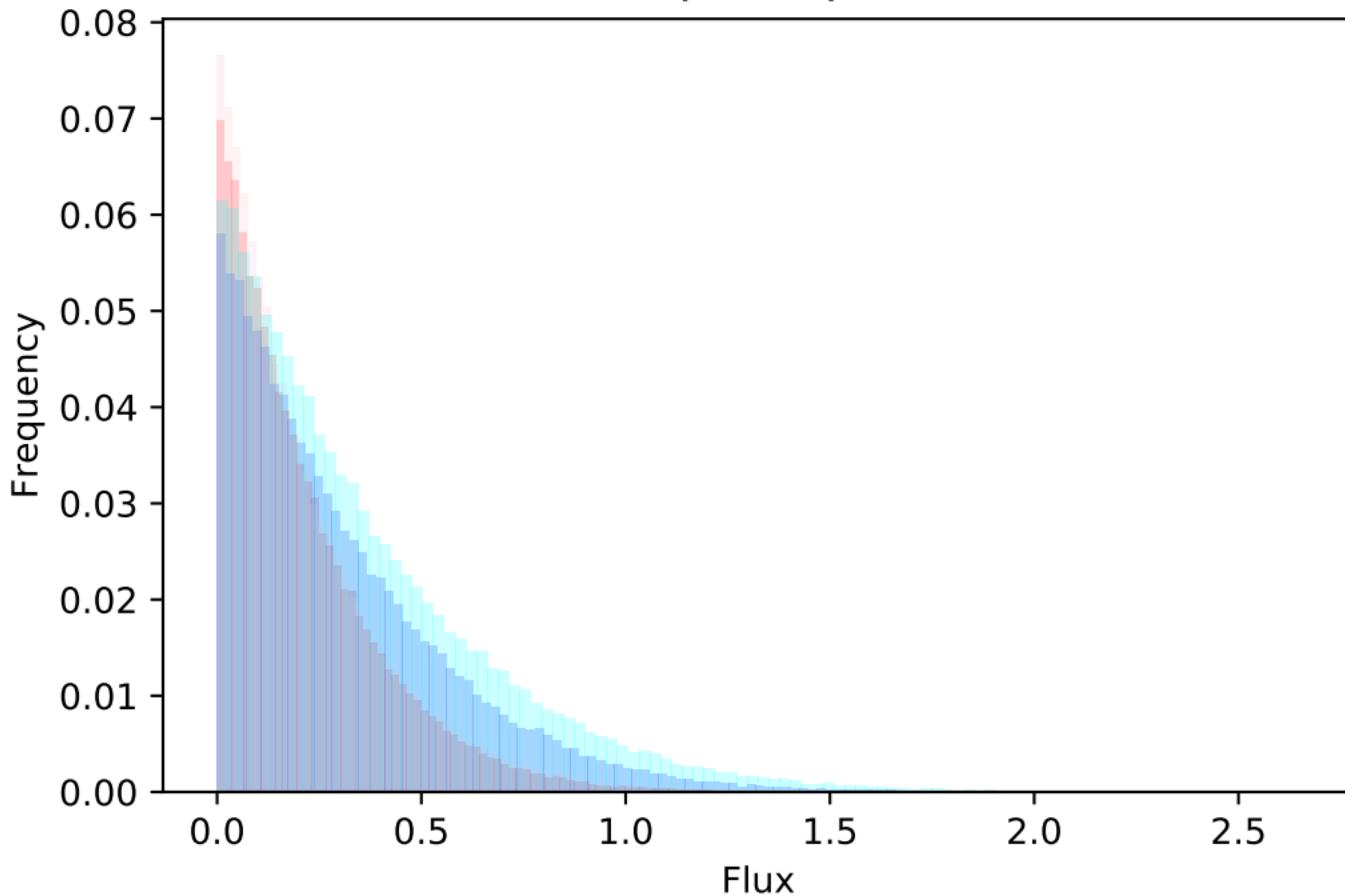
126 : NADP_m + iCit_m --> CO2_m + KG_m + NADPH_m
['AT5G14590']



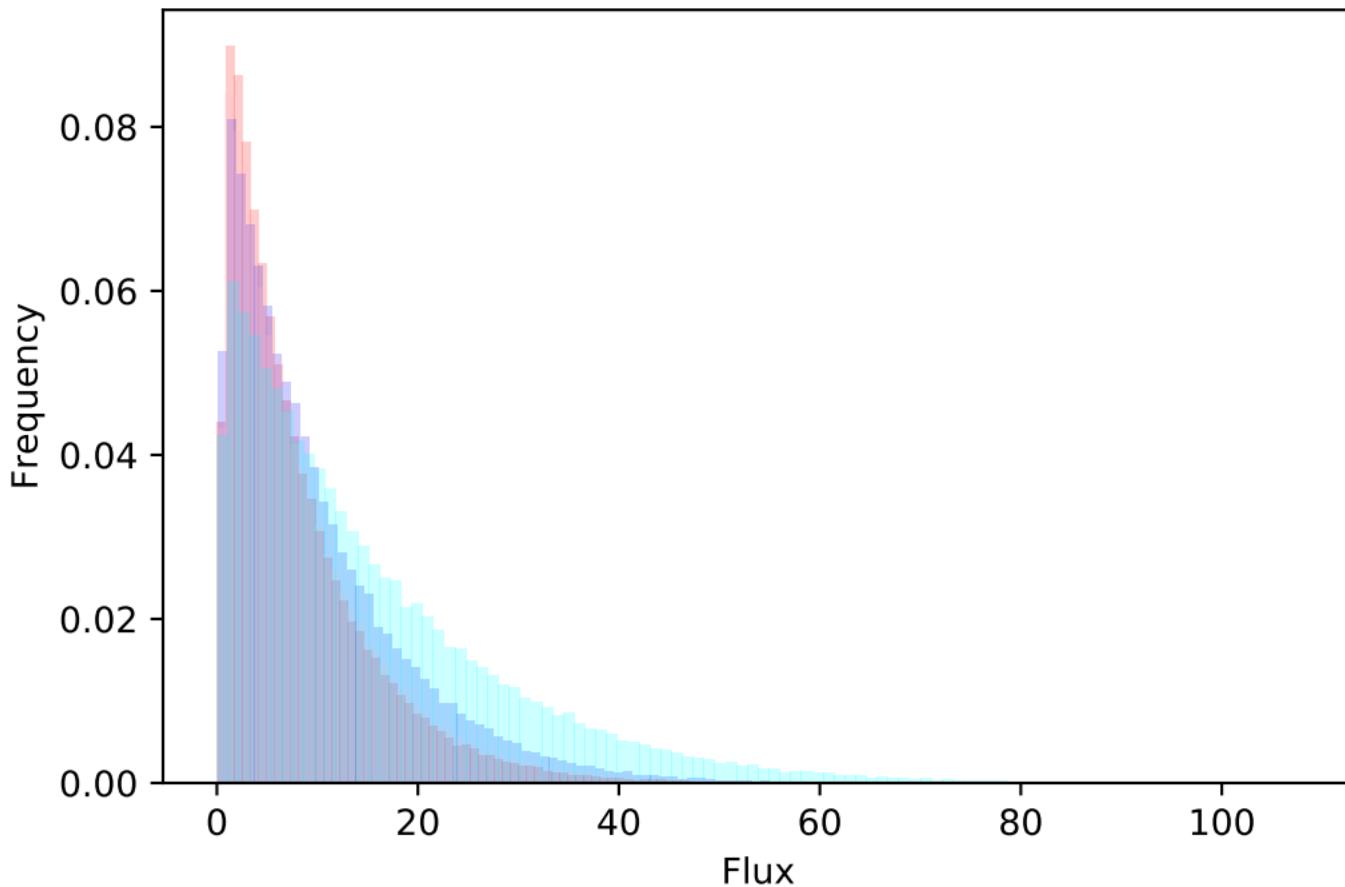
127 : iCit_c --> GLX_c + SCA_c
['AT3G21720']



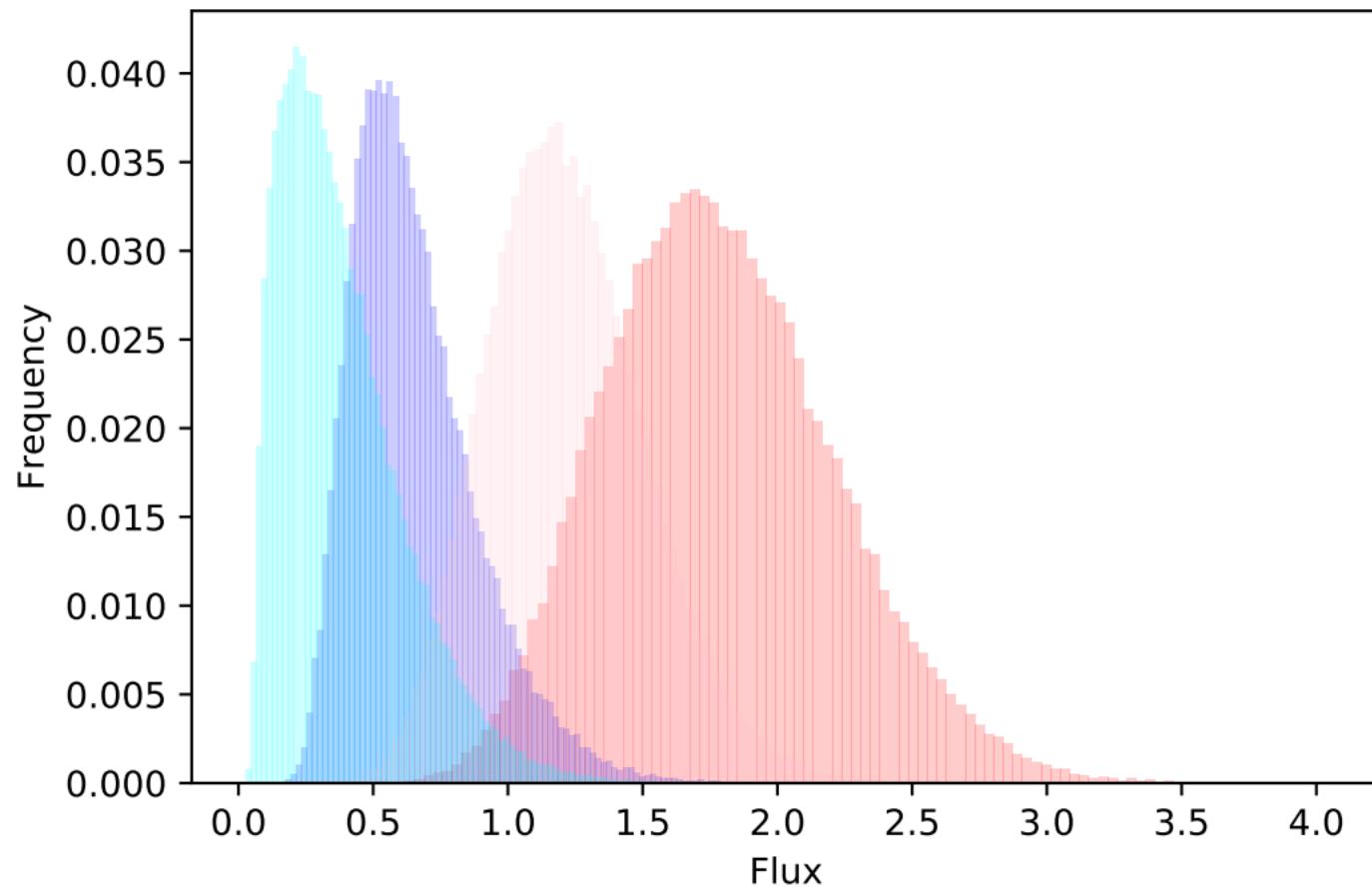
128 : A_DASH_CoA_c + GLX_c + H2O_c --> CoA_c + H_c + Mal_c
['AT5G03860']



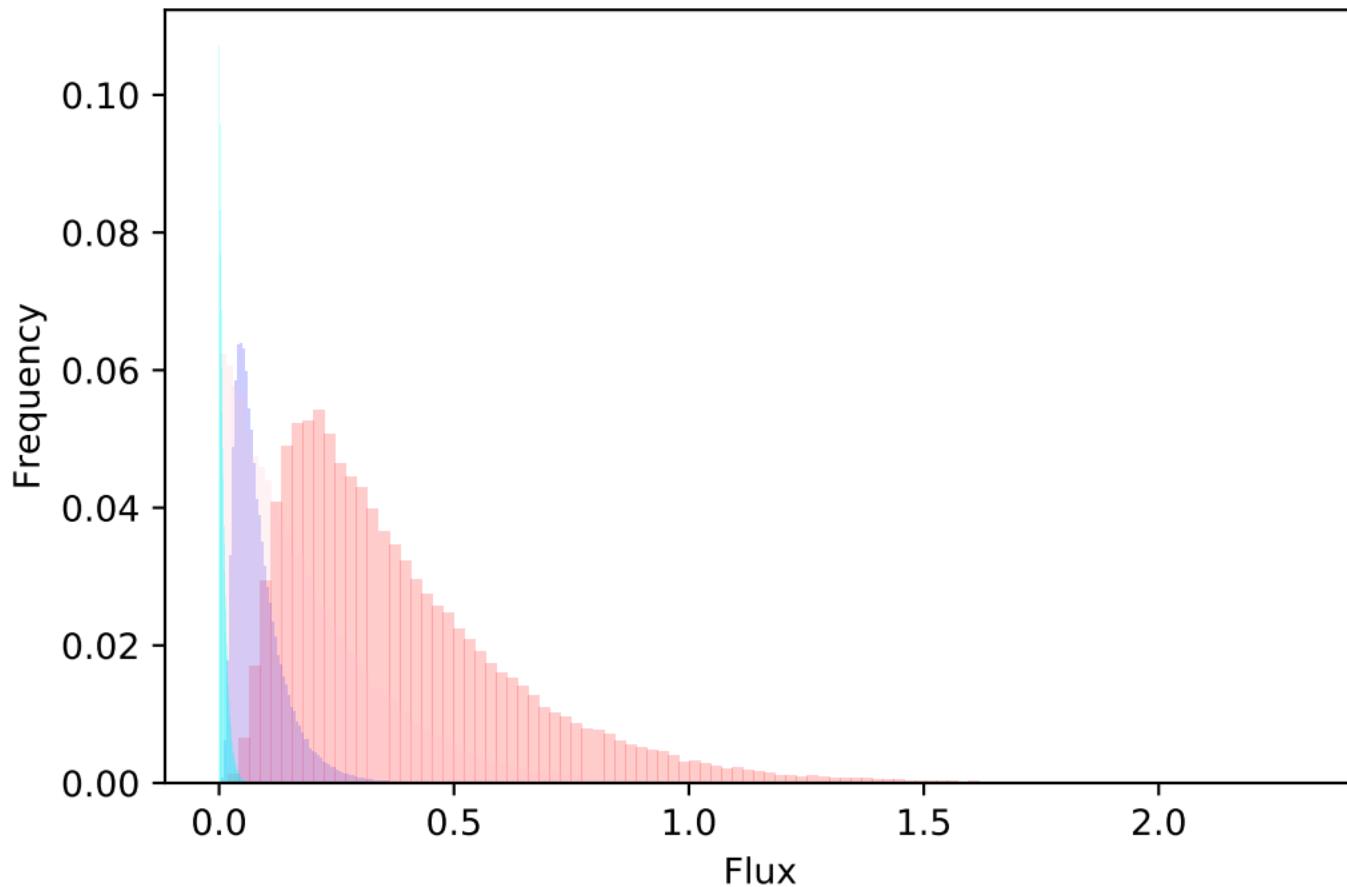
129 : ATP_c + Cit_c + CoA_c --> ADP_c + A_DASH_CoA_c + OAA_c + Pi_c
['AT1G60810', 'AT1G09430', '4*AT3G06650AT5G49460', '4*AT1G10670']



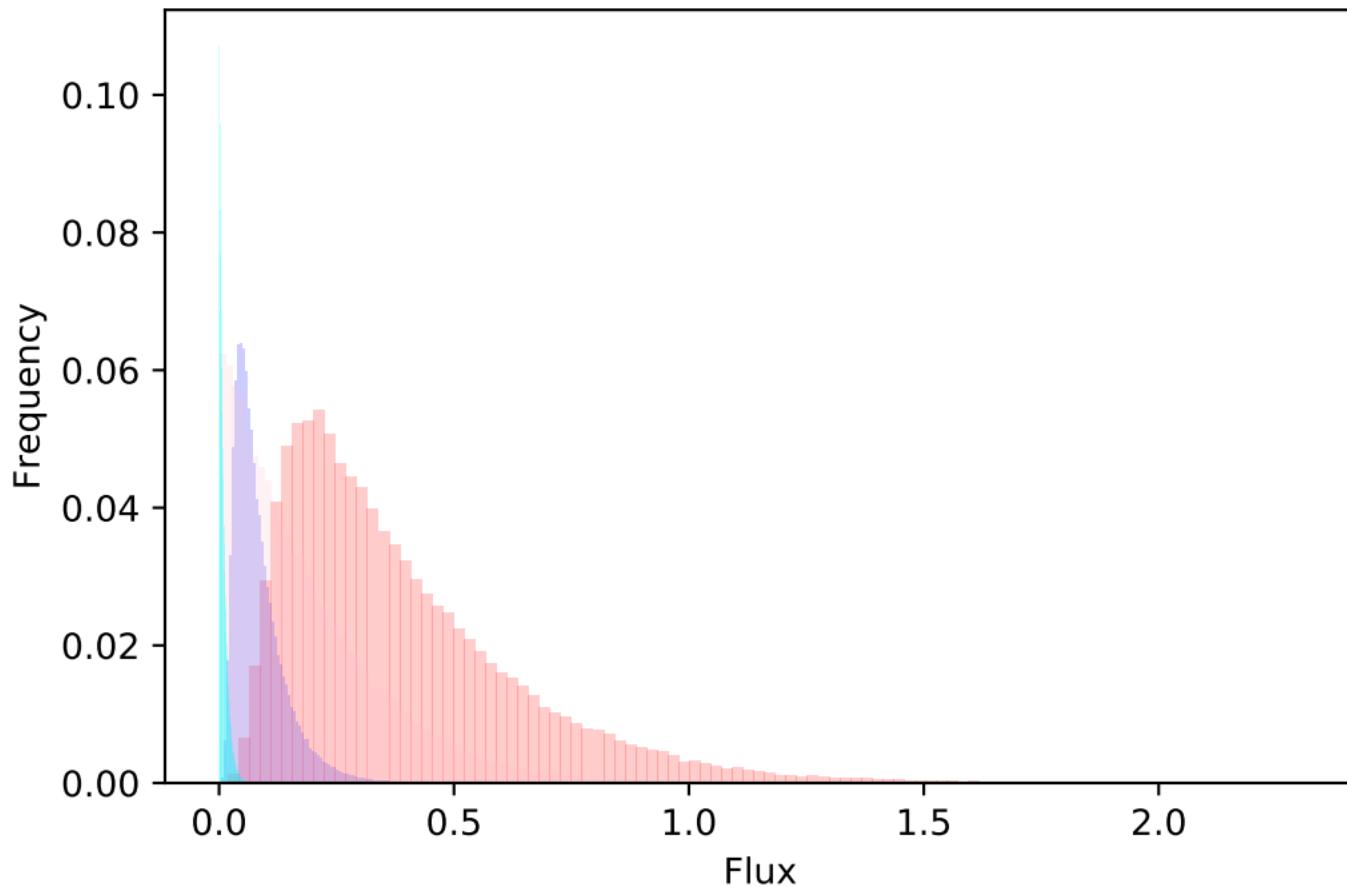
130 : AC_h + ATP_h + CoA_h --> AMP_h + A_DASH_CoA_h + H_h + PPi_h
['AT5G36880']



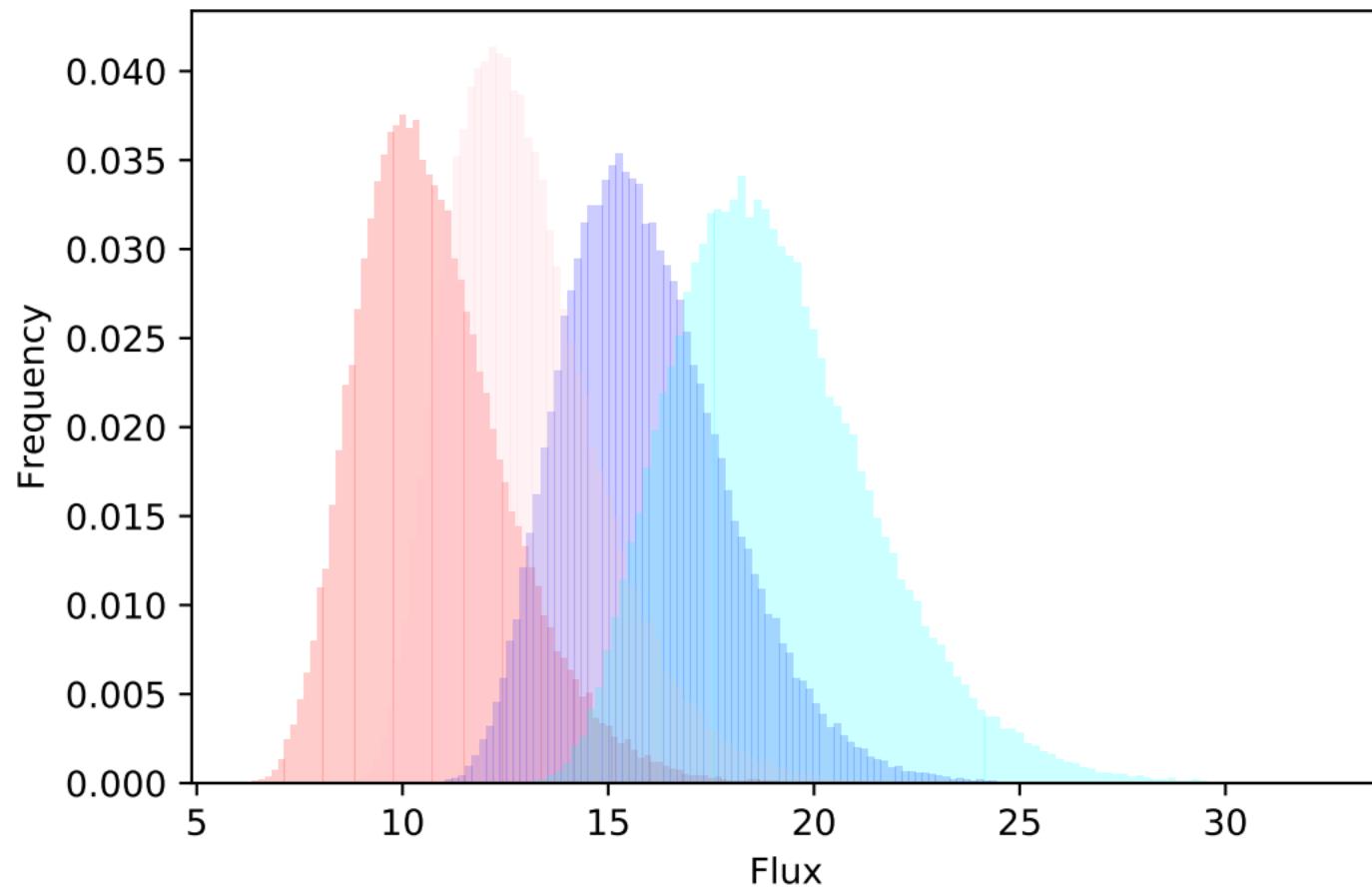
131 : ATP_h + A_DASH_CoA_h + HCO3_h --> ADP_h + H_h + M_DASH_CoA_h + Pi_h
['AT5G15530', 'AT5G35360', 'AT5G16390', '2*AT2G38040', '2*ATCG00500']

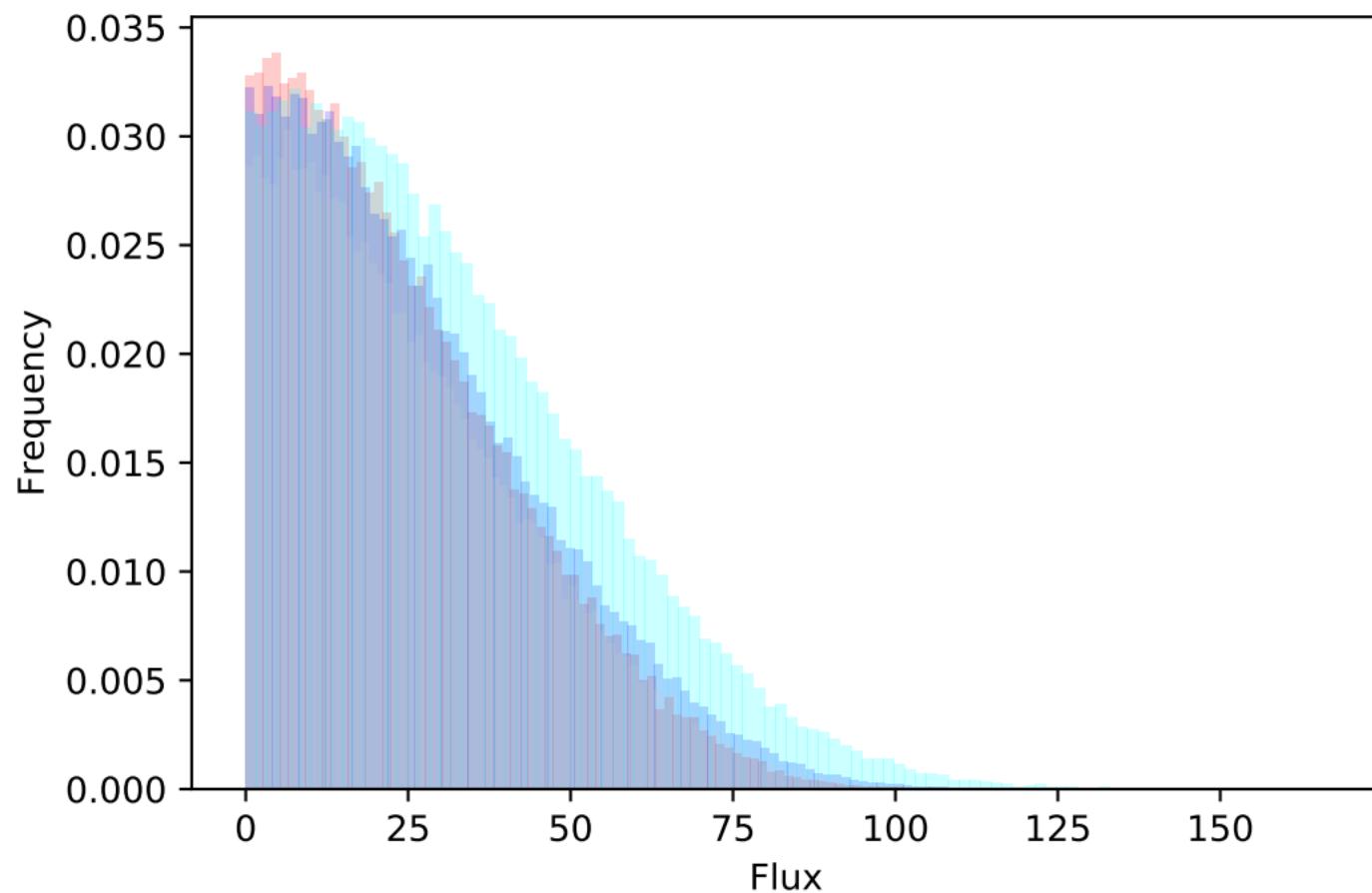
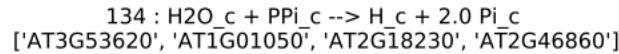


132 : ACP_h + M_DASH_CoA_h --> CoA_h + M_DASH_ACP_h
['AT2G30200']

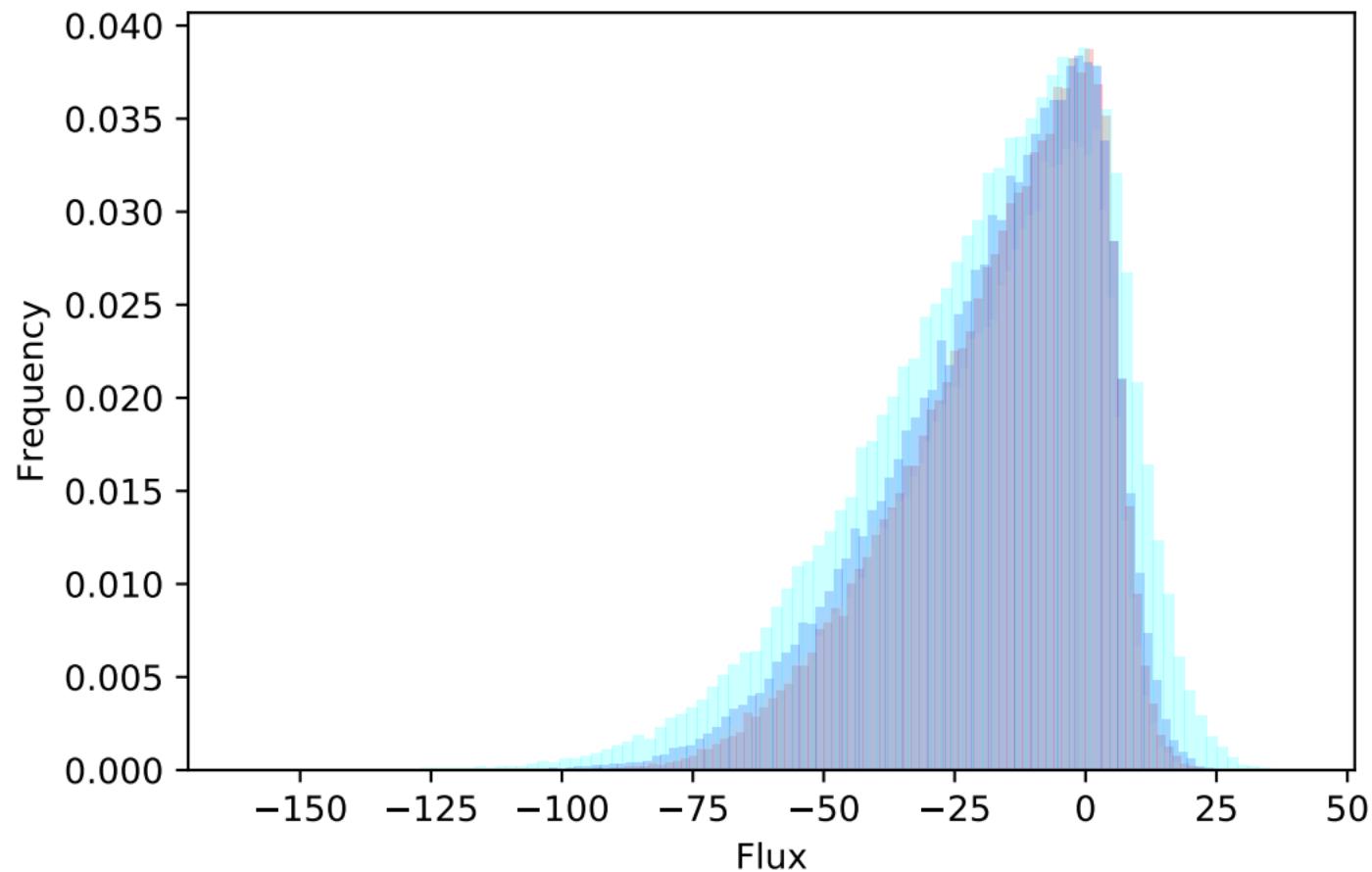


133 : H₂O_h + PPi_h --> 2.0 Pi_h
['AT5G09650']

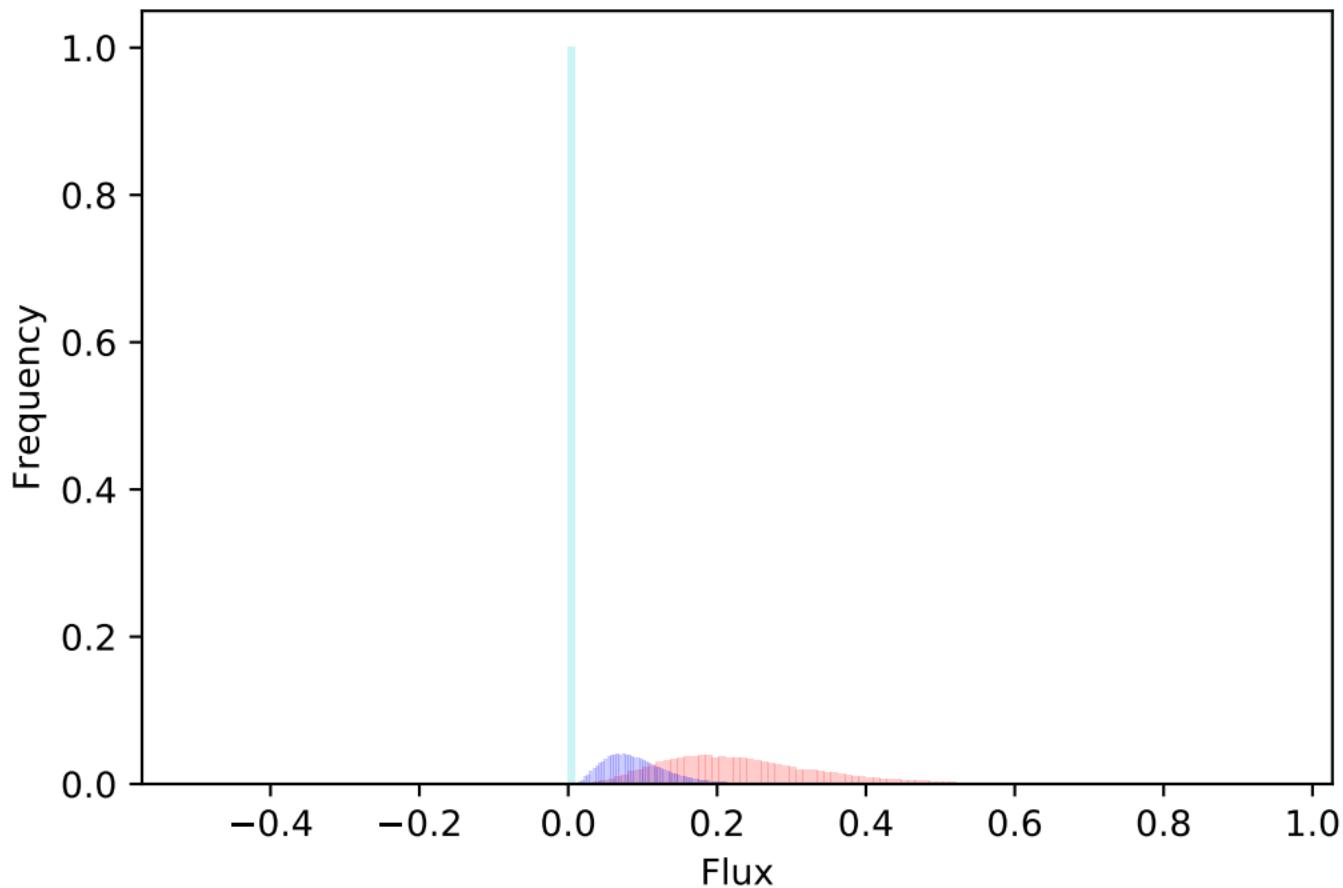




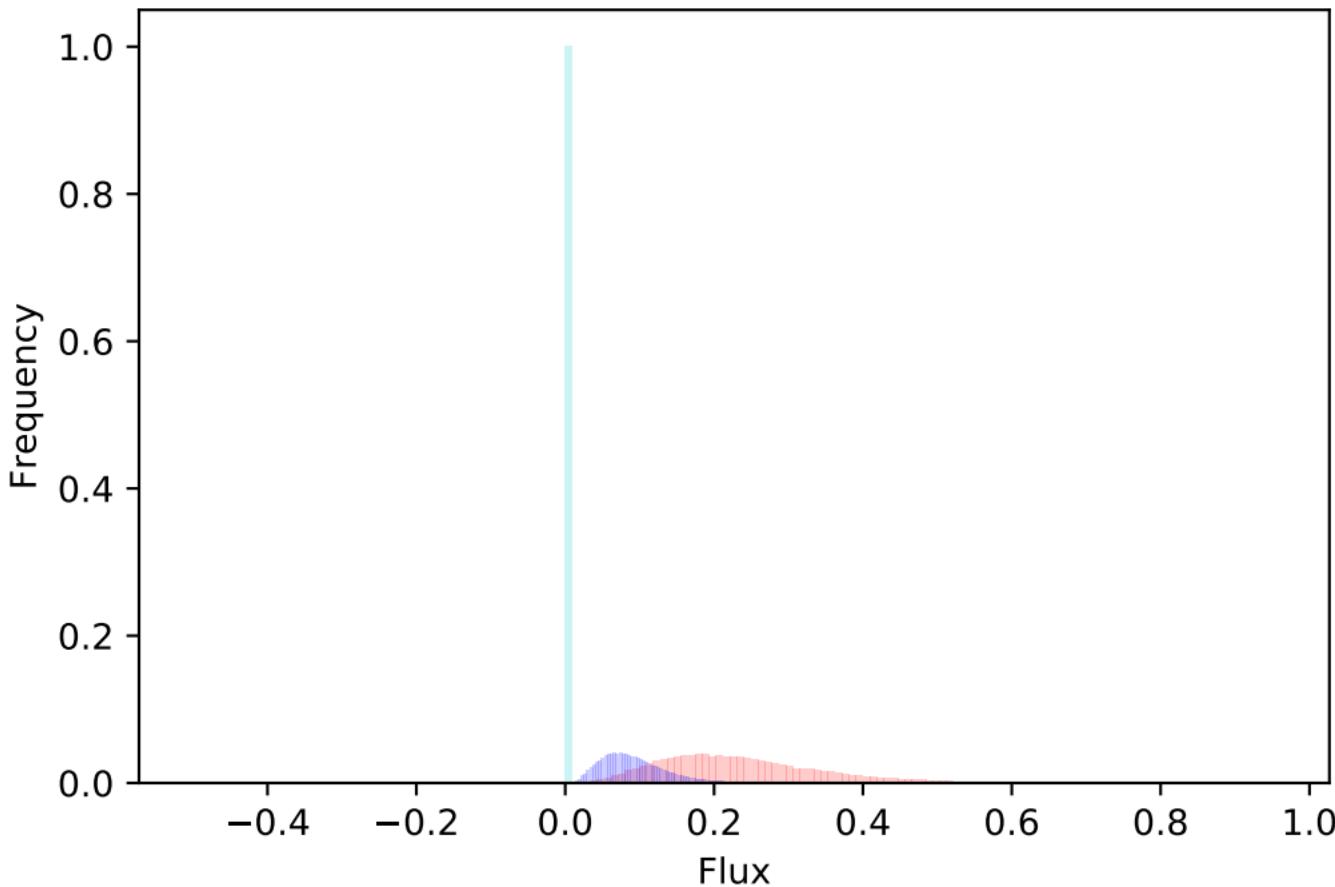
135 : F6P_c + PPi_c <=> FBP_c + H_c + Pi_c
['AT1G20950', 'AT4G04040', 'AT1G12000', 'AT1G76550']



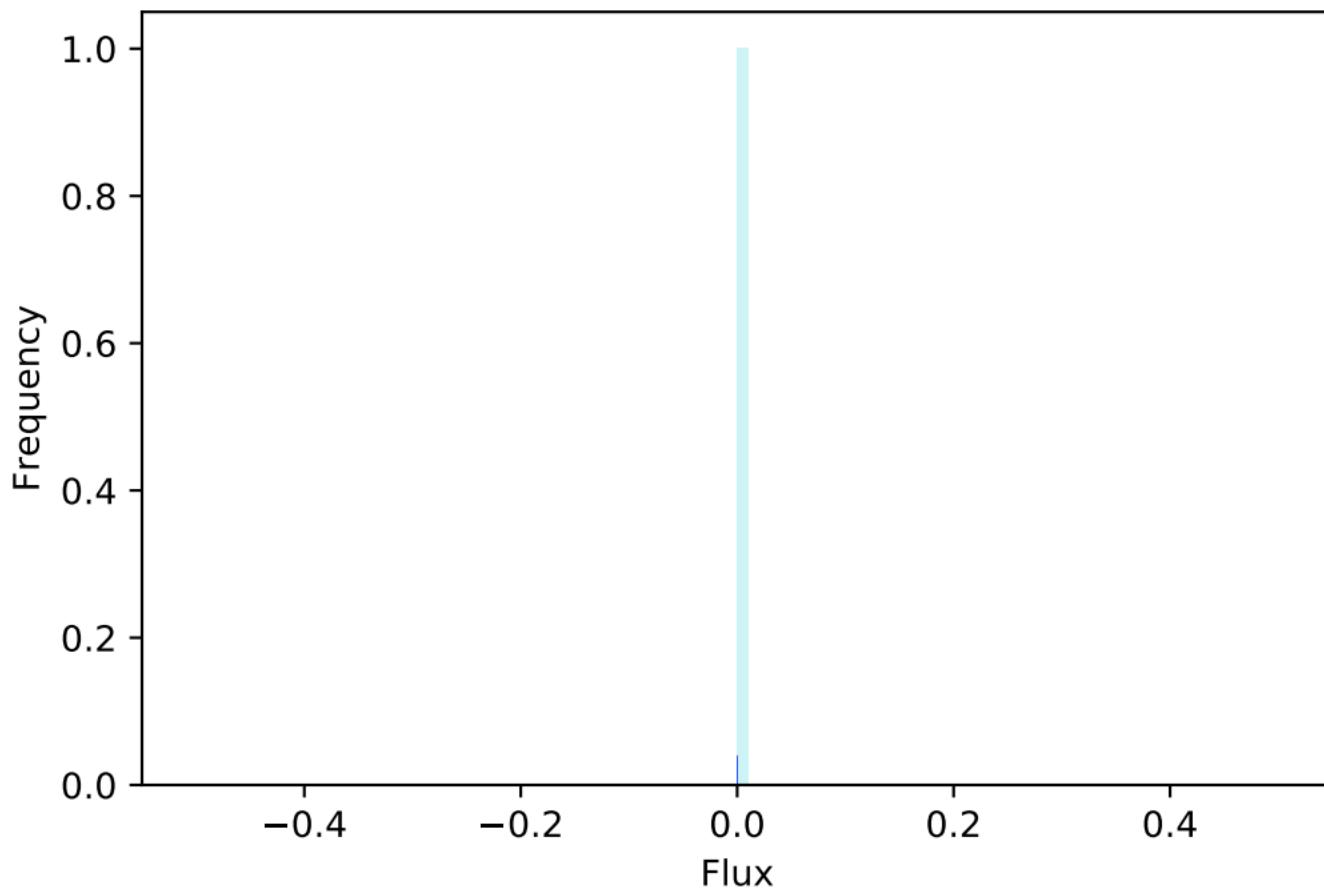
136 : CO2_h + NADH_h <=> For_h + NAD_h
['AT5G14780']



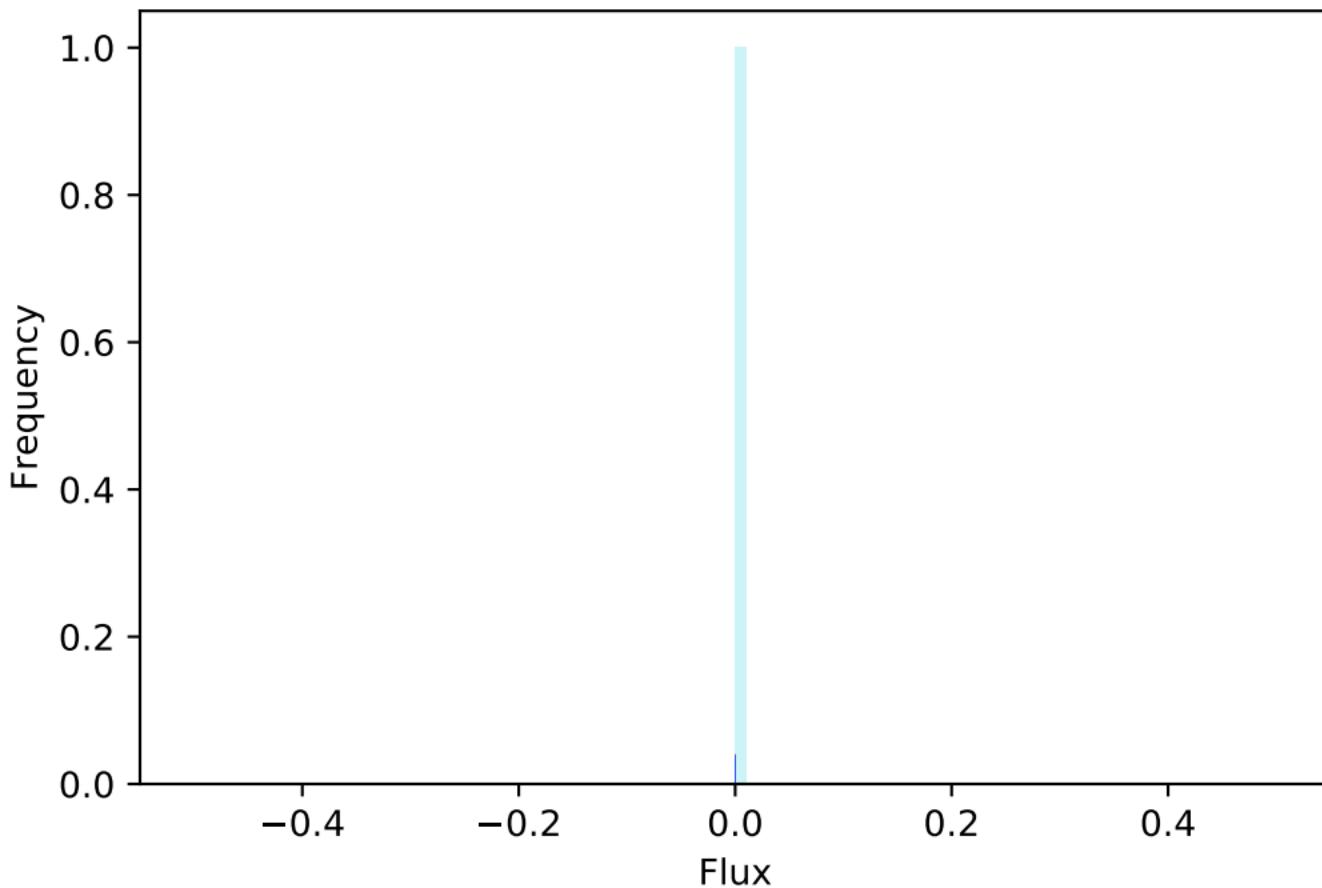
137 : ATP_h + For_h + H_h + THF_h --> ADP_h + F_DASH_THF_h + Pi_h
['AT1G50480']



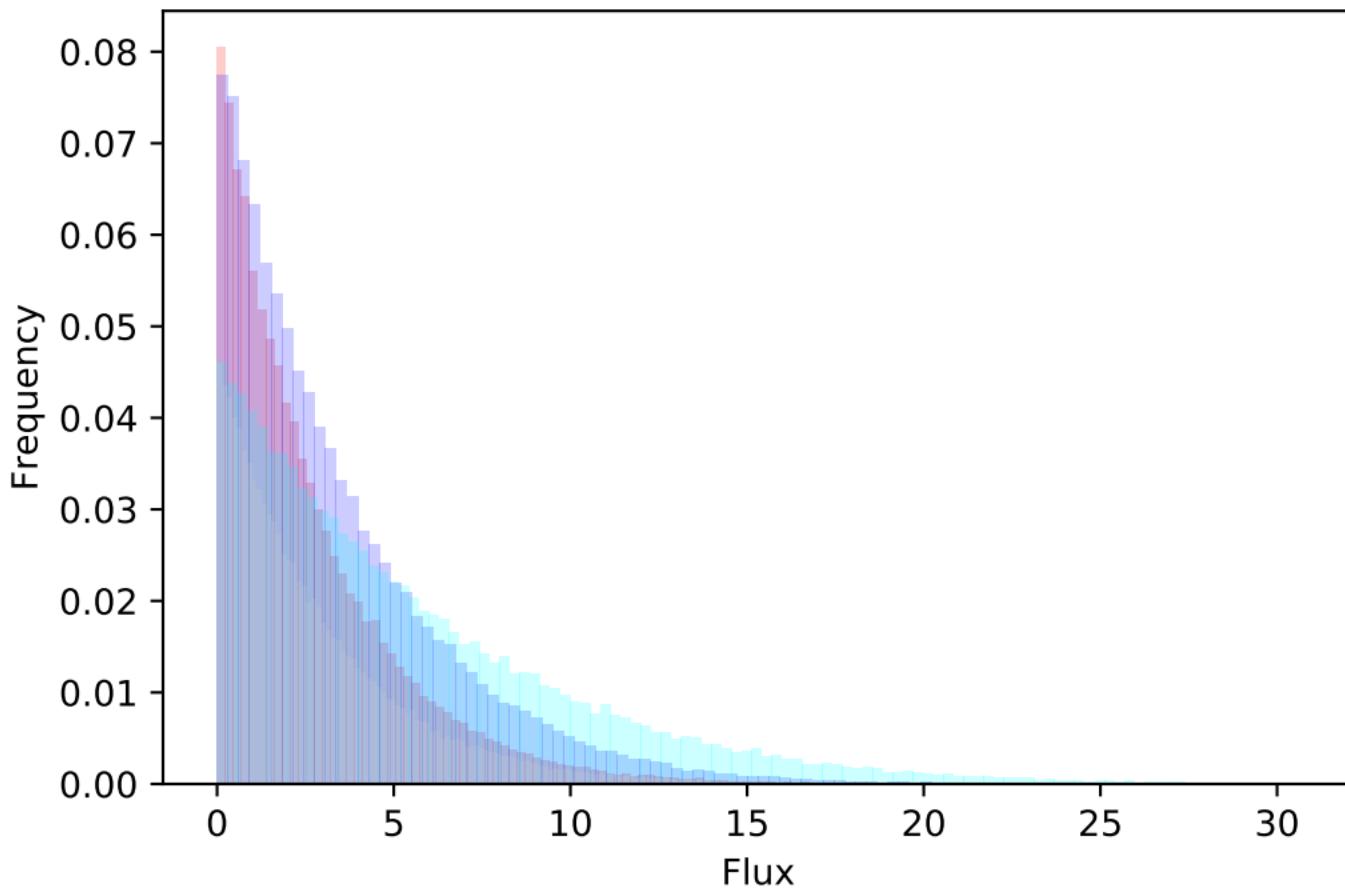
138 : DHF_c + NADPH_c --> NADP_c + THF_c
['AT2G16370', 'AT2G21550']

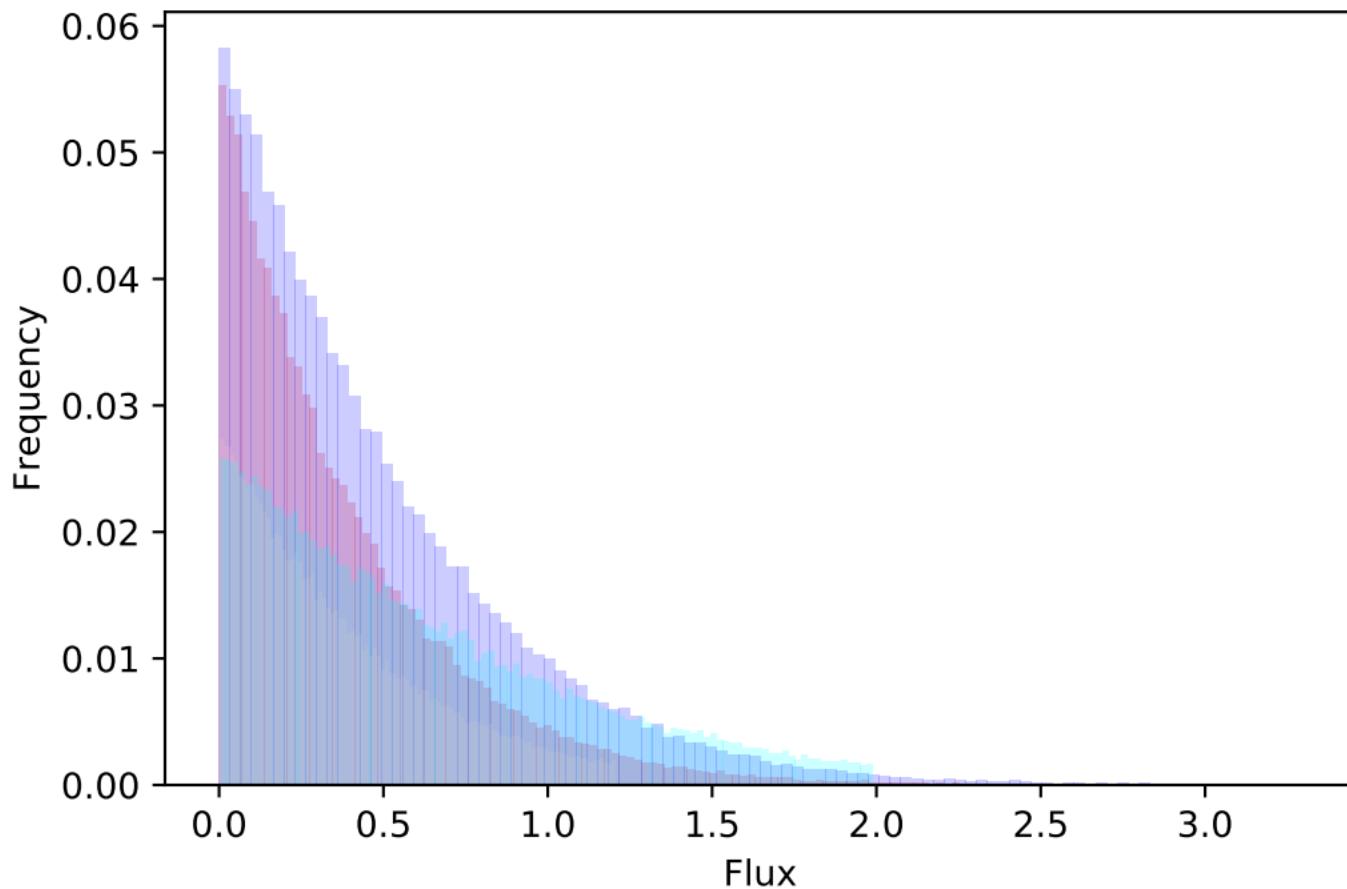
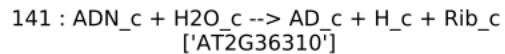


139 : NADPH_c + TRXox_c --> NADP_c + TRXrd_c
['AT2G41680', '2*AT4G35460', 'AT2G17420']

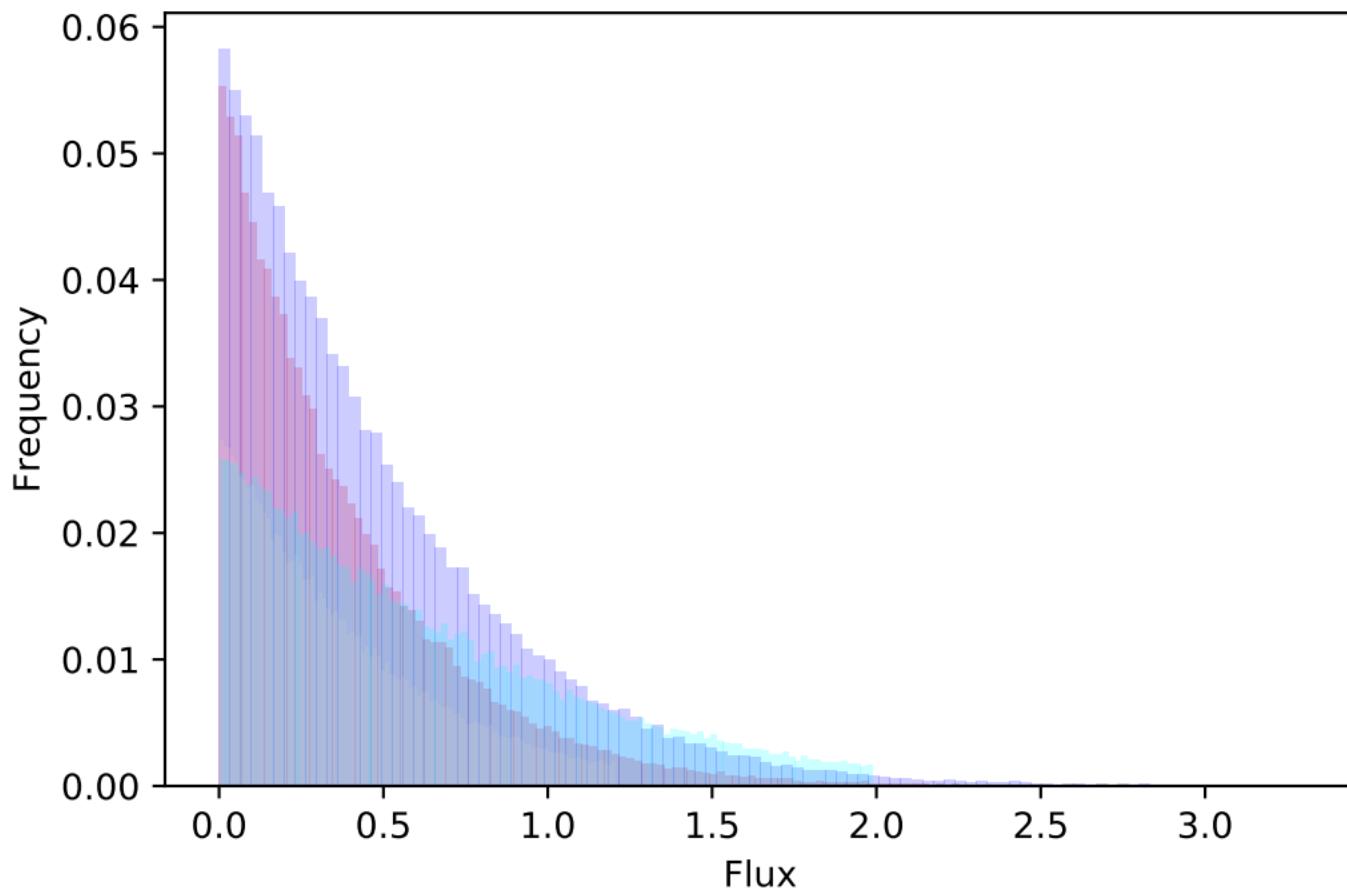


140 : ADN_c + ATP_c --> ADP_c + AMP_c + H_c
['AT5G03300', 'AT3G09820']

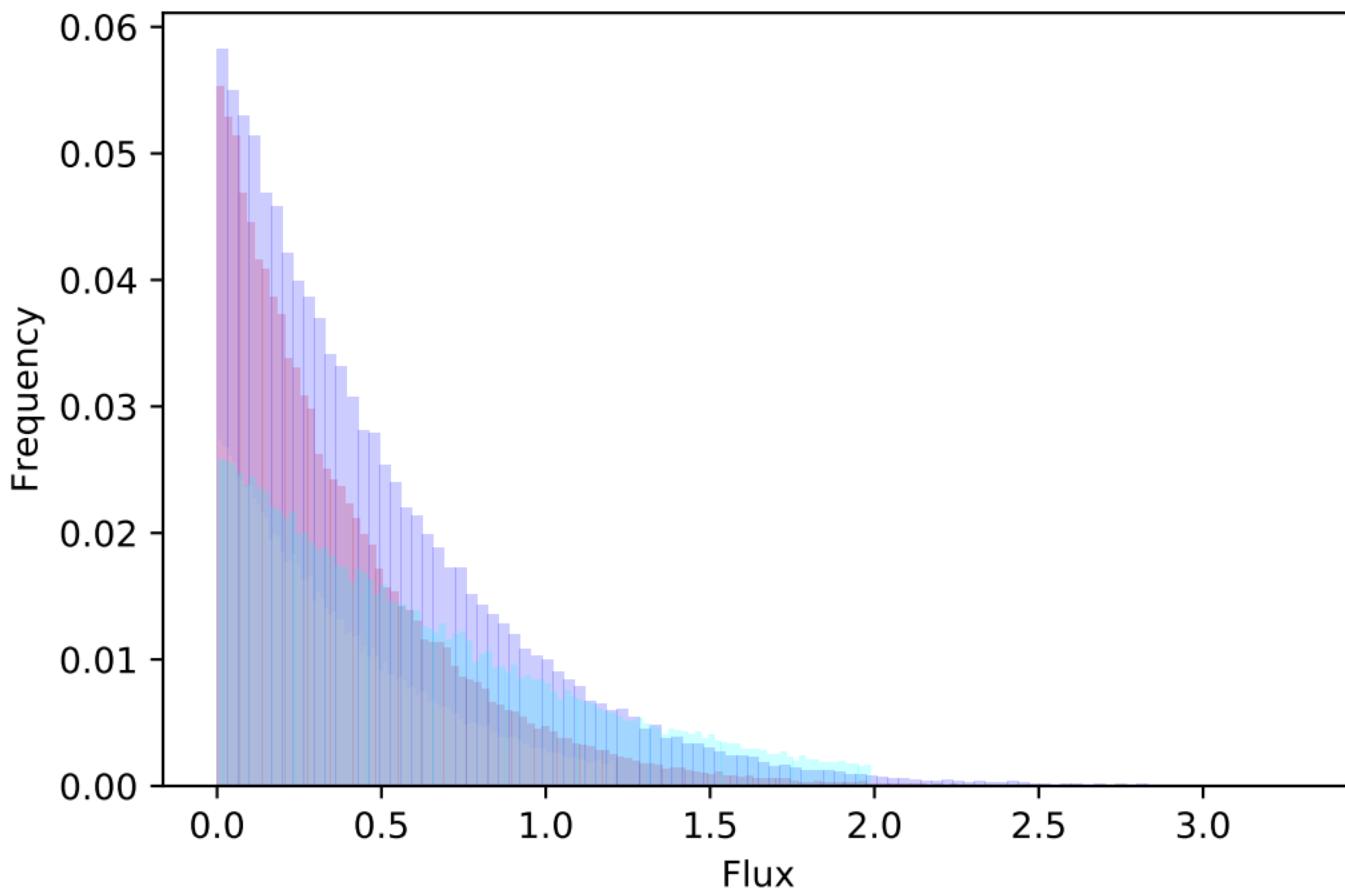


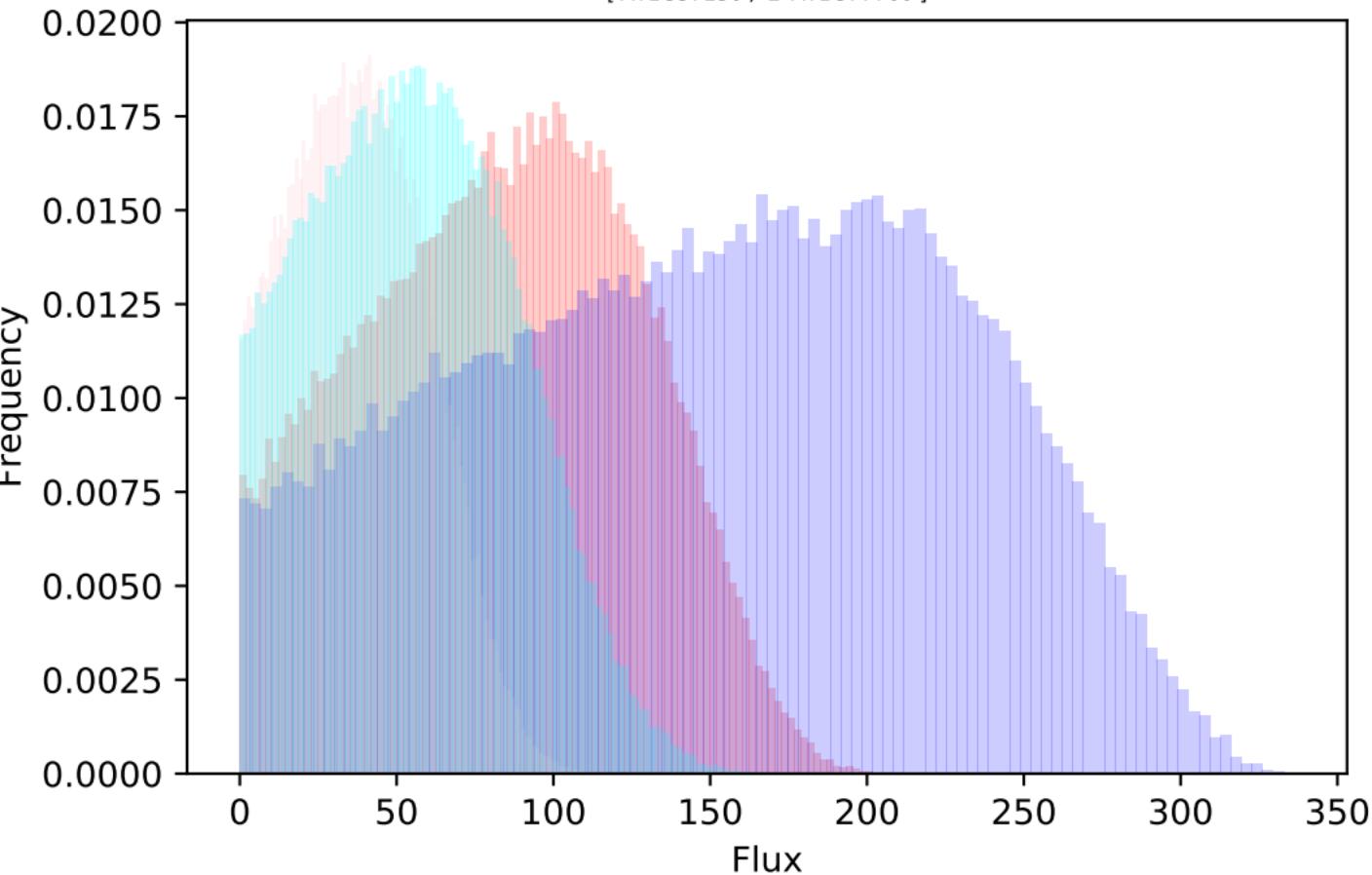
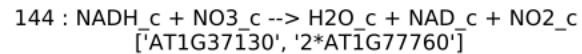


142 : AD_c + PRPP_c --> AMP_c + PPi_c
['AT4G22570', 'AT1G80050', 'AT5G11160', 'AT1G27450', '2*AT4G12440']

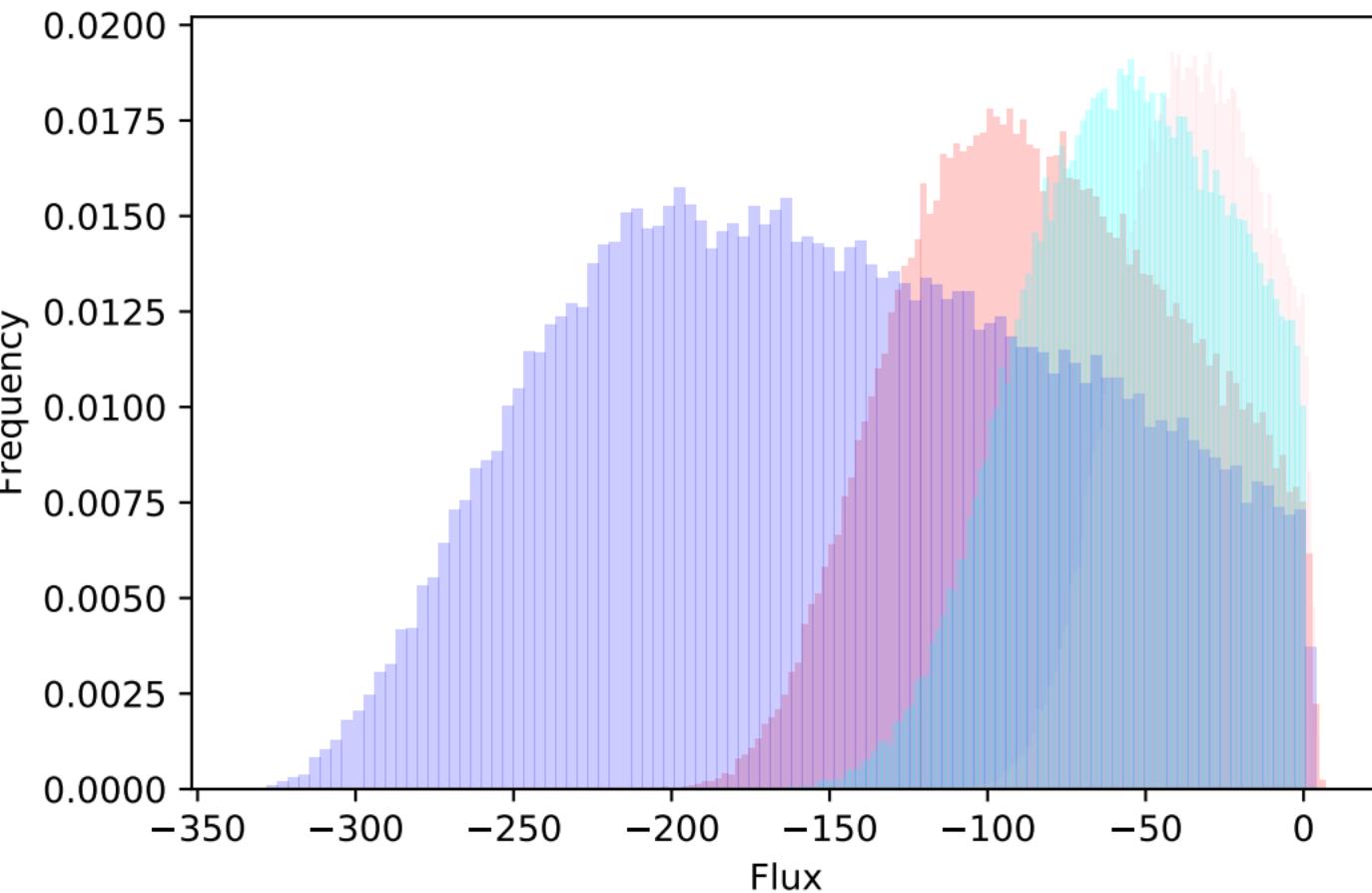


143 : ATP_h + Rib_h --> ADP_h + H_h + R5P_h
['AT1G17160']

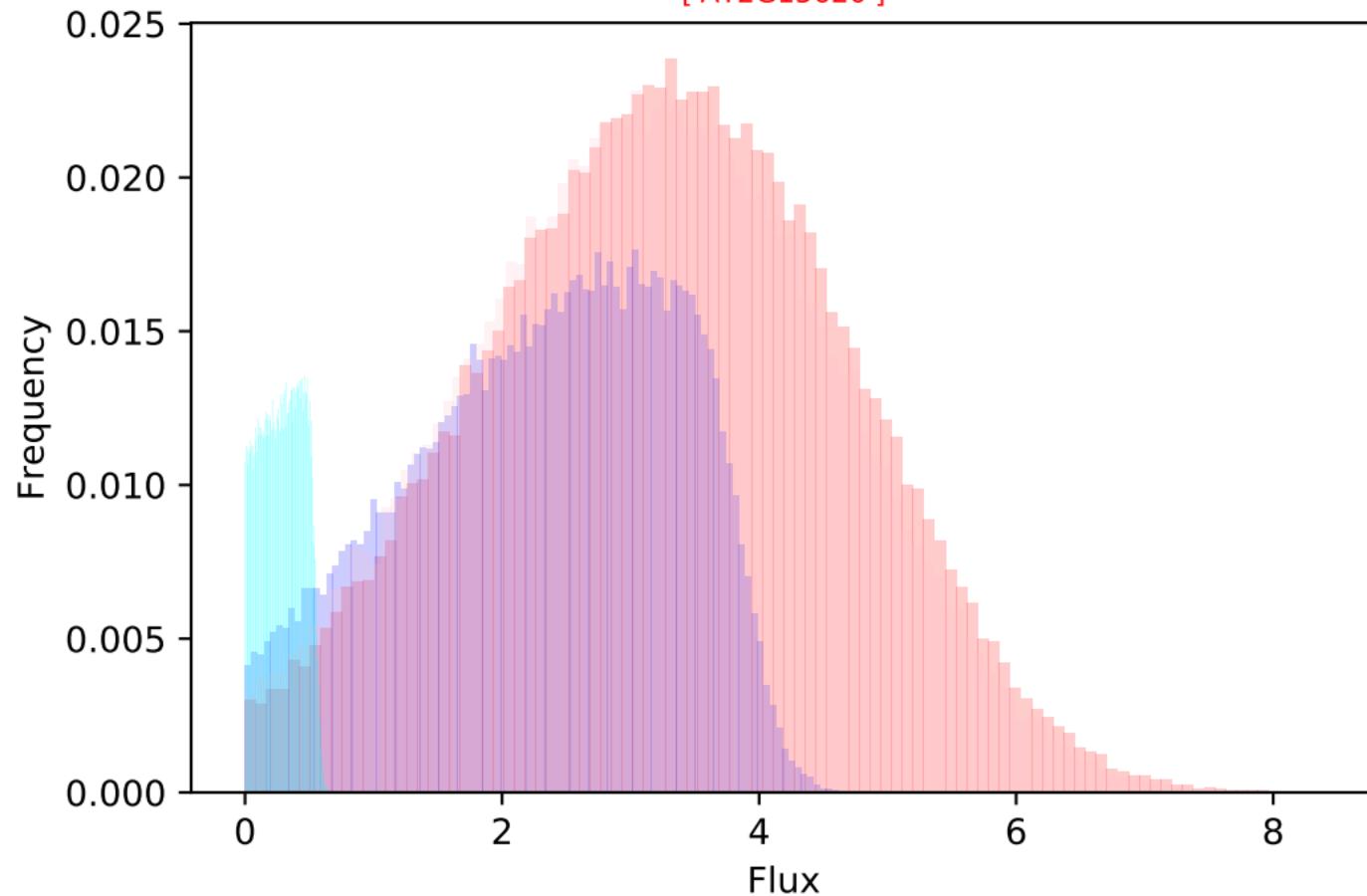




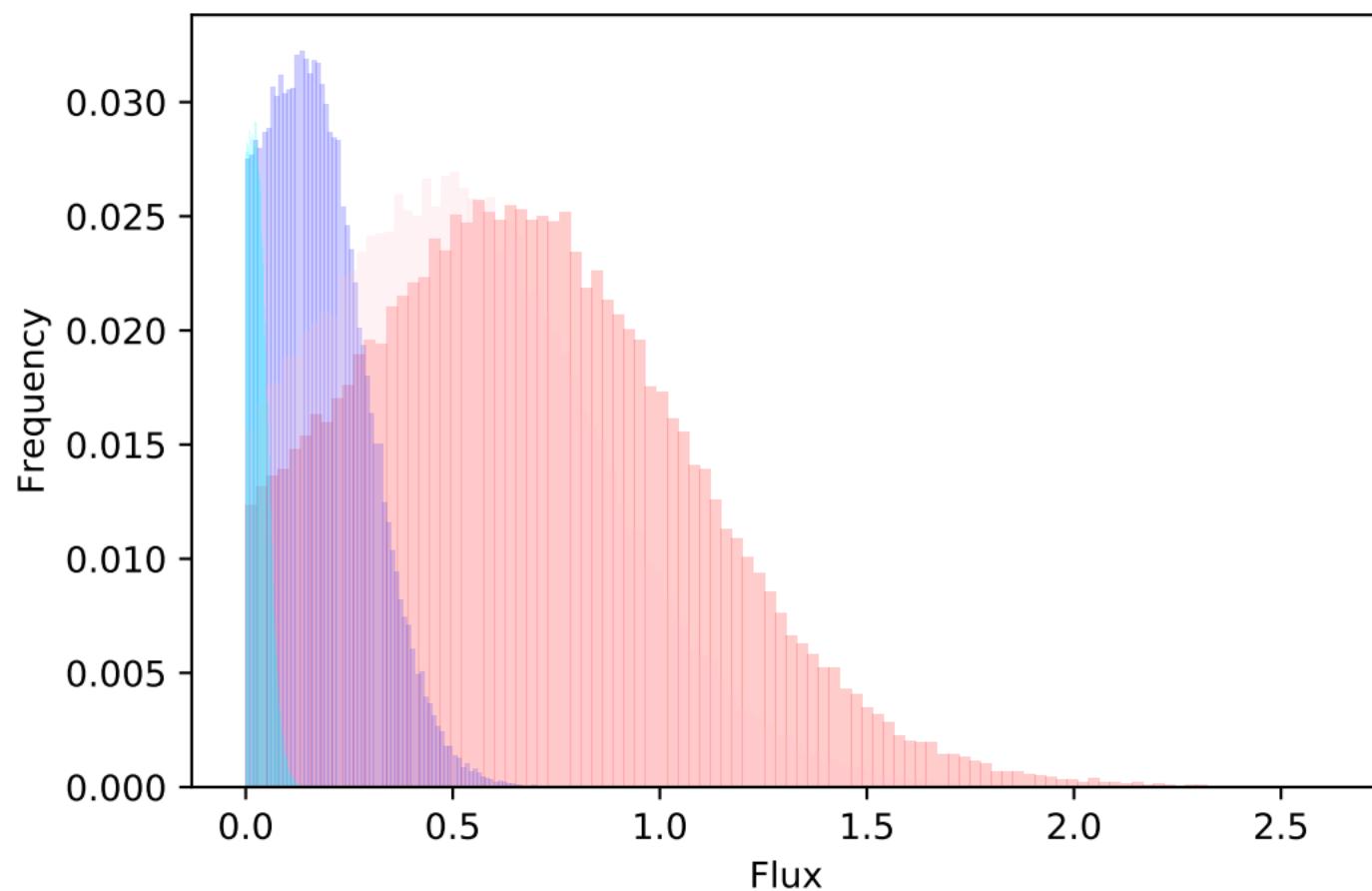
145 : NADPH_c + NO3_c <=> H2O_c + NADP_c + NO2_c
['AT1G37130', '2*AT1G77760']



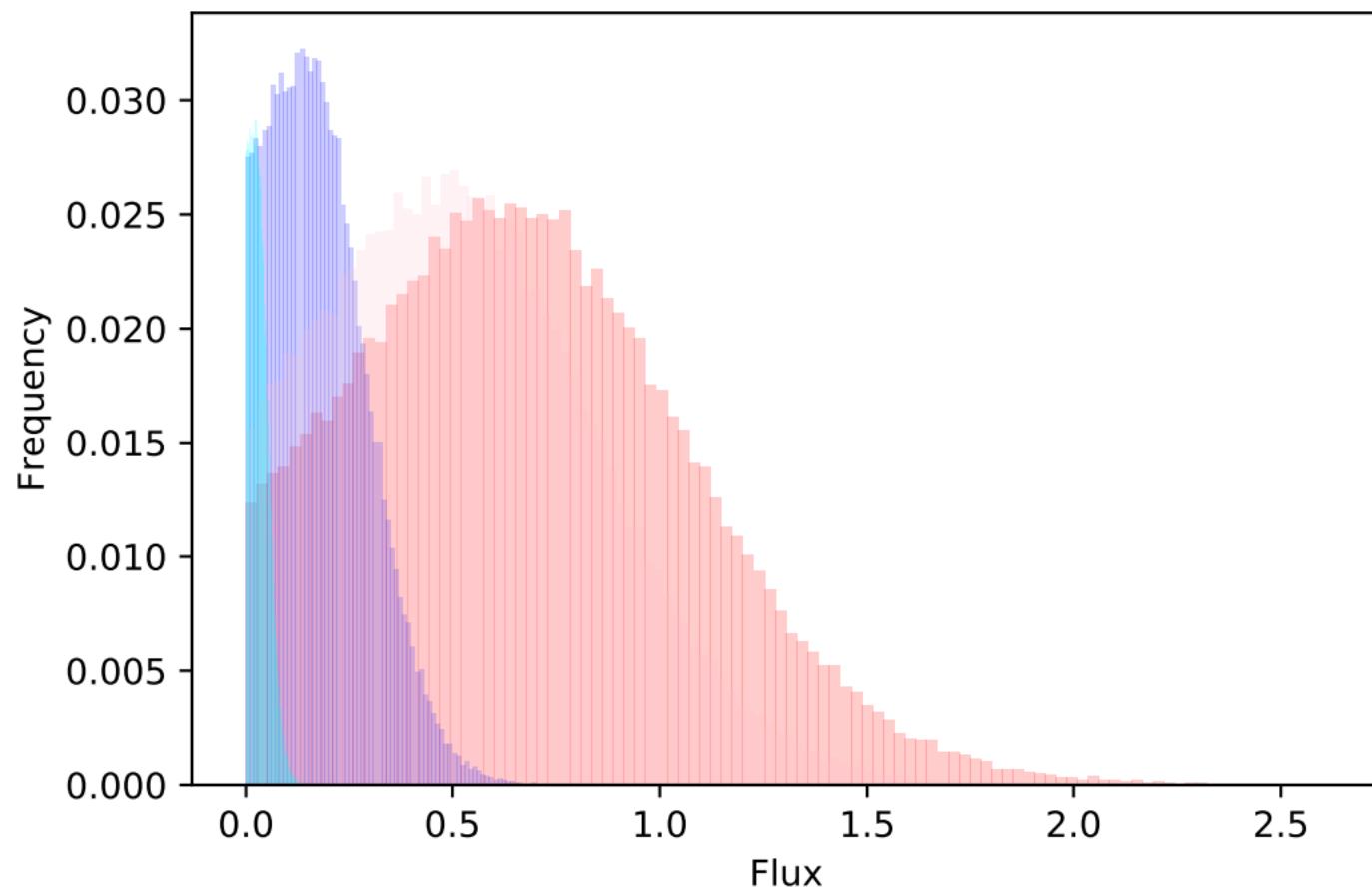
146 : 6.0 Frd_h + 8.0 H_h + NO2_h --> 6.0 Fdox_h + 2.0 H2O_h + NH4_h
['AT2G15620']



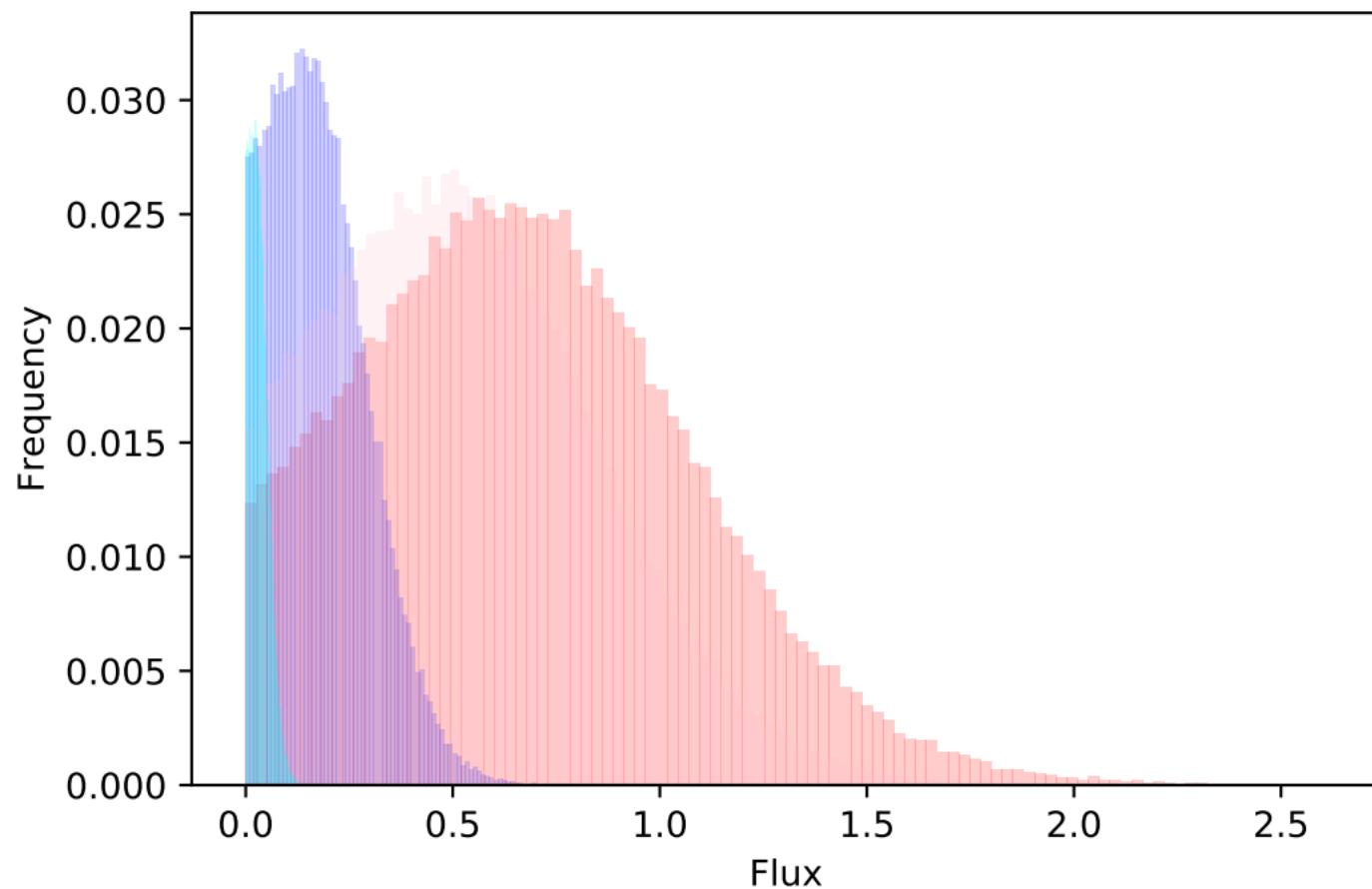
147 : ATP_h + SO4_h --> APS_h + PPi_h
['4*AT3G22890', 'AT4G14680', 'AT5G43780', 'AT1G19920']



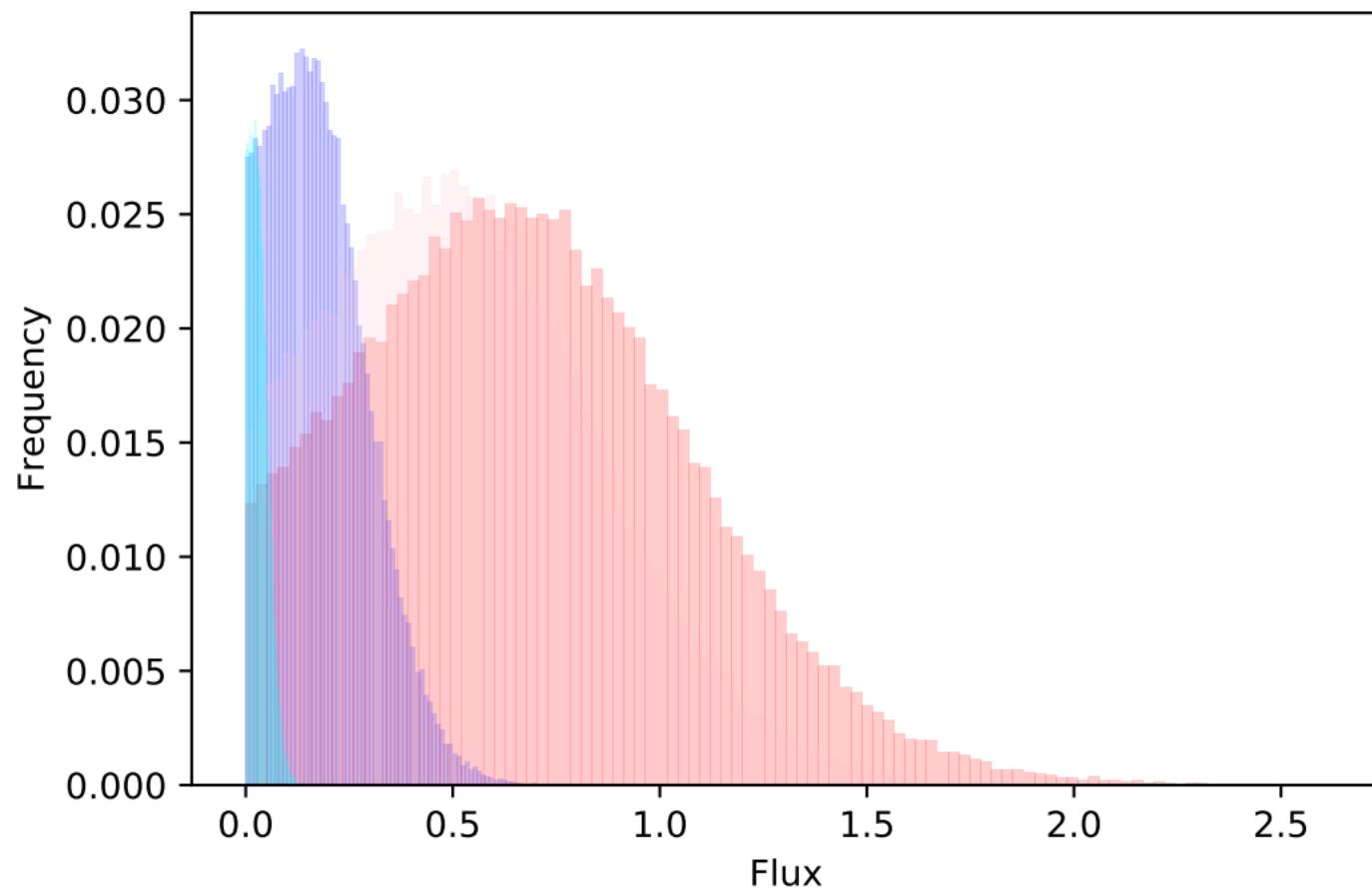
148 : APS_h + 2.0 GSH_h --> AMP_h + GSSG_h + H_h + SO3_h
['AT4G21990', 'AT4G04610', 'AT1G62180']



149 : GSSG_h + H_h + NADPH_h --> 2.0 GSH_h + NADP_h
['2*AT3G54660']

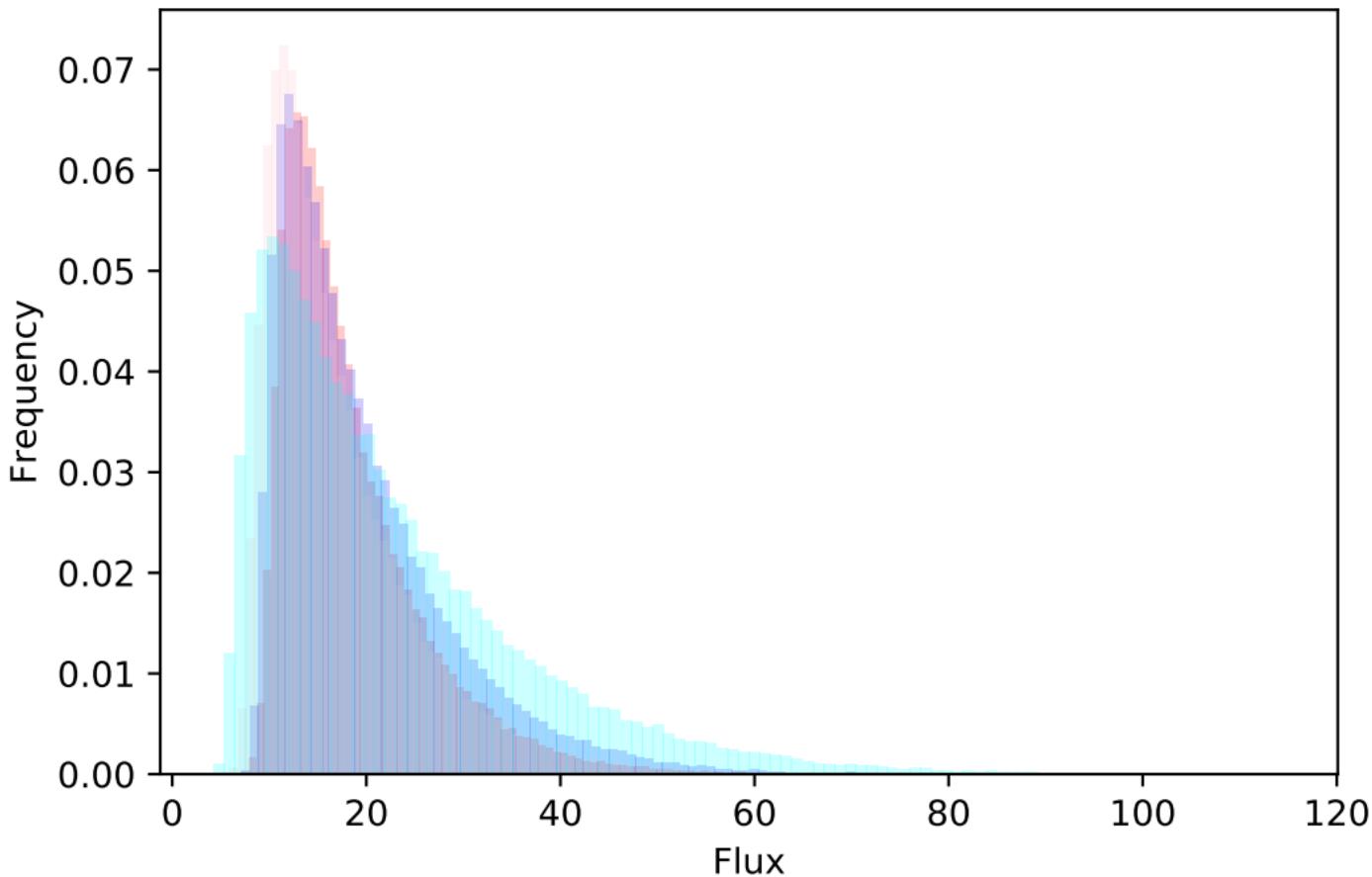


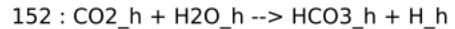
150 : 3.0 Fdrd_h + 7.0 H_h + SO3_h --> 3.0 Fdox_h + 3.0 H2O_h + H2S_h
['AT5G04590']



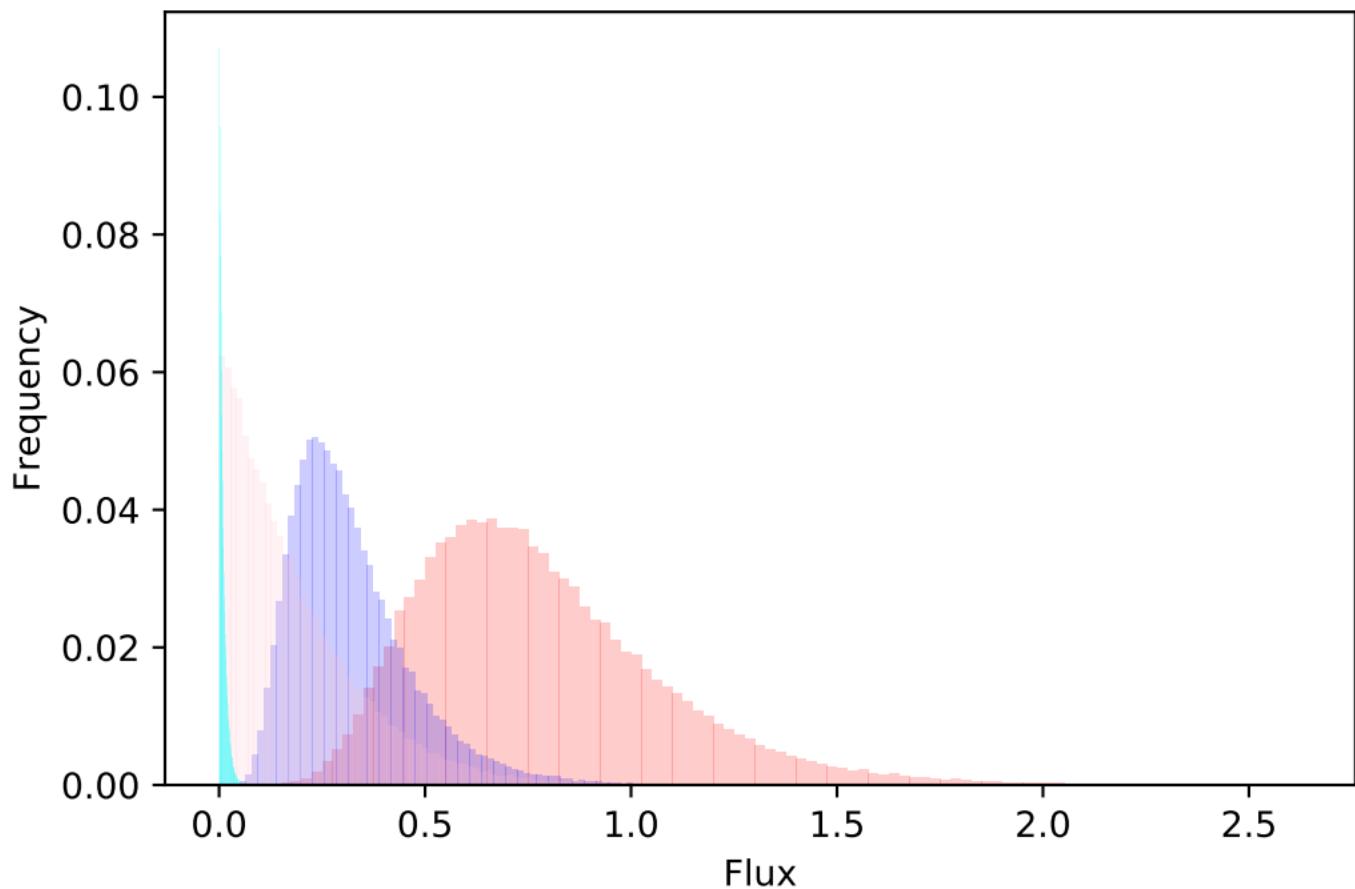


['AT4G21000', 'AT5G04180', 'AT1G08065', 'AT3G52720', '8*AT1G23730', 'AT4G20990', 'AT5G14740', 'AT2G28210']

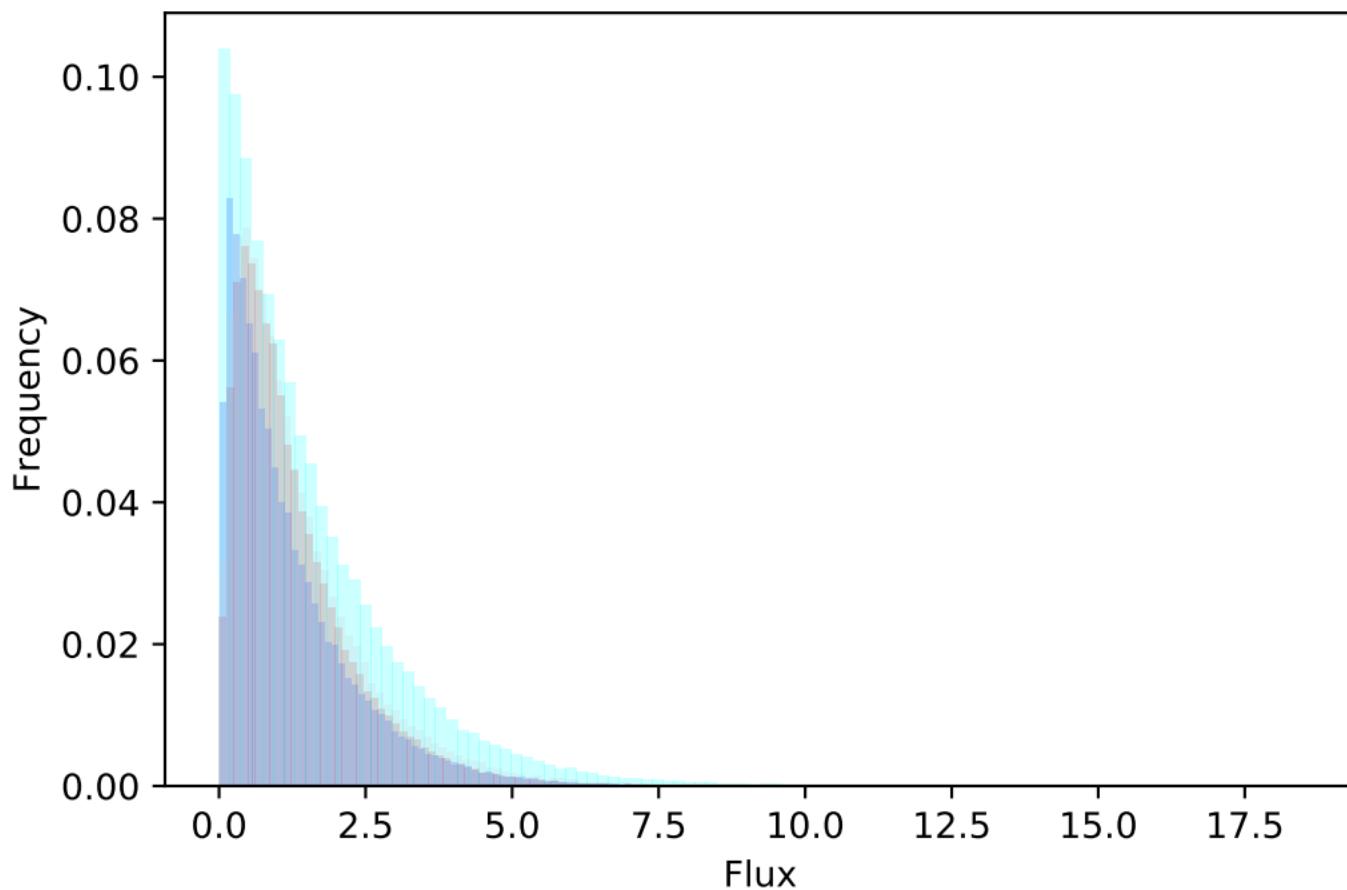




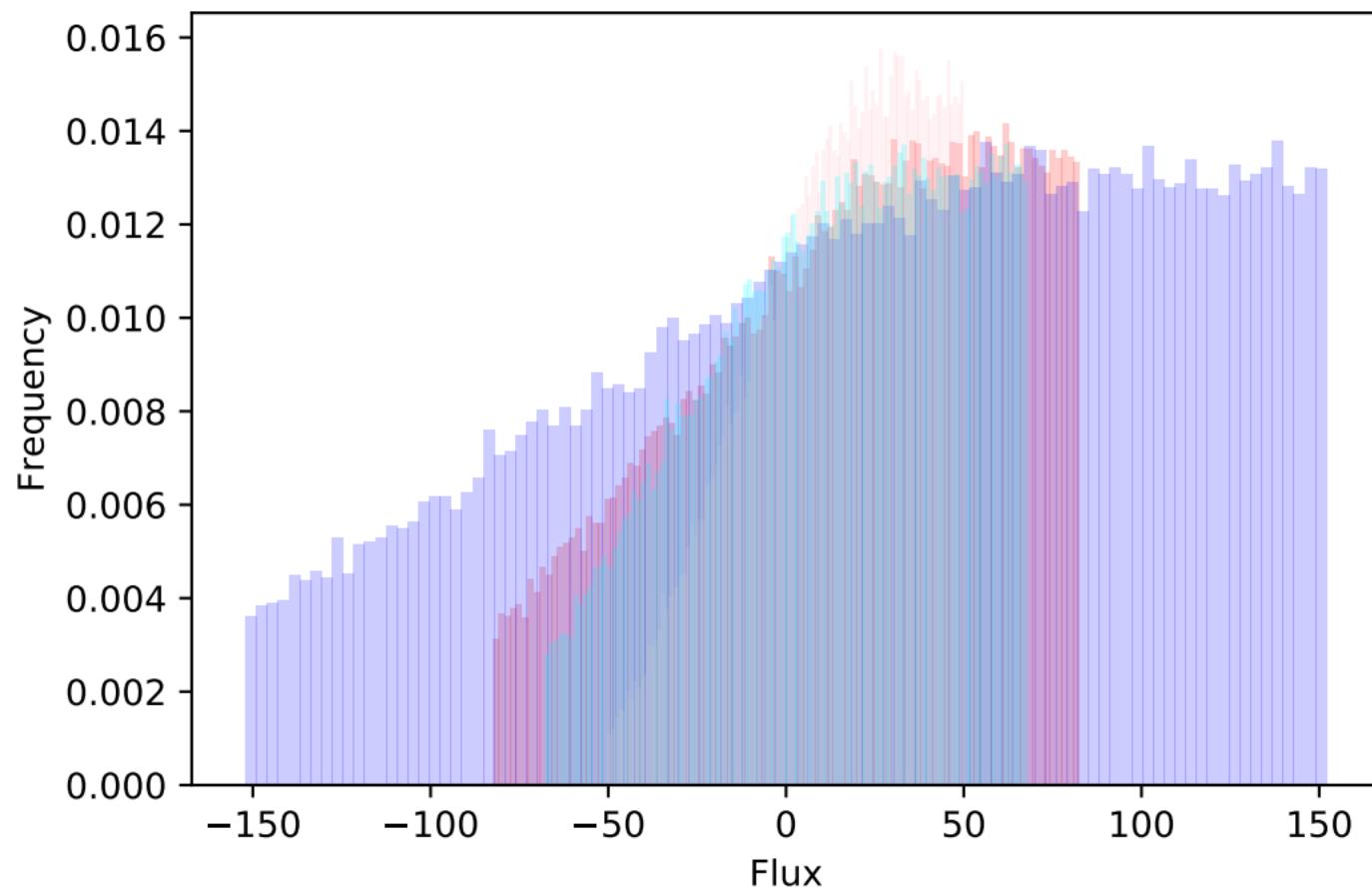
['AT1G70410', 'AT1G58180', 'AT3G01500', 'AT3G52720', 'AT4G33580', 'AT1G08080', 'AT4G20990', 'AT5G14740', '8*AT1G23730']



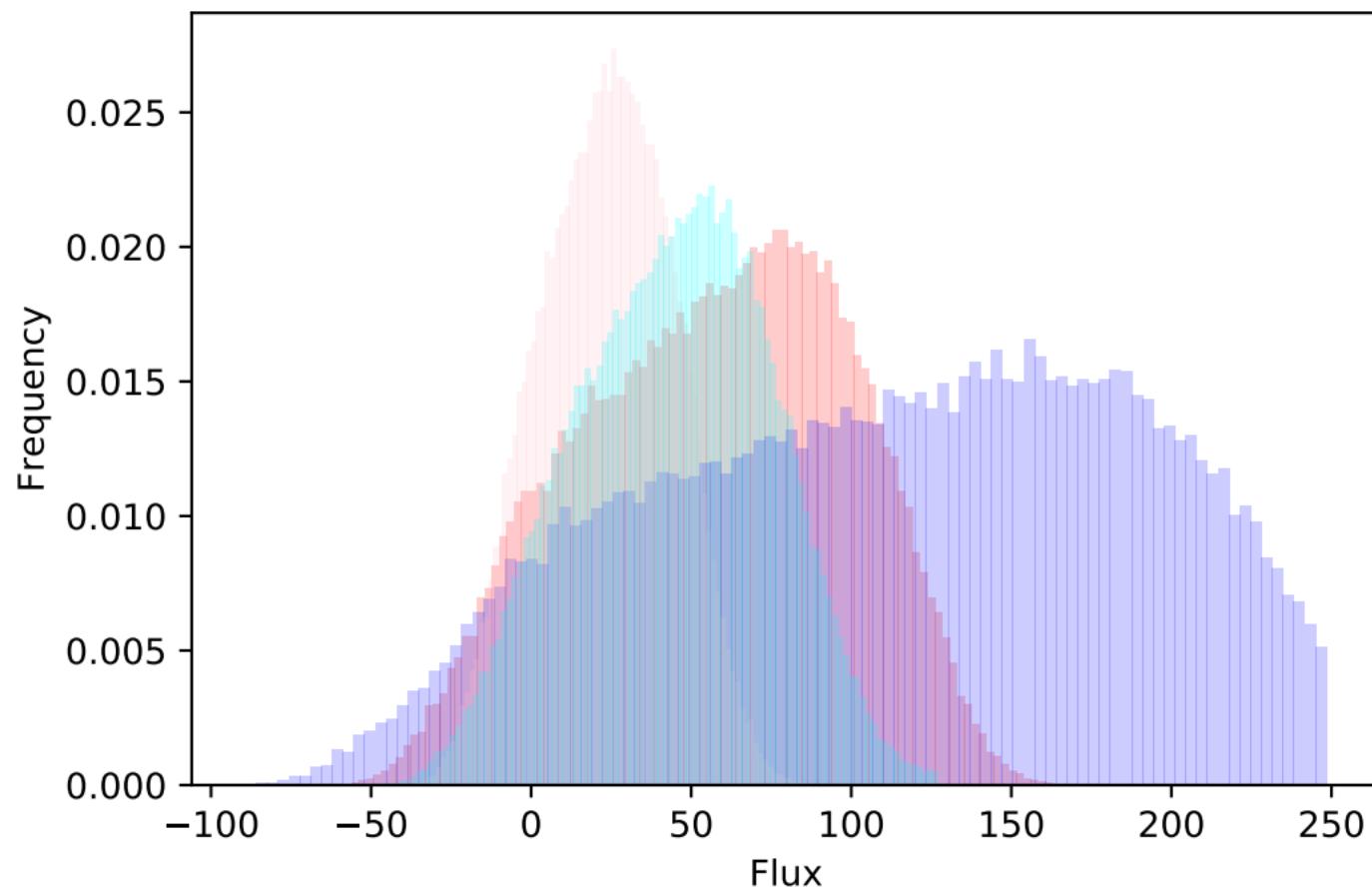
153 : Glu_h + Pyr_h <=> Ala_h + KG_h
['AT1G23310', 'AT1G70580', 'AT1G17290']



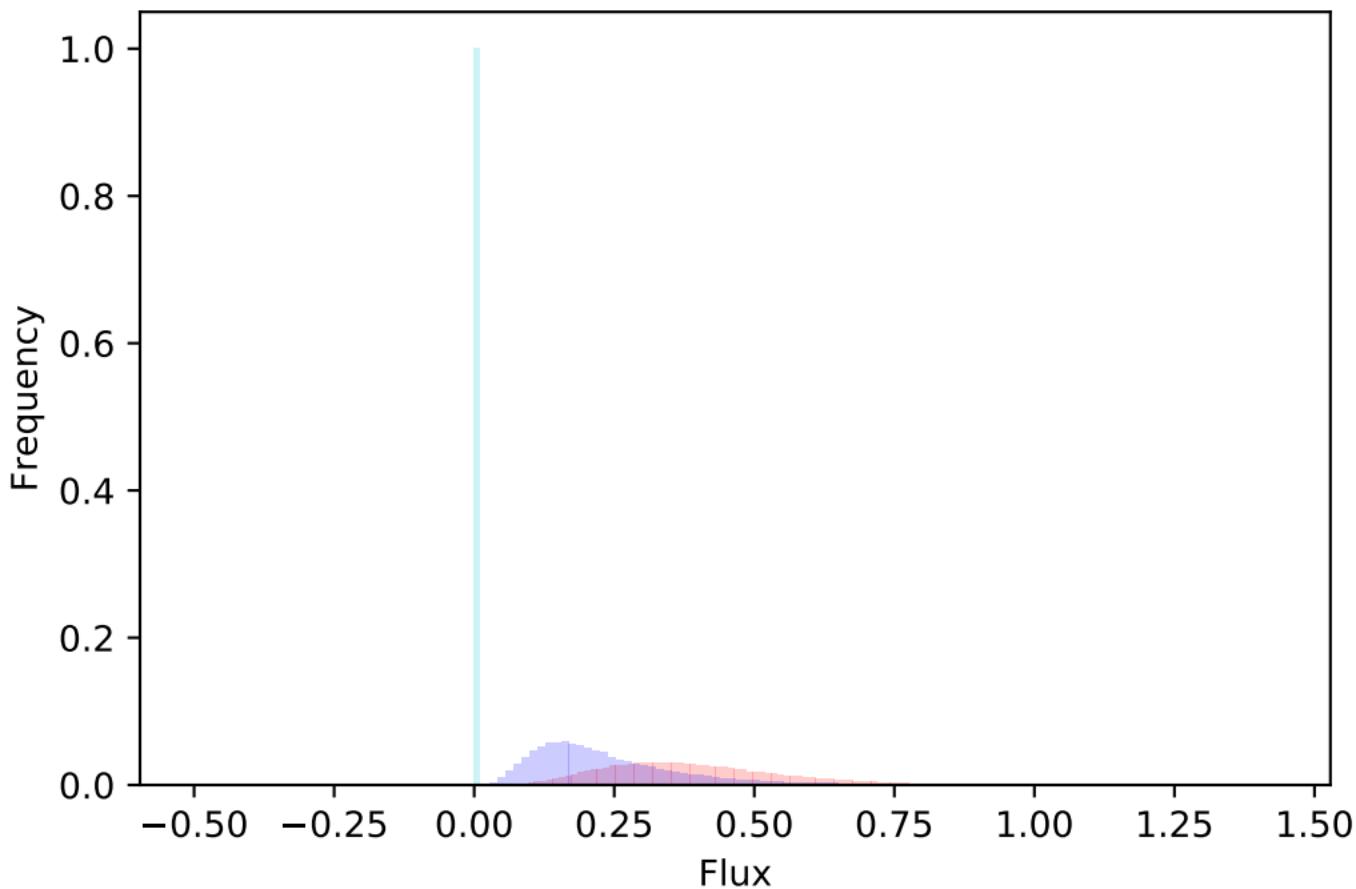
154 : Glu_m + Pyr_m <=> Ala_m + KG_m
['AT1G17290', 'AT1G72330']



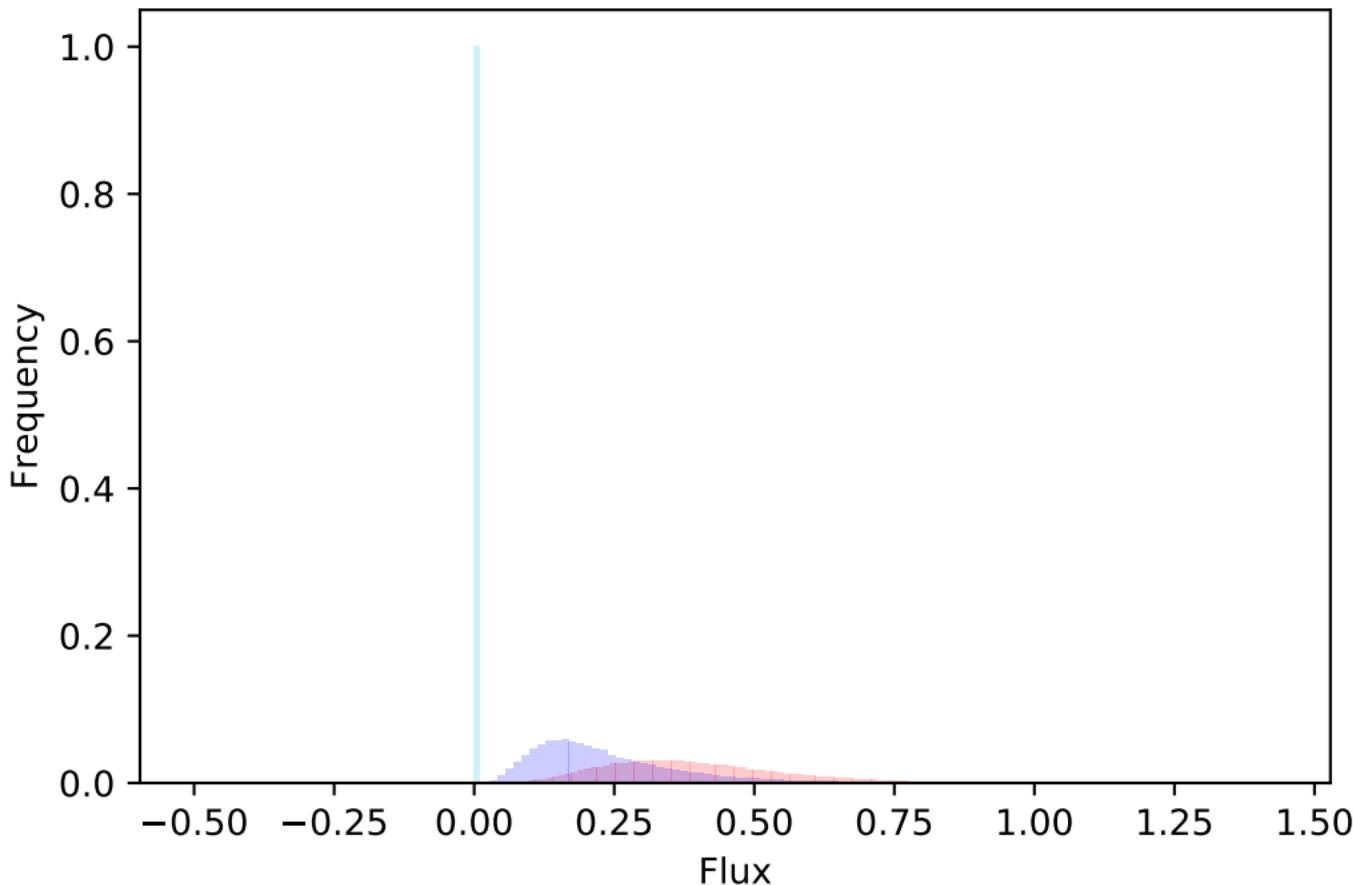
155 : Glu_p + Pyr_p <=> Ala_p + KG_p
['AT1G23310', 'AT1G70580']



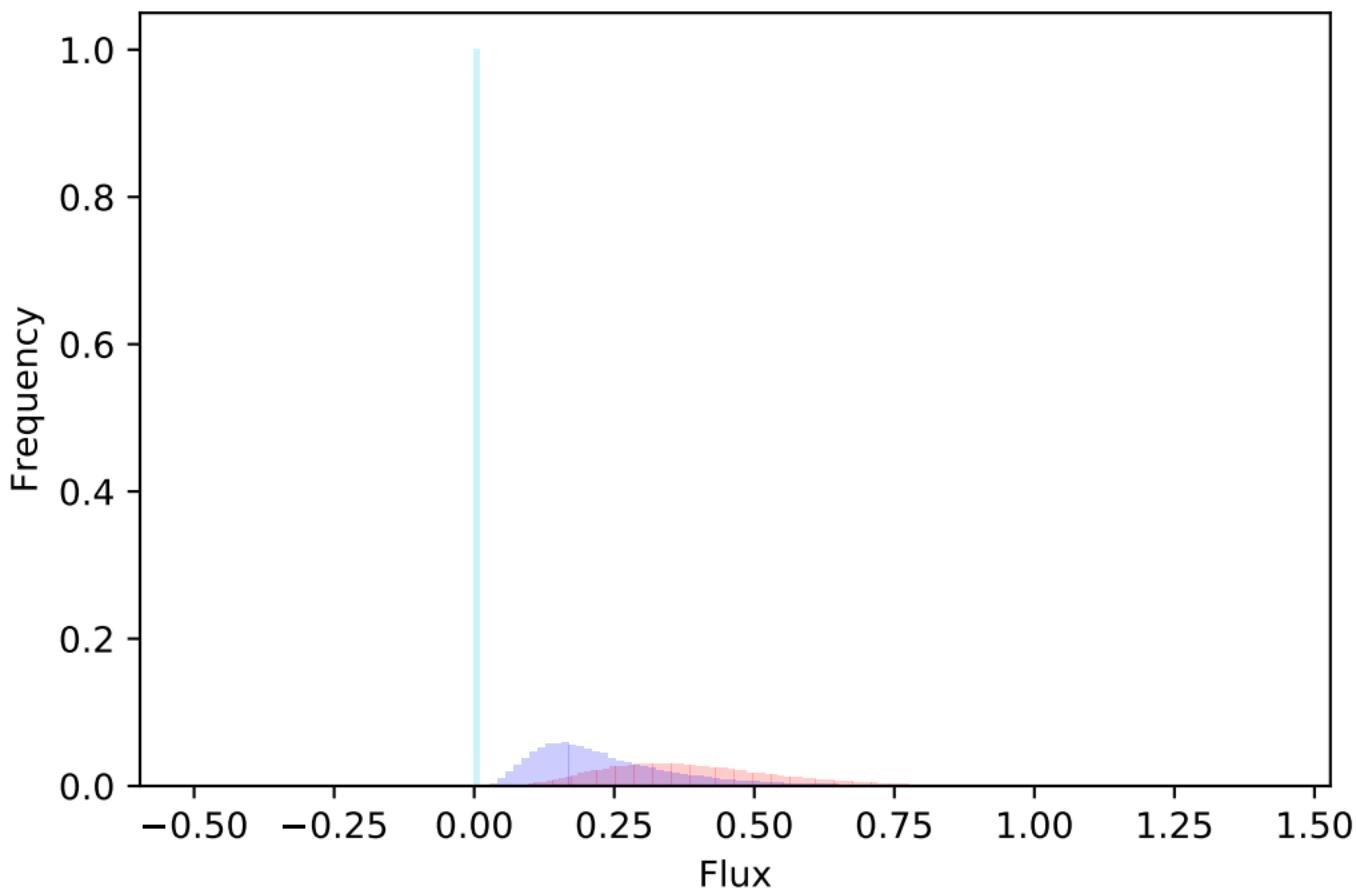
156 : ATP_h + A_DASH_Glu_h --> ADP_h + A_DASH_GluP_h
['6*AT3G57560']



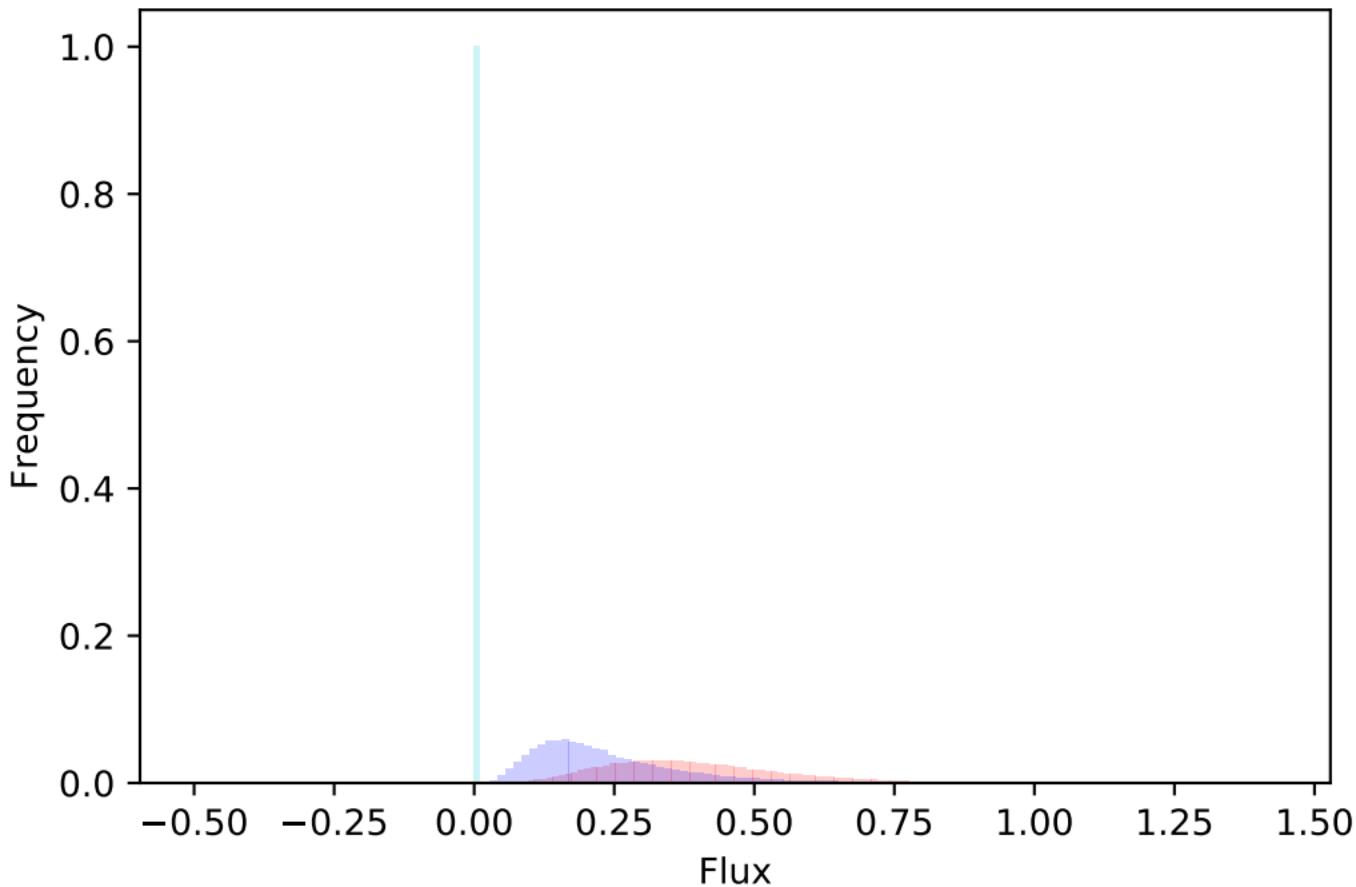
157 : A_DASH_GluP_h + H_h + NADPH_h --> A_DASH_Glu_DASH_SeA_h + NADP_h + Pi_h
['AT2G19940']

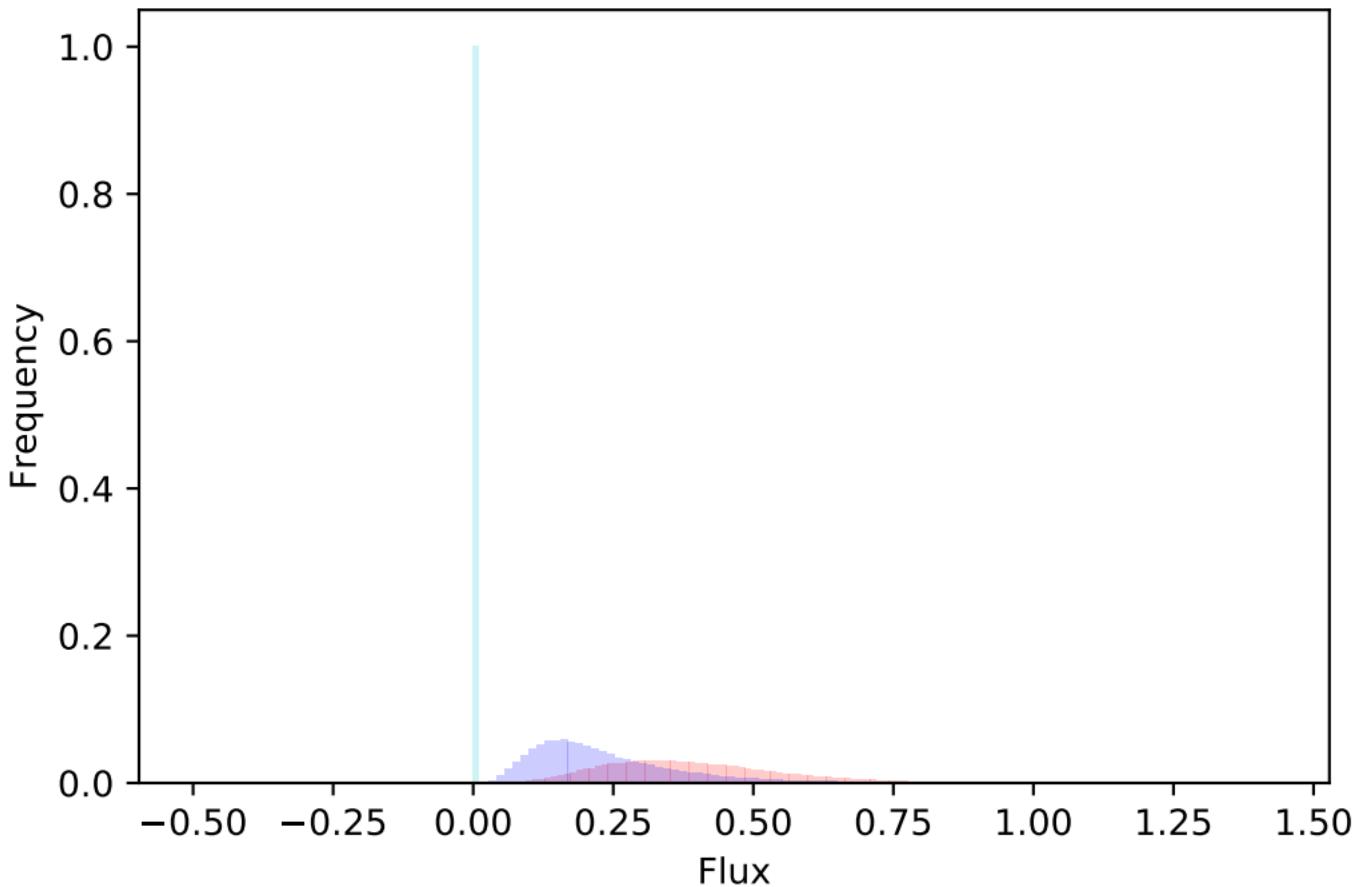
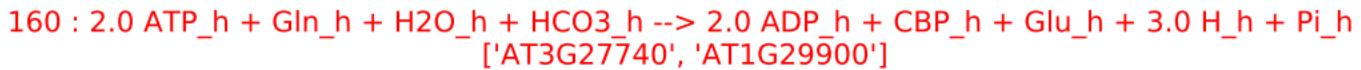


158 : A_DASH_Glu_DASH_SeA_h + Glu_h --> A_DASH_Orn_h + KG_h
['AT1G80600']

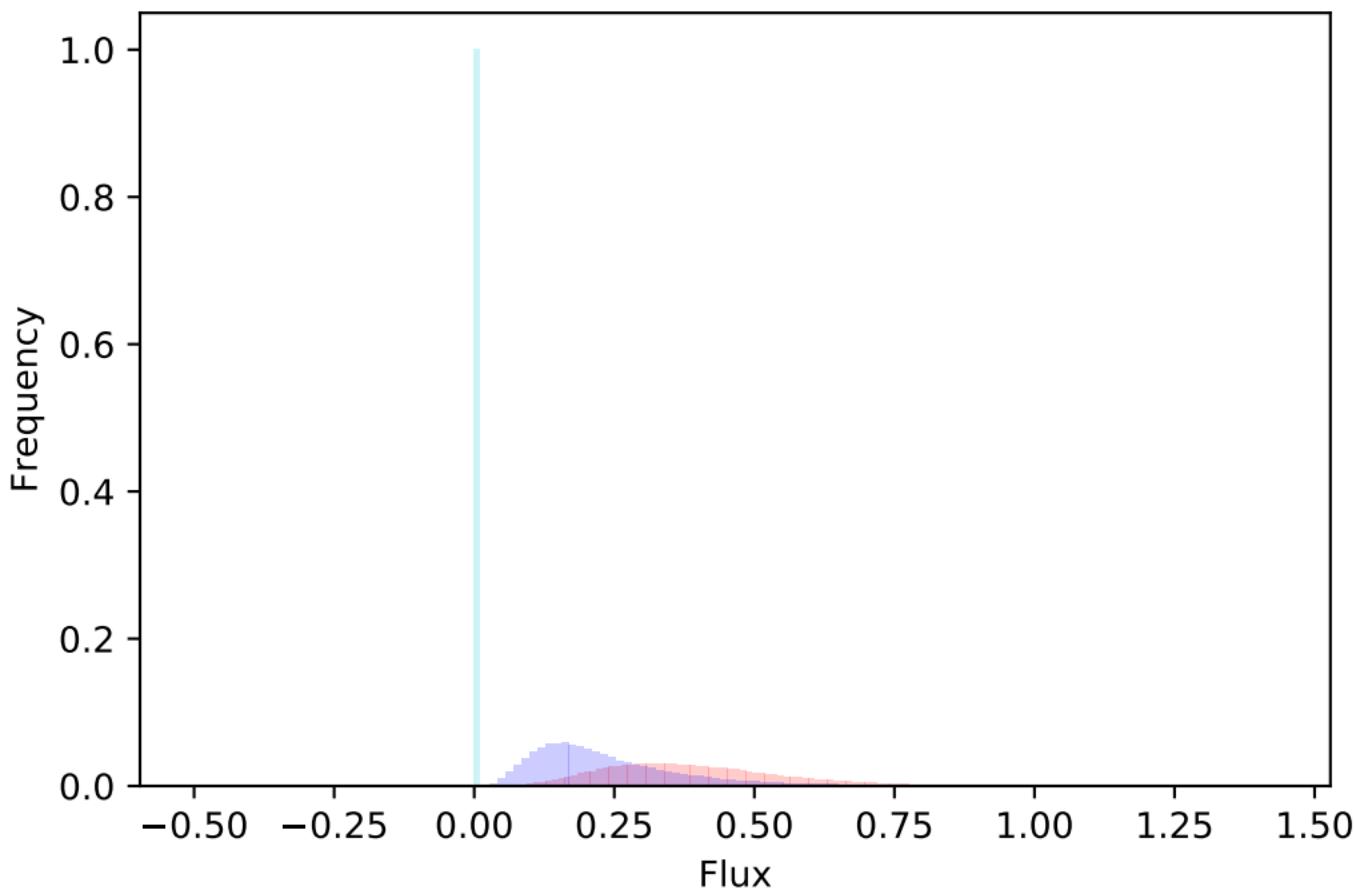


159 : A_DASH_Orn_h + Glu_h --> A_DASH_Glu_h + Orn_h
['AT2G37500']

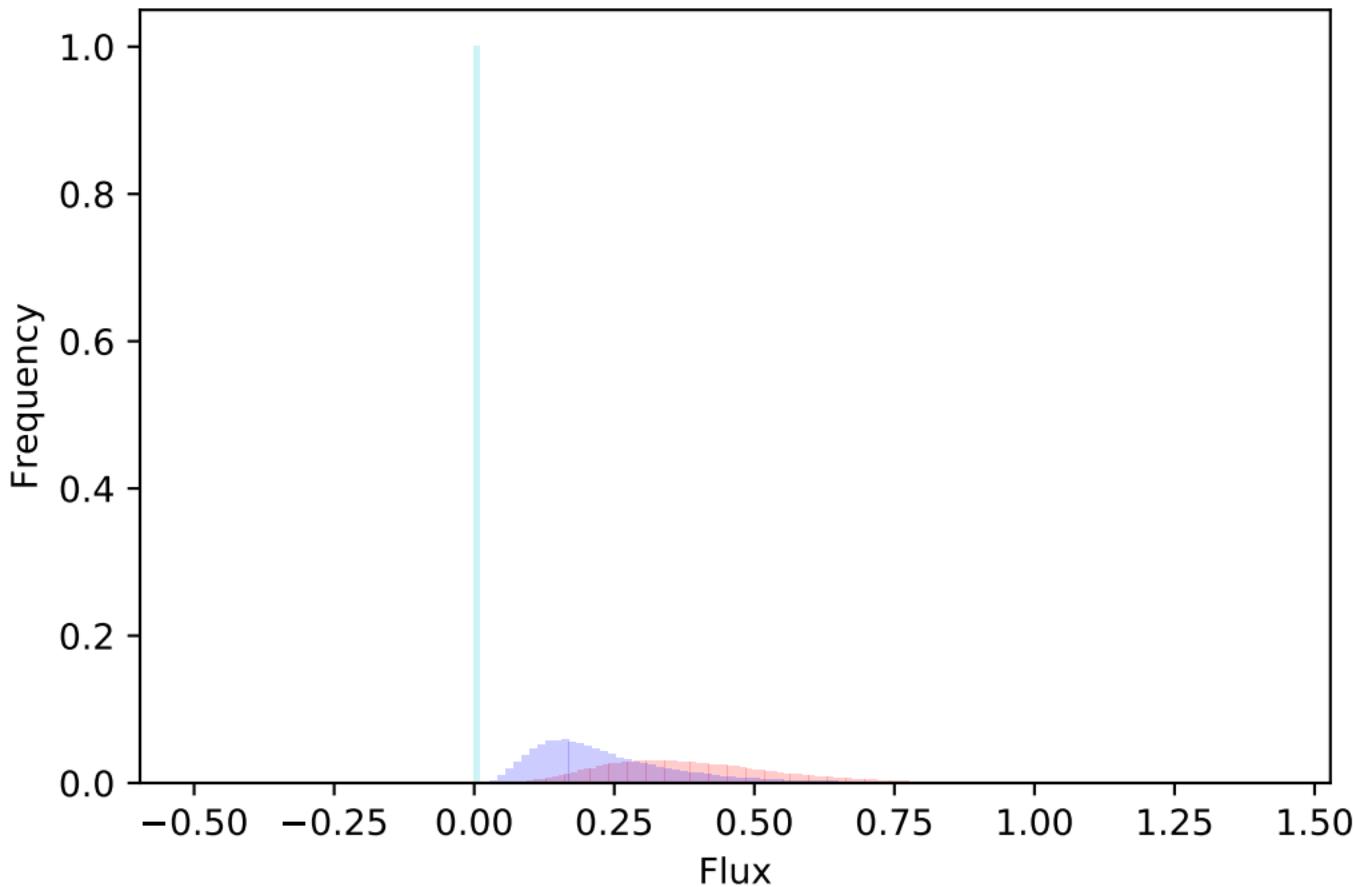




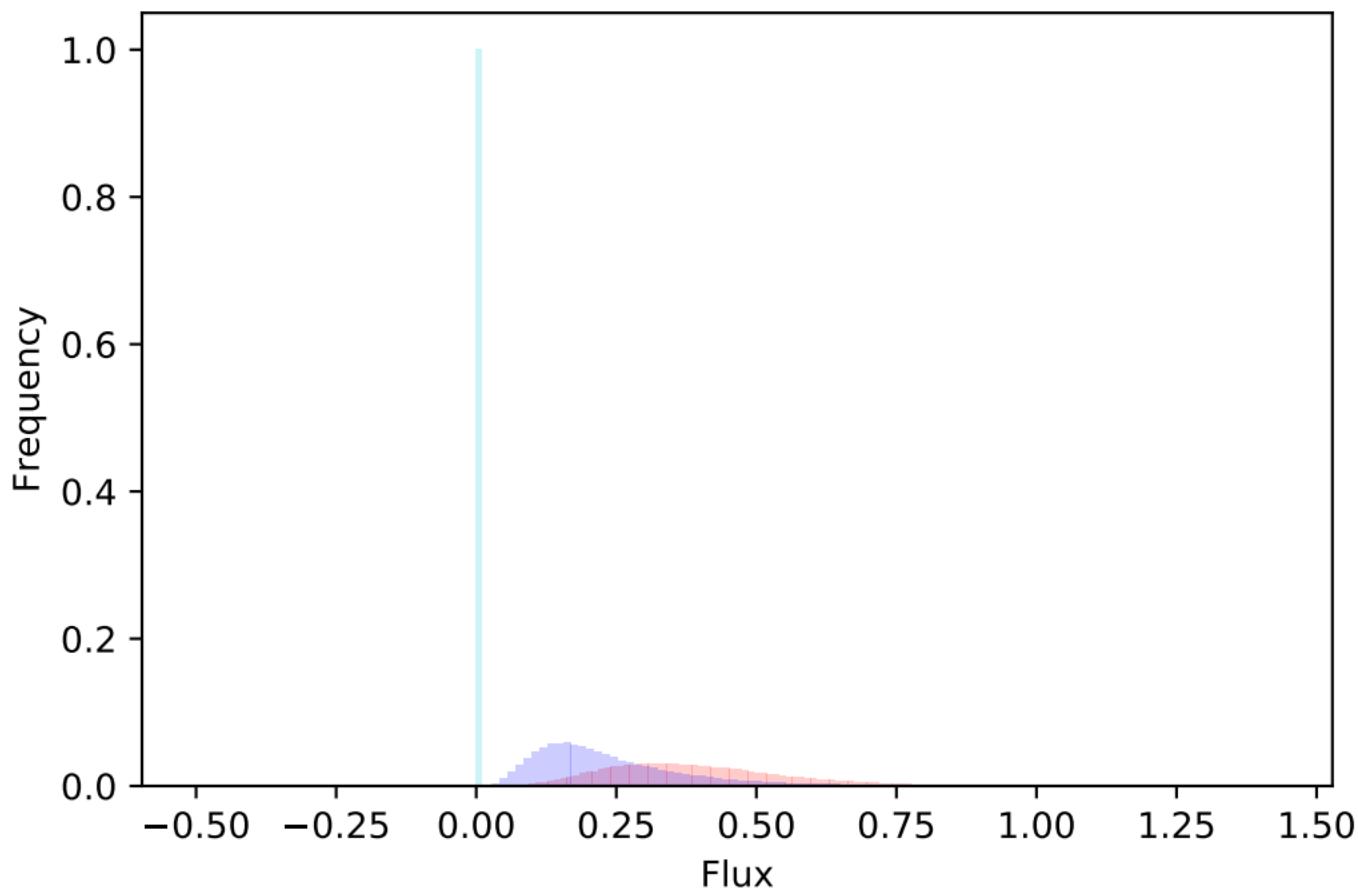
161 : CBP_h + H_h + Orn_h <=> CTL_h + Pi_h
['AT1G75330']



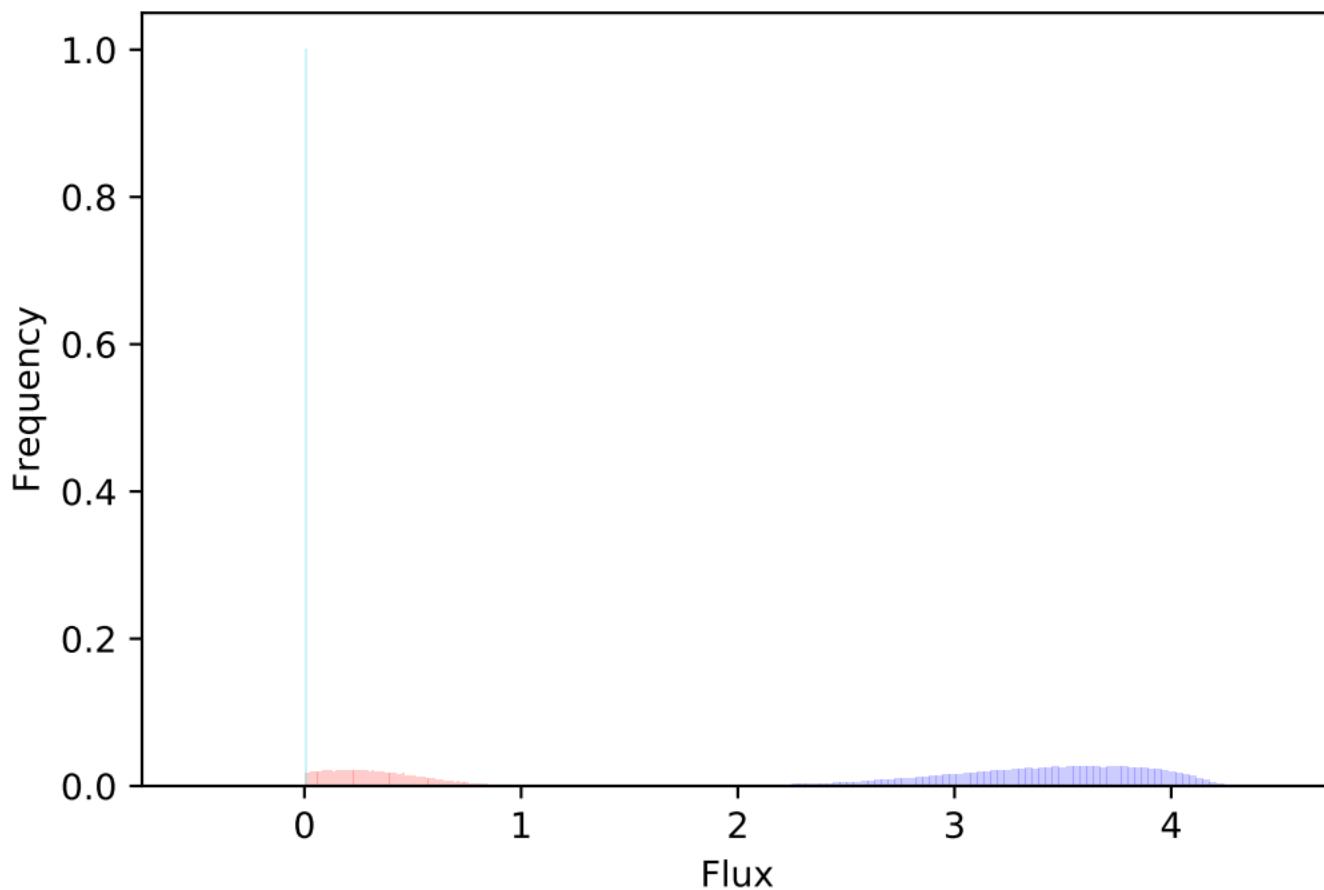
162 : ATP_h + Asp_h + CTL_h --> AMP_h + Arg_DASH_SCA_h + 3.0 H_h + PPi_h
['AT4G24830']

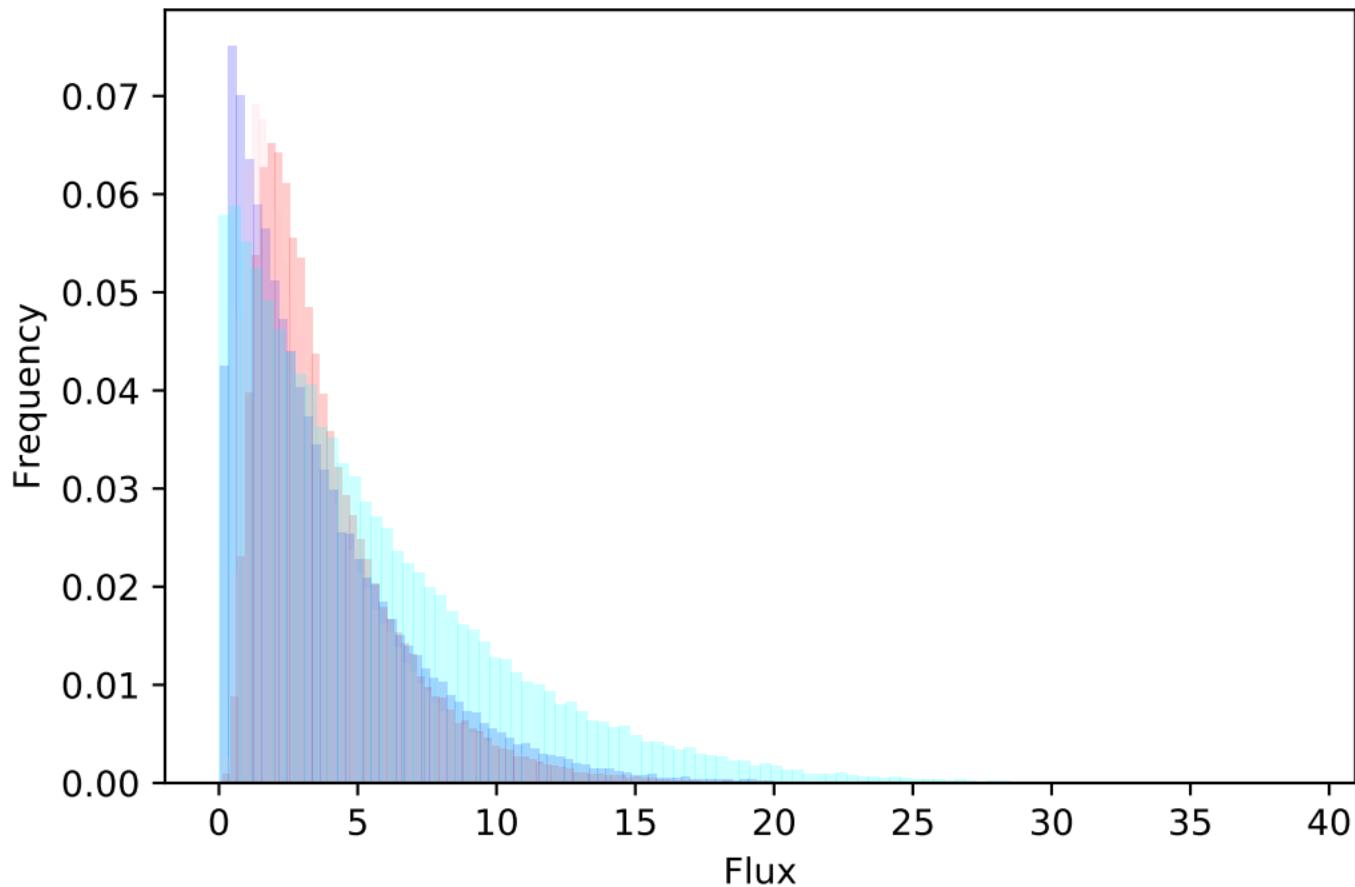
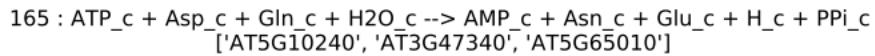


163 : Arg_DASH_SCA_h --> Arg_h + Fum_h
['AT5G10920']

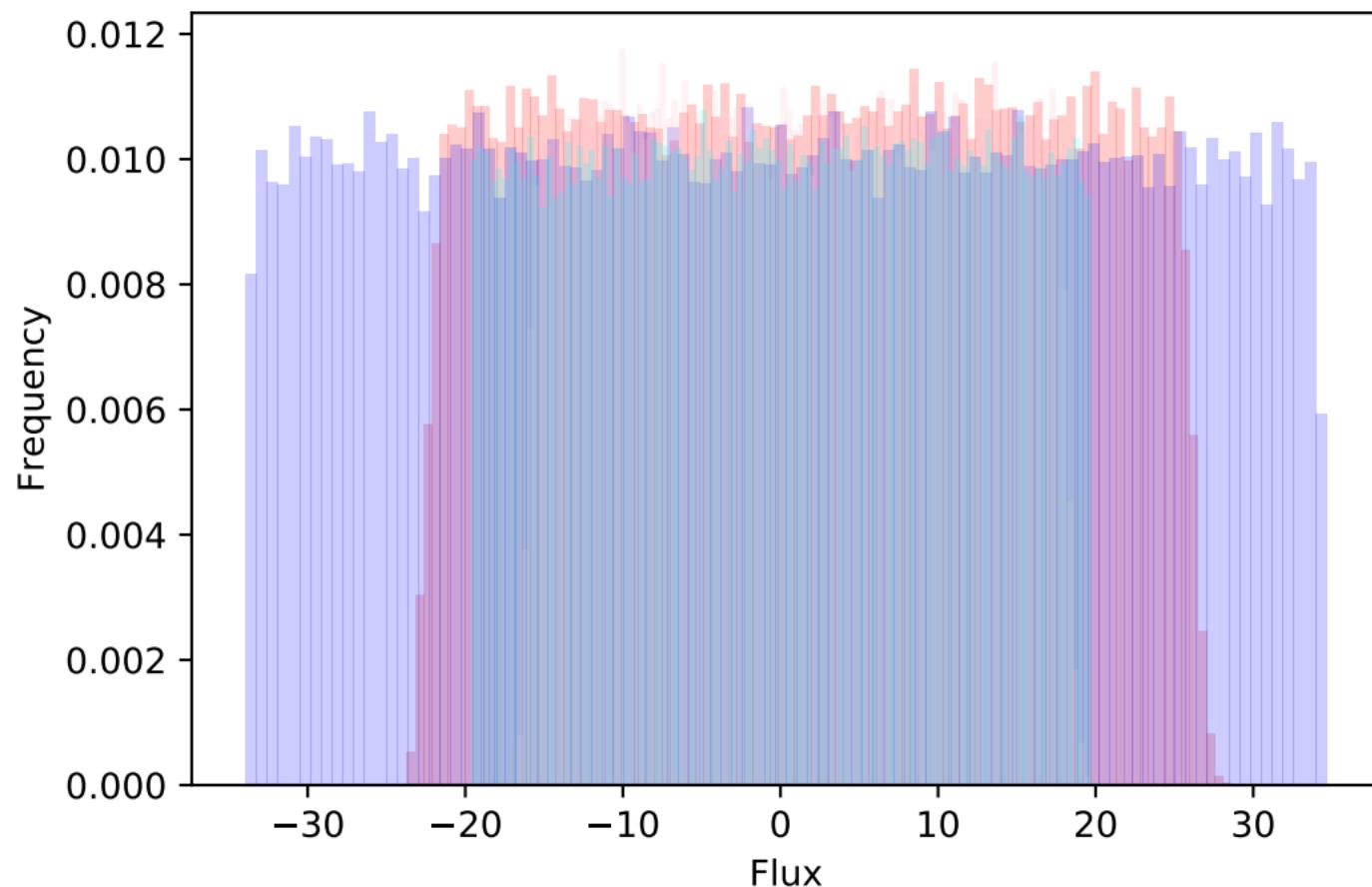


164 : Mal_c --> Fum_c + H2O_c
[AT5G50950]

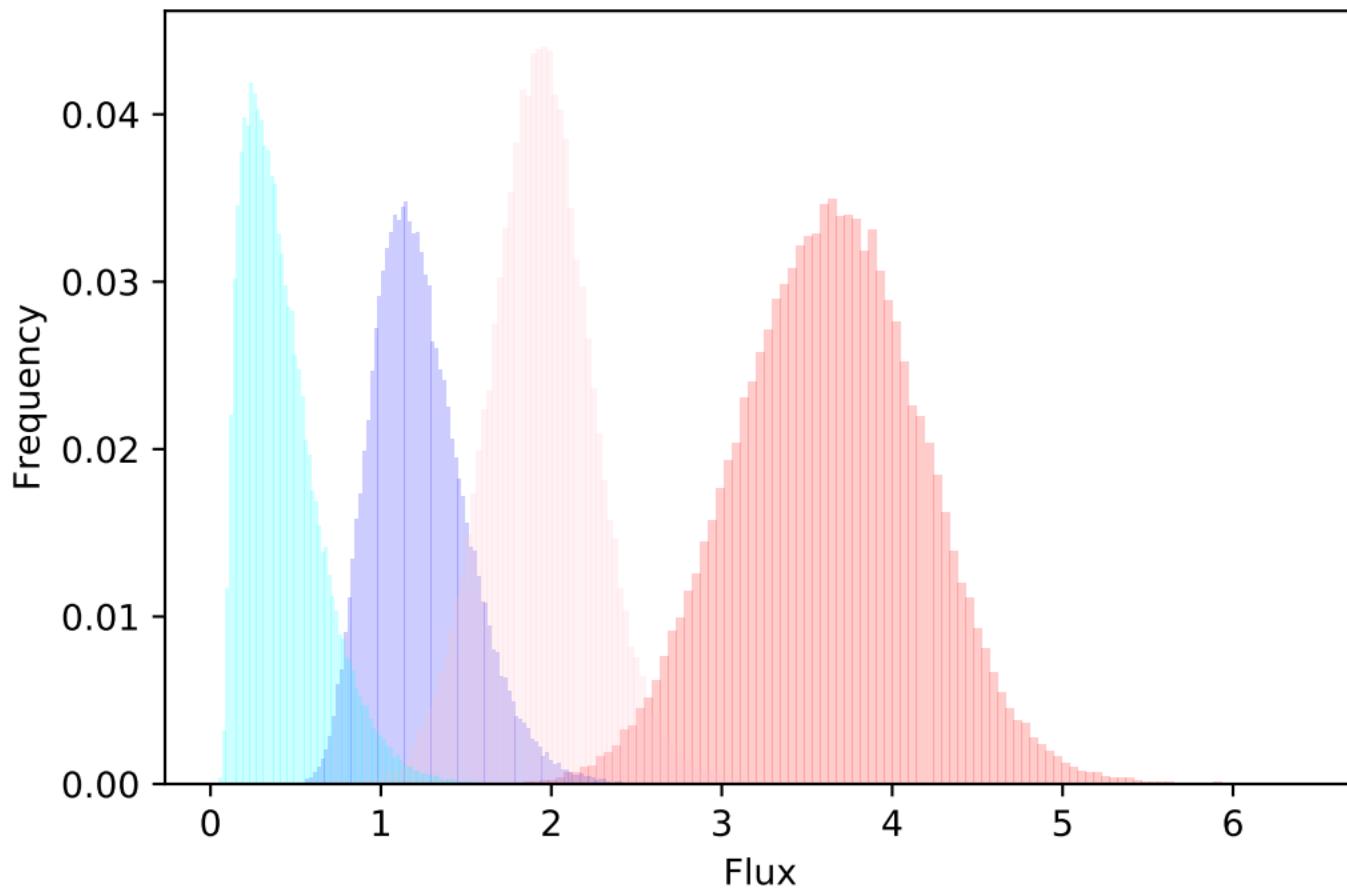




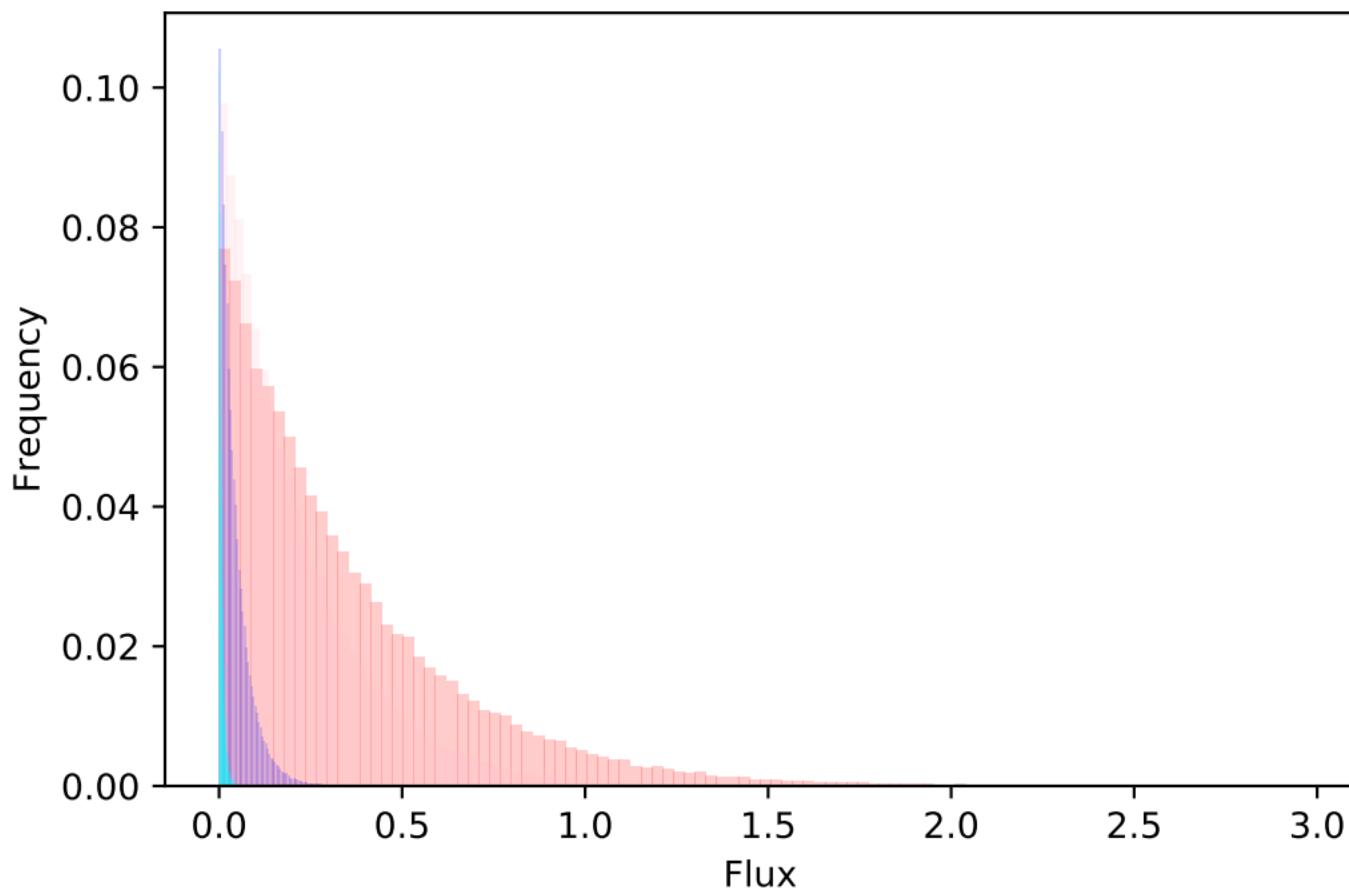
166 : Glu_c + OAA_c <=> Asp_c + KG_c
['AT5G19550', 'AT1G62800', 'AT1G62960', 'AT5G51690']



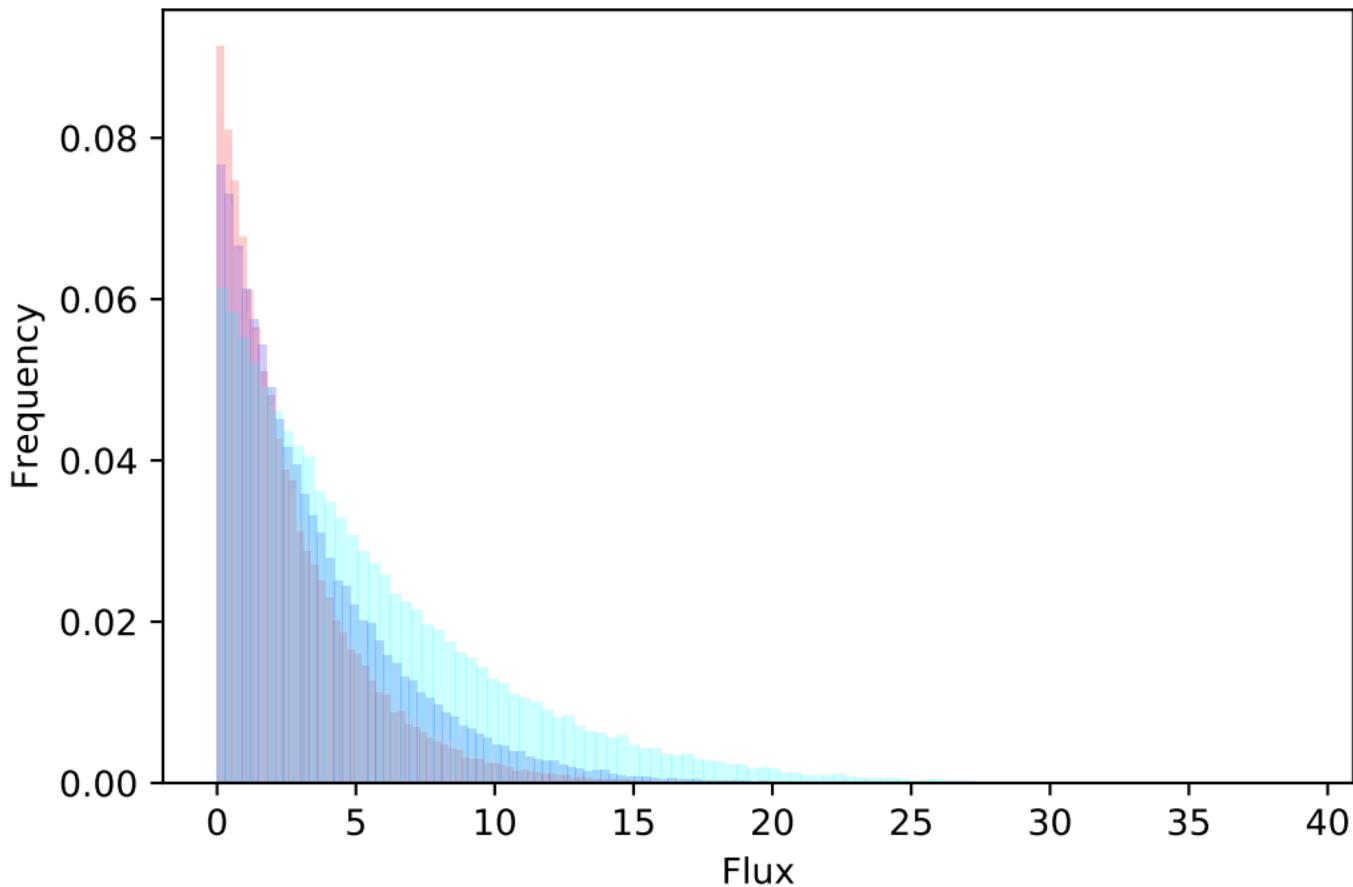
167 : Glu_h + OAA_h <=> Asp_h + KG_h
['AT2G22250', 'AT4G31990']



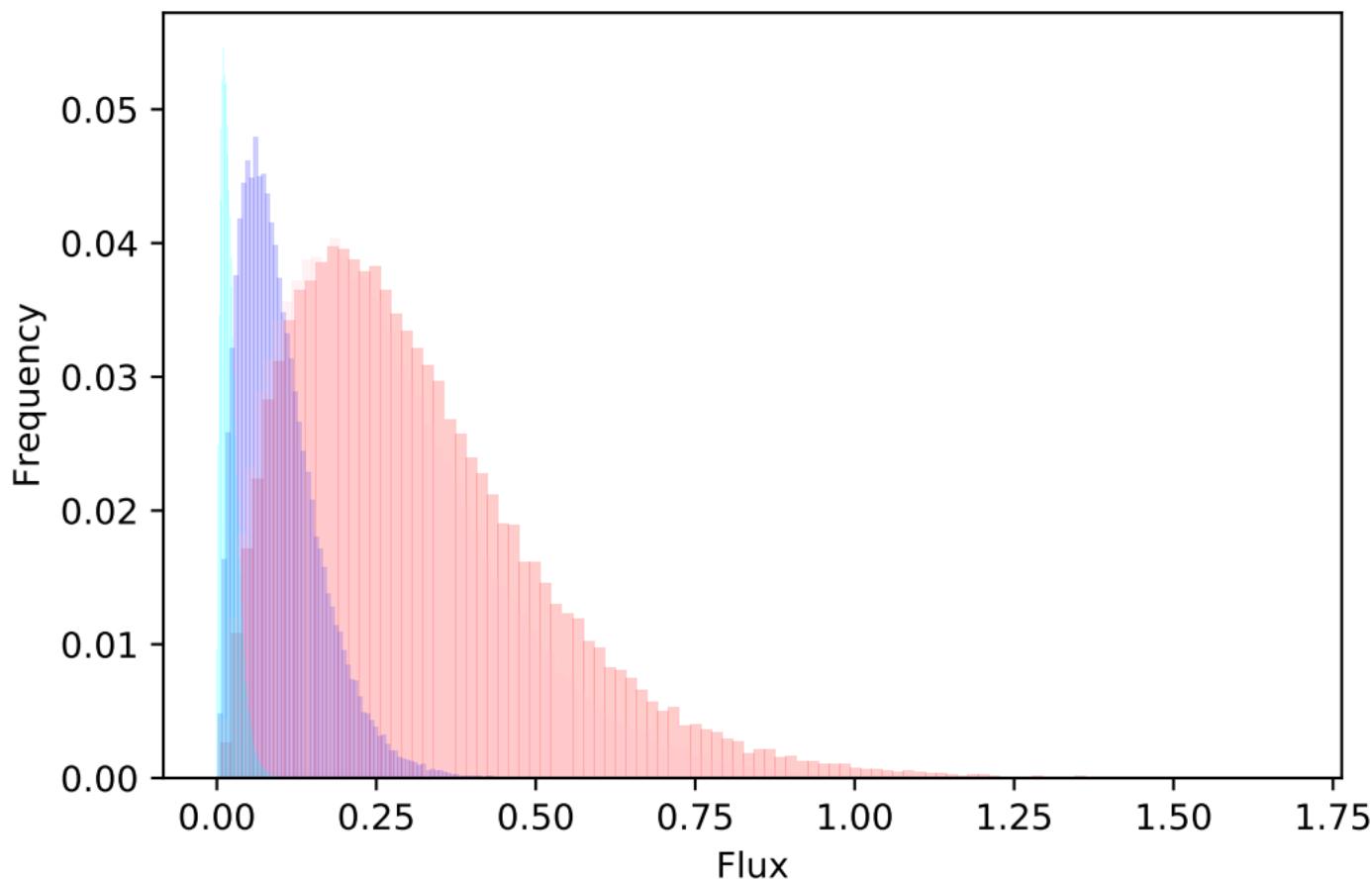
168 : Glu_m + OAA_m <=> Asp_m + KG_m
['AT2G30970', 'AT5G11520']



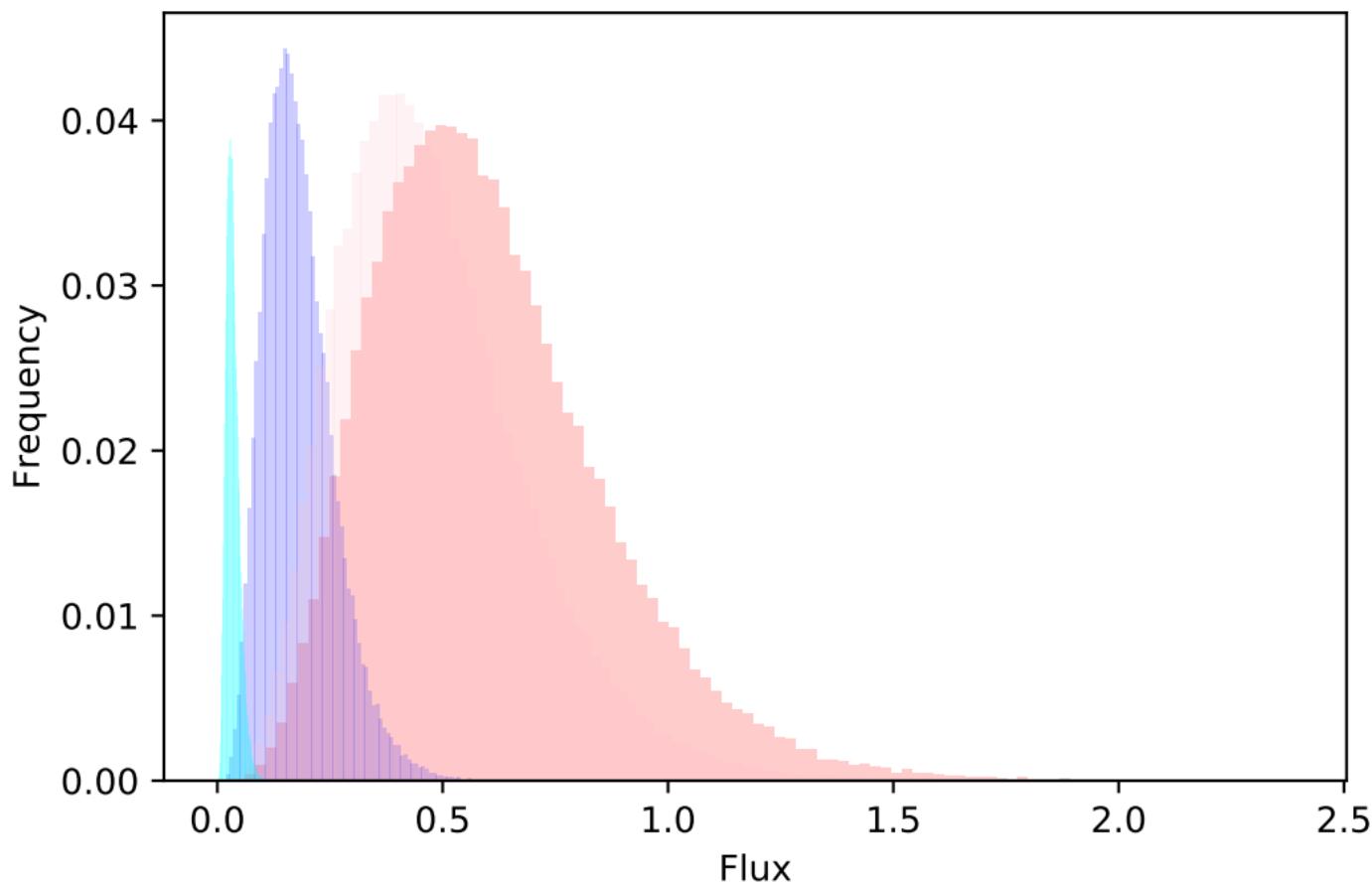
170 : Asn_c + H2O_c --> Asp_c + NH4_c
['2*AT3G16150', '2*AT5G08100']



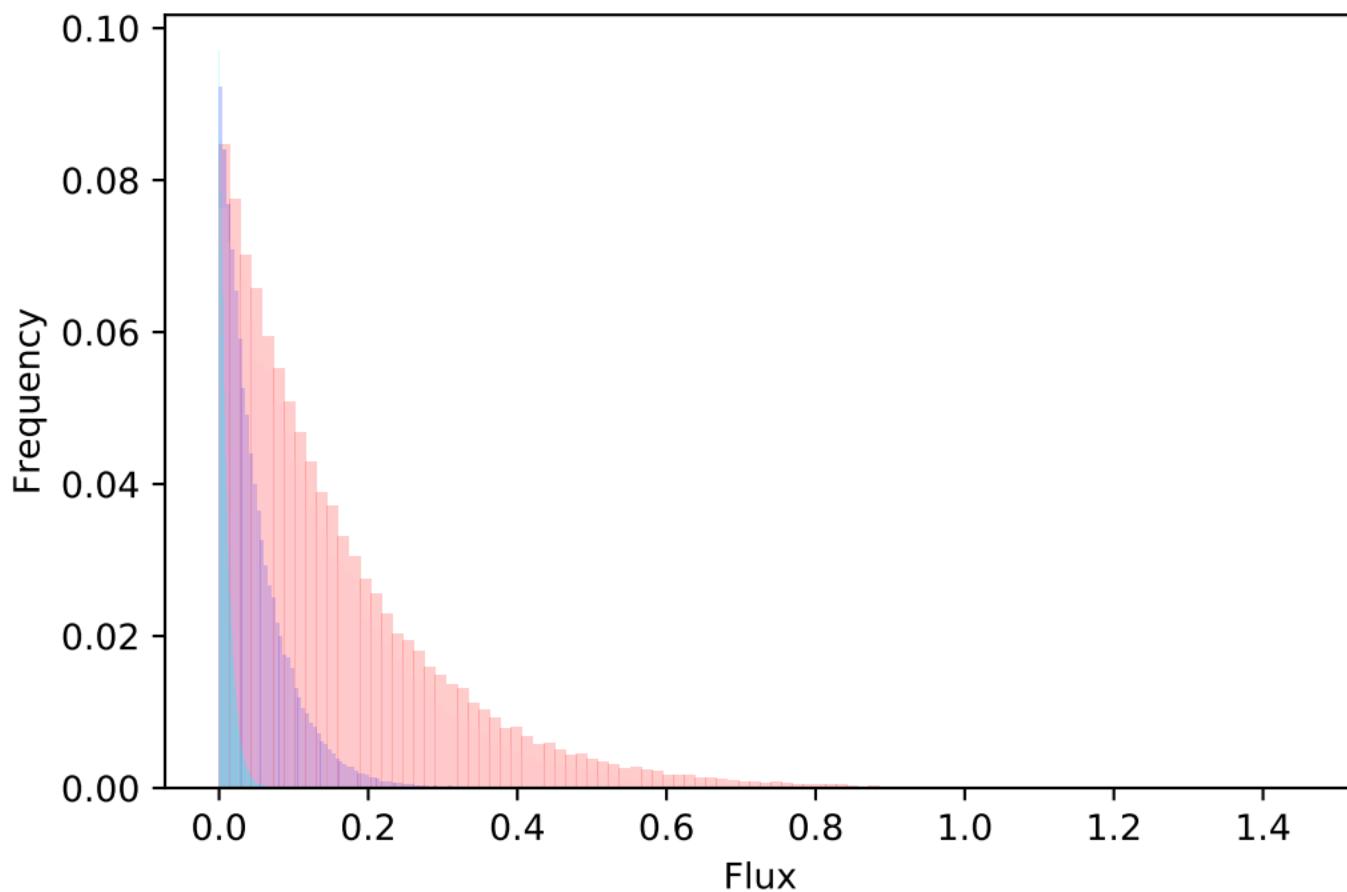
171 : A_DASH_CoA_c + Ser_c --> A_DASH_Ser_c + CoA_c
['6*AT1G55920', 'AT2G17640', 'AT3G13110', 'AT5G56760', 'AT4G35640']



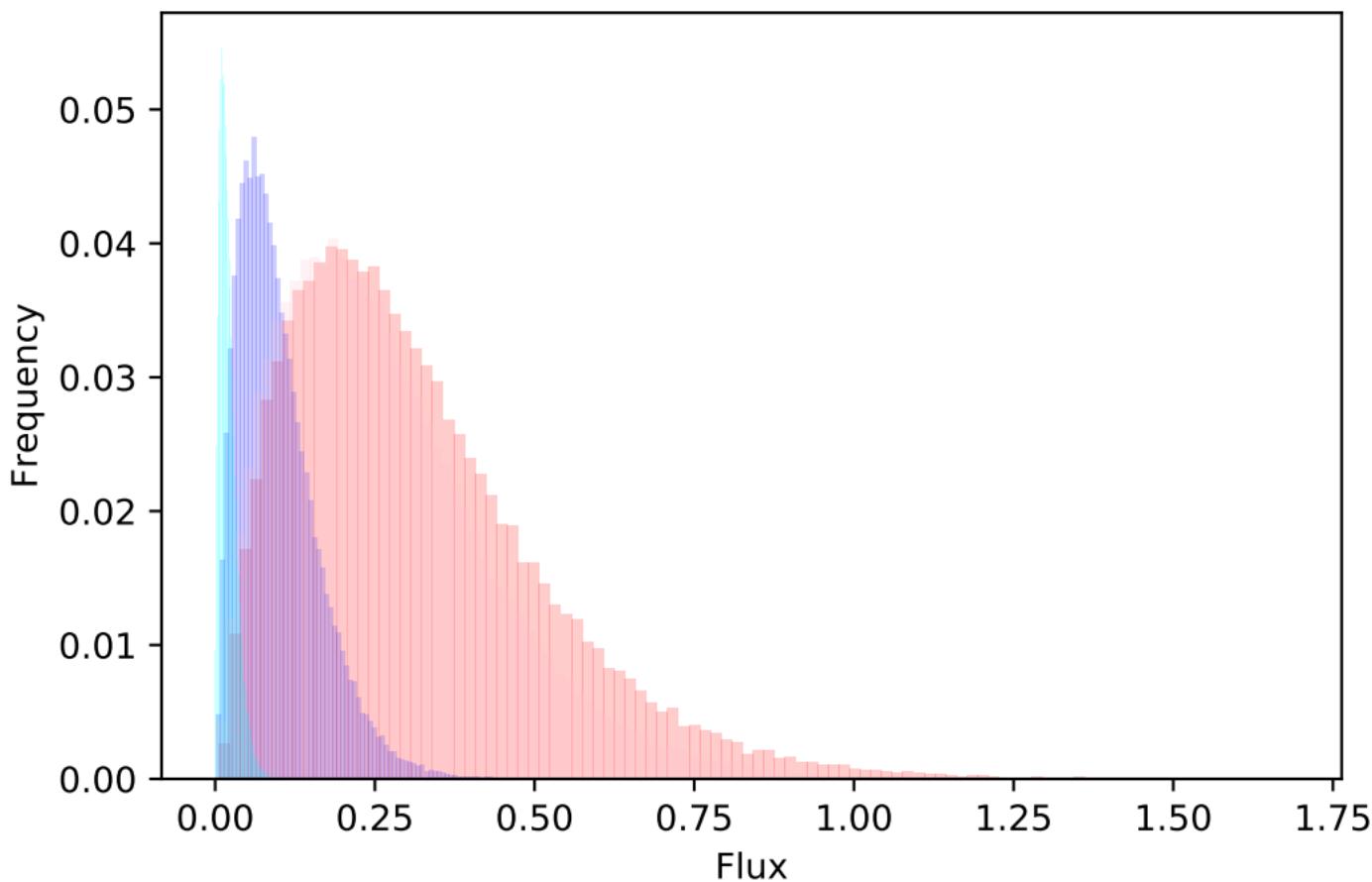
172 : A_DASH_CoA_h + Ser_h --> A_DASH_Ser_h + CoA_h
['AT3G13110', '6*AT1G55920']



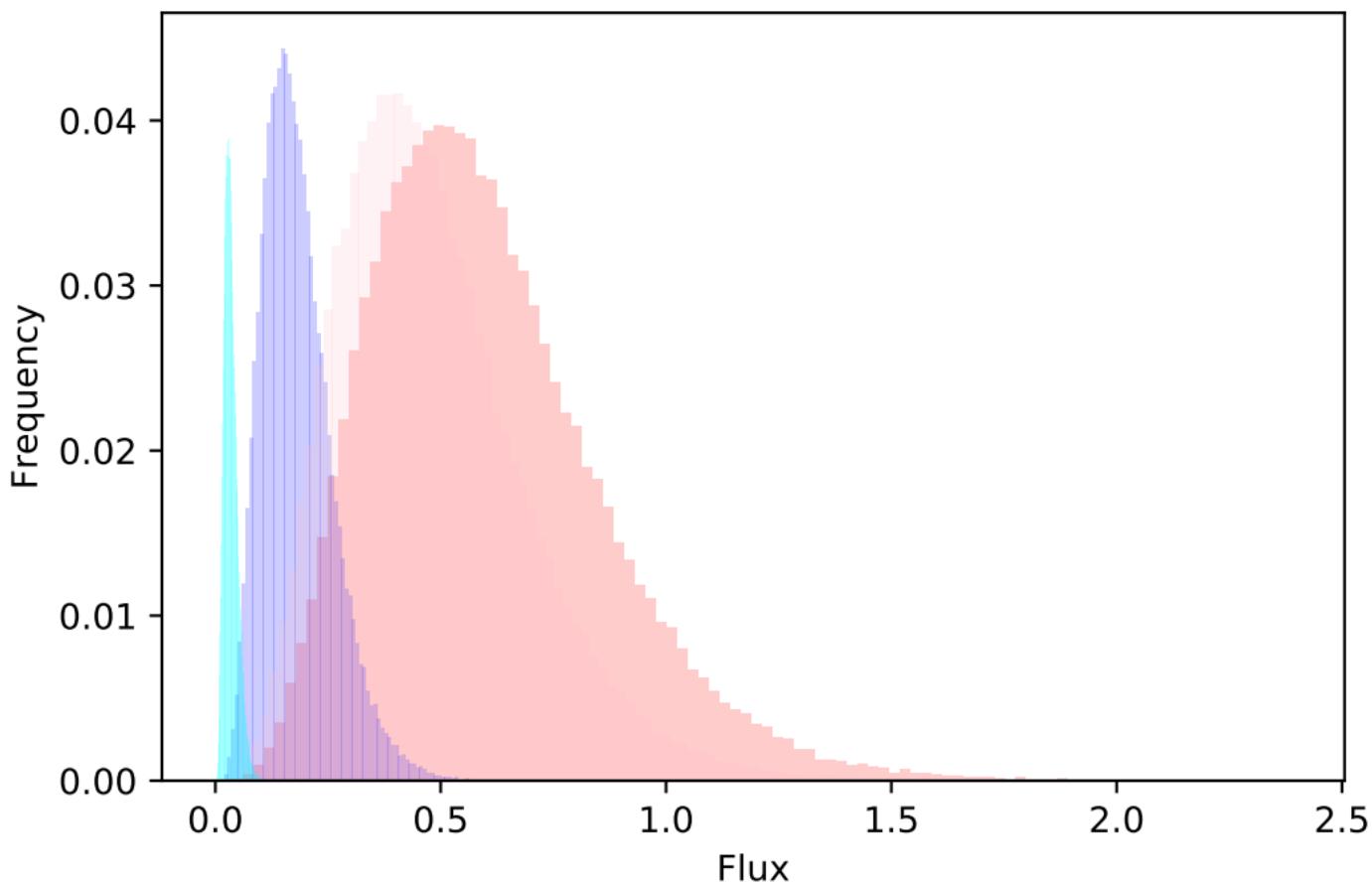
173 : A_DASH_CoA_m + Ser_m --> A_DASH_Ser_m + CoA_m
['6*AT1G55920', 'AT3G13110']



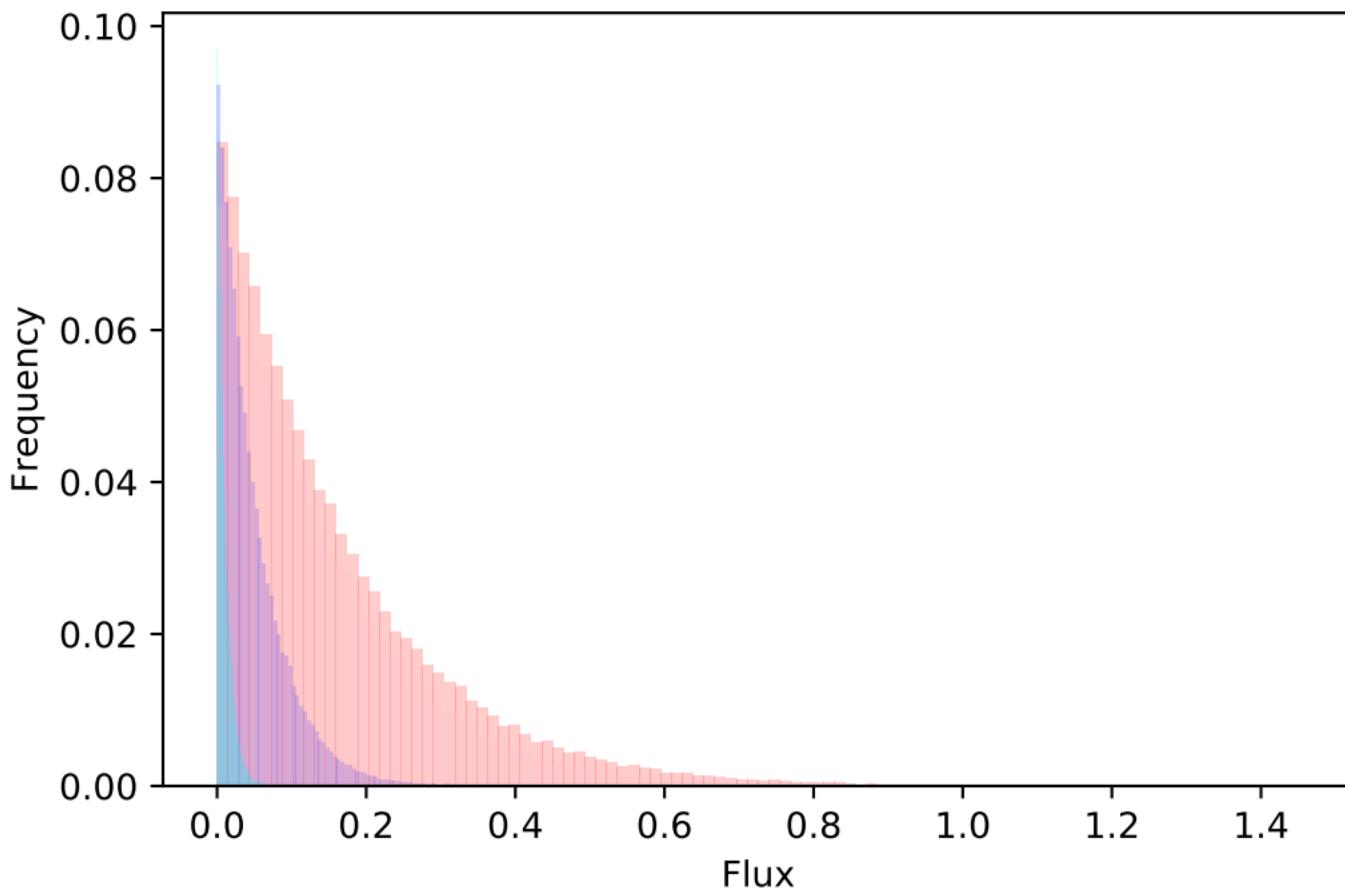
174 : A_DASH_Ser_c + H2S_c --> AC_c + Cys_c + H_c
['AT3G22460', '2*AT4G14880']



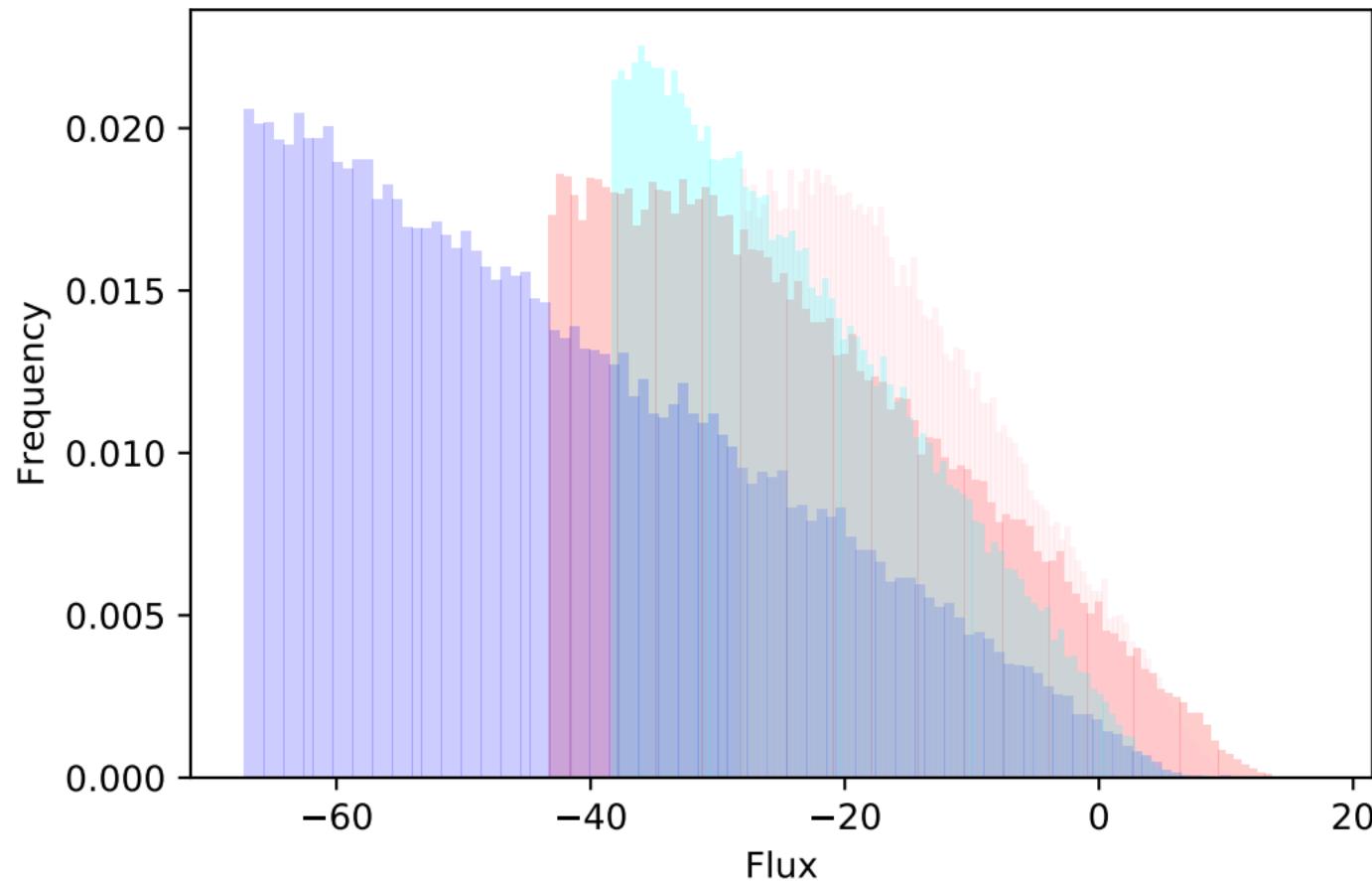
175 : A_DASH_Ser_h + H2S_h --> AC_h + Cys_h + H_h
['AT4G14880', 'AT3G03630', 'AT2G43750', '2*AT3G61440']



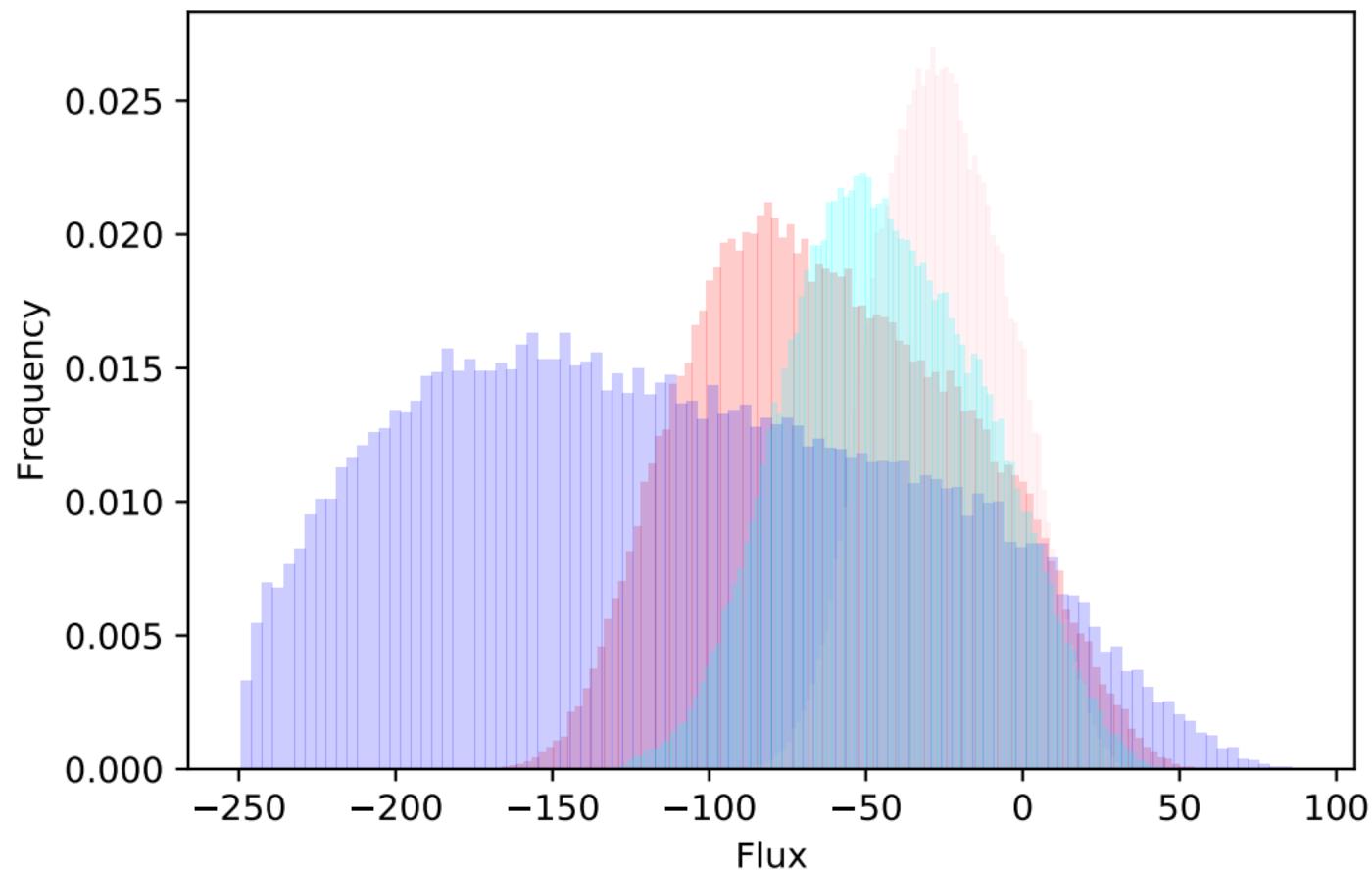
176 : A_DASH_Ser_m + H2S_m --> AC_m + Cys_m + H_m
['AT5G28020', 'AT2G43750', '2*AT3G61440', 'AT3G03630']



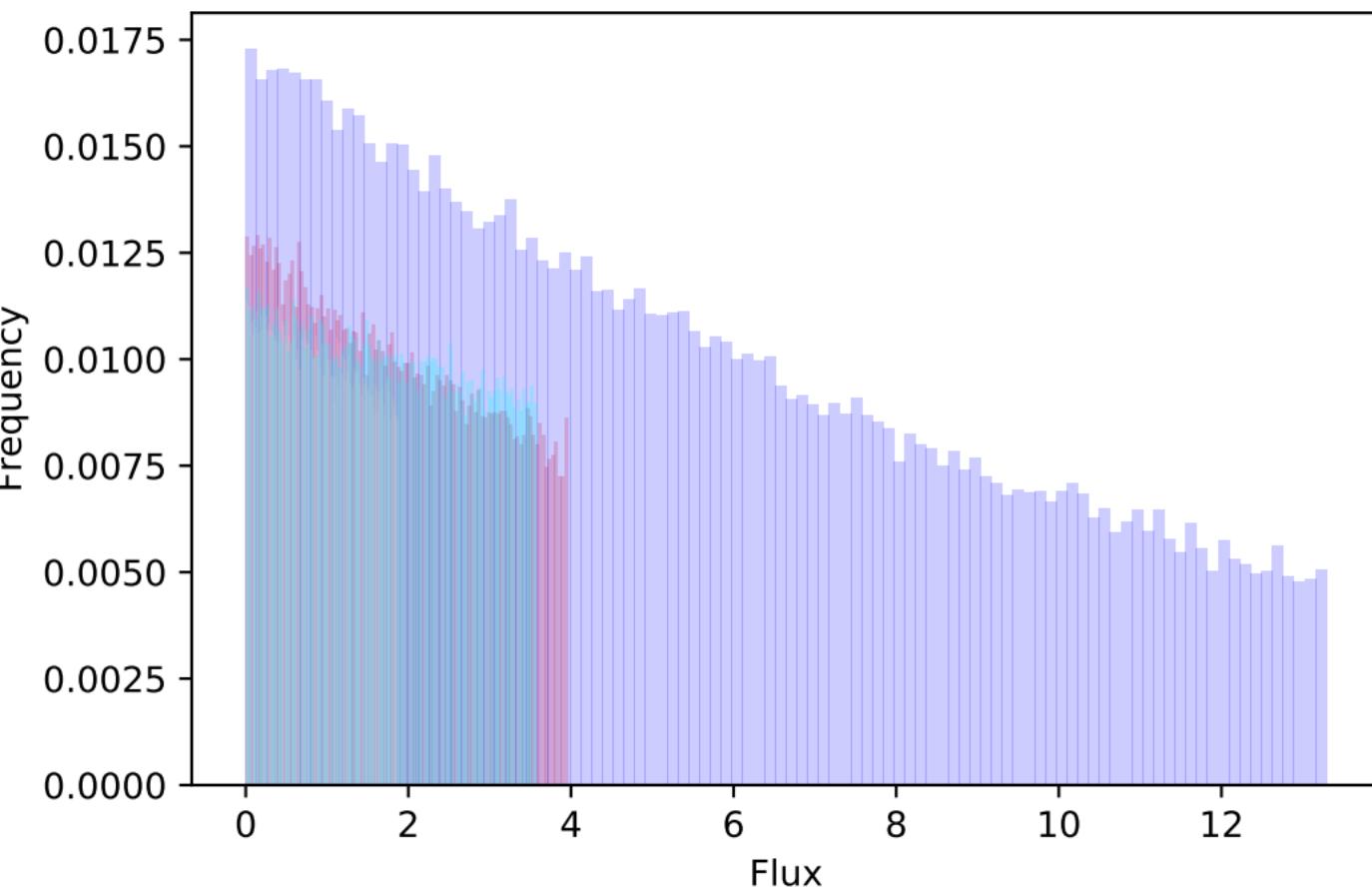
177 : Gln_h + H_h + KG_h + NADPH_h <=> 2.0 Glu_h + NADP_h
['AT5G53460']



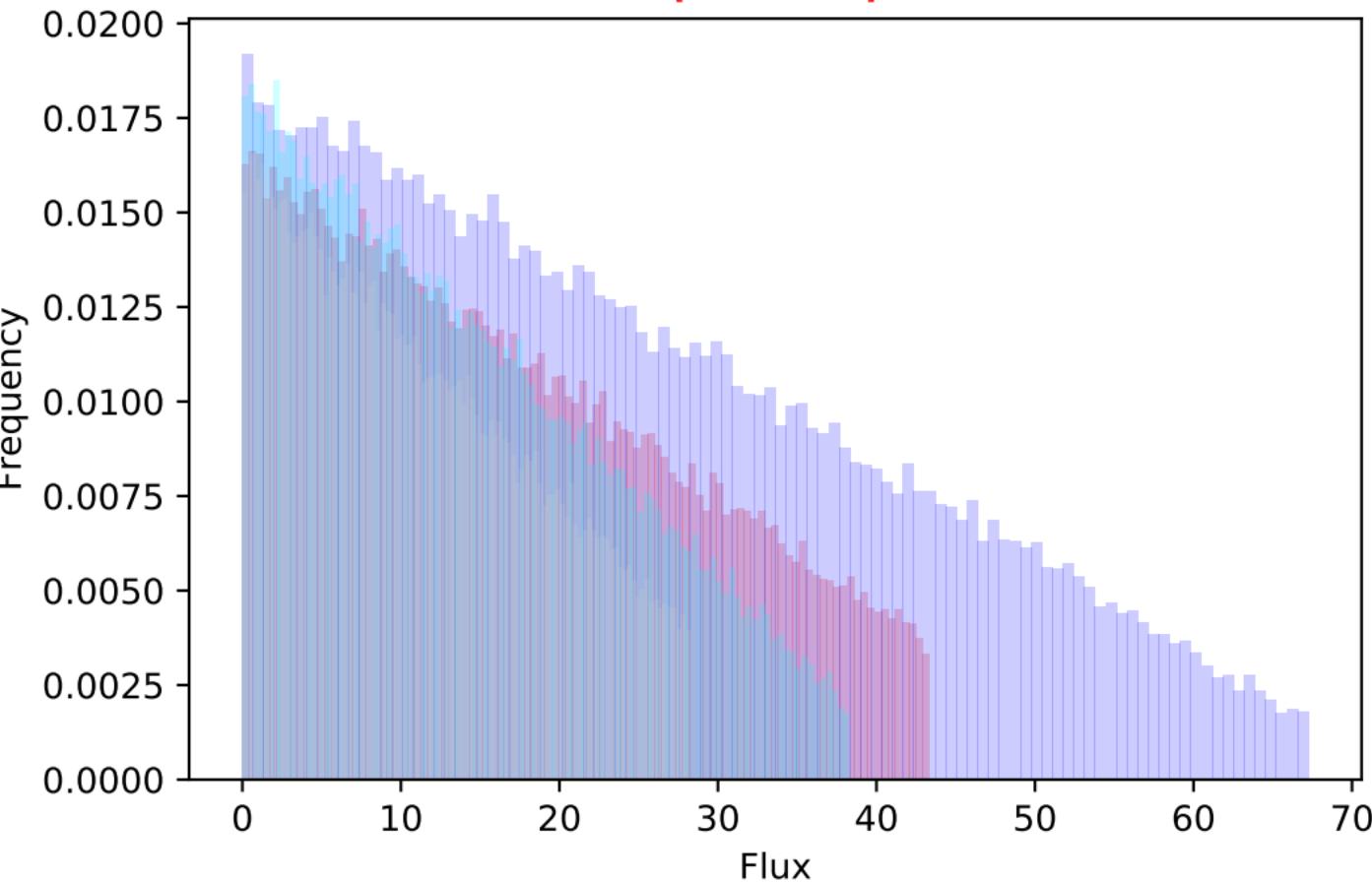
178 : Glu_c + H2O_c + NADP_c <=> KG_c + NADPH_c + NH4_c
['AT1G51720']



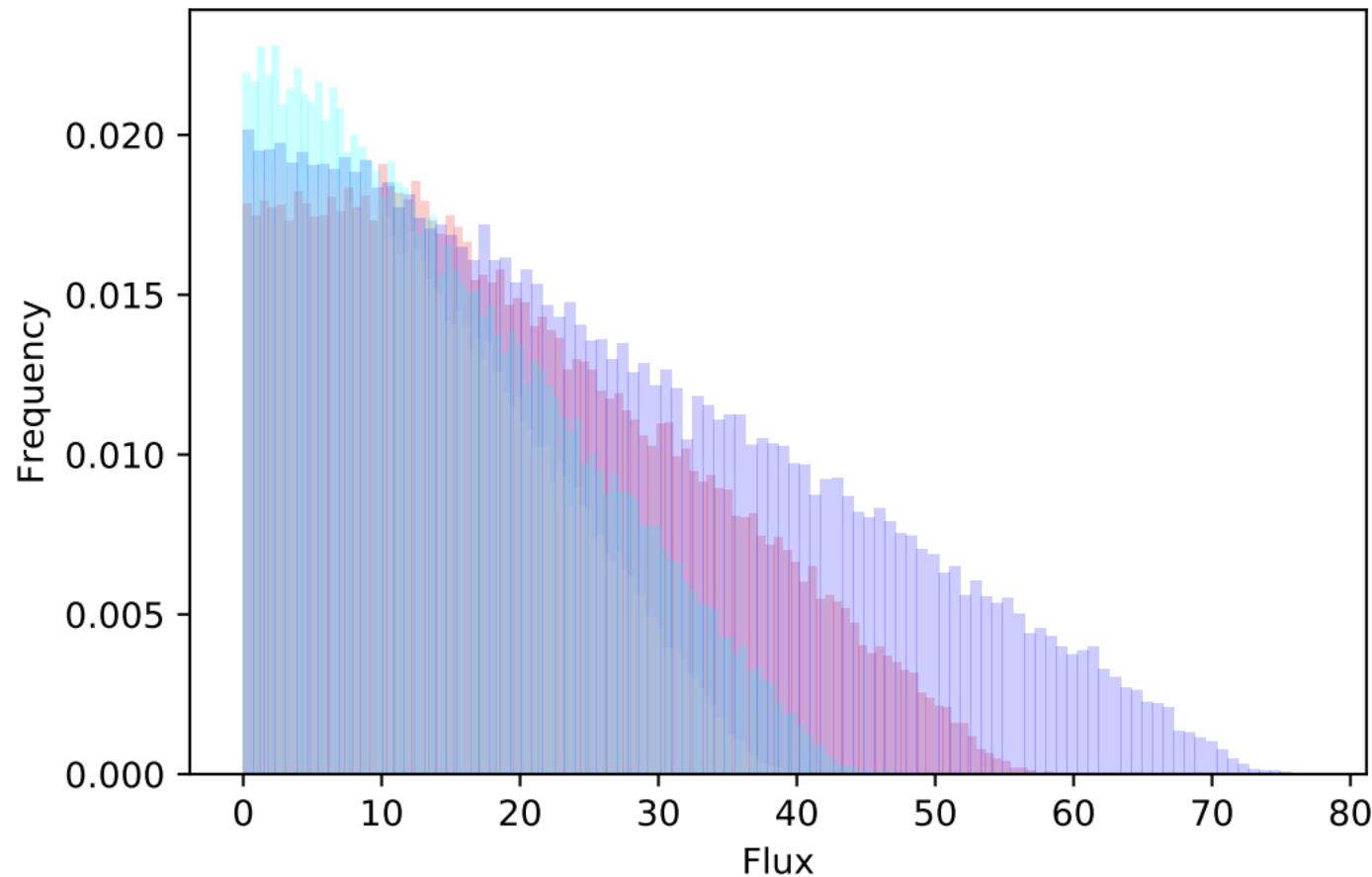
179 : Gln_c + H2O_c --> Glu_c + NH4_c
['AT5G60540']



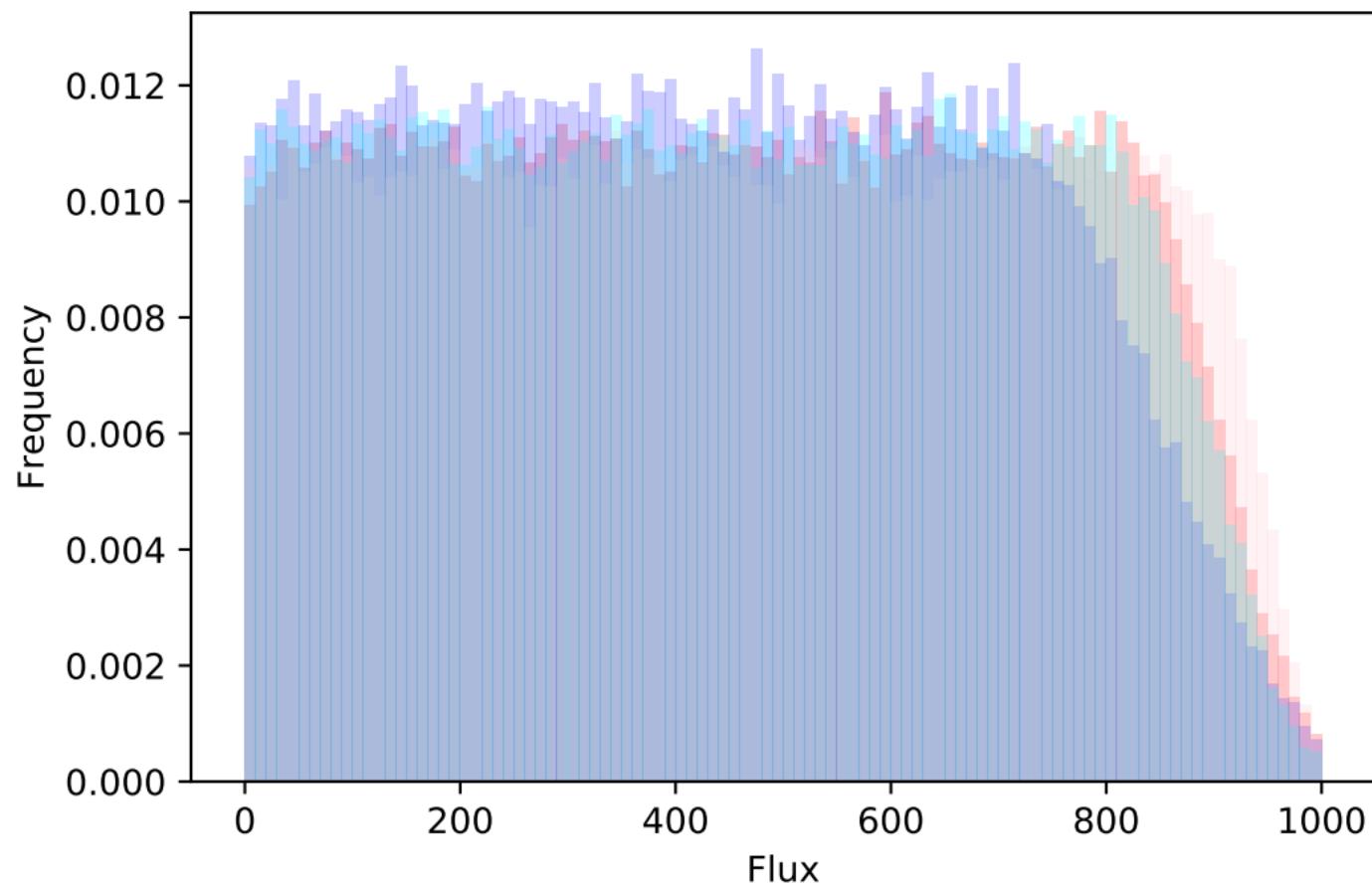
180 : Gln_h + H_h + KG_h + NADH_h --> 2.0 Glu_h + NAD_h
['AT5G53460']

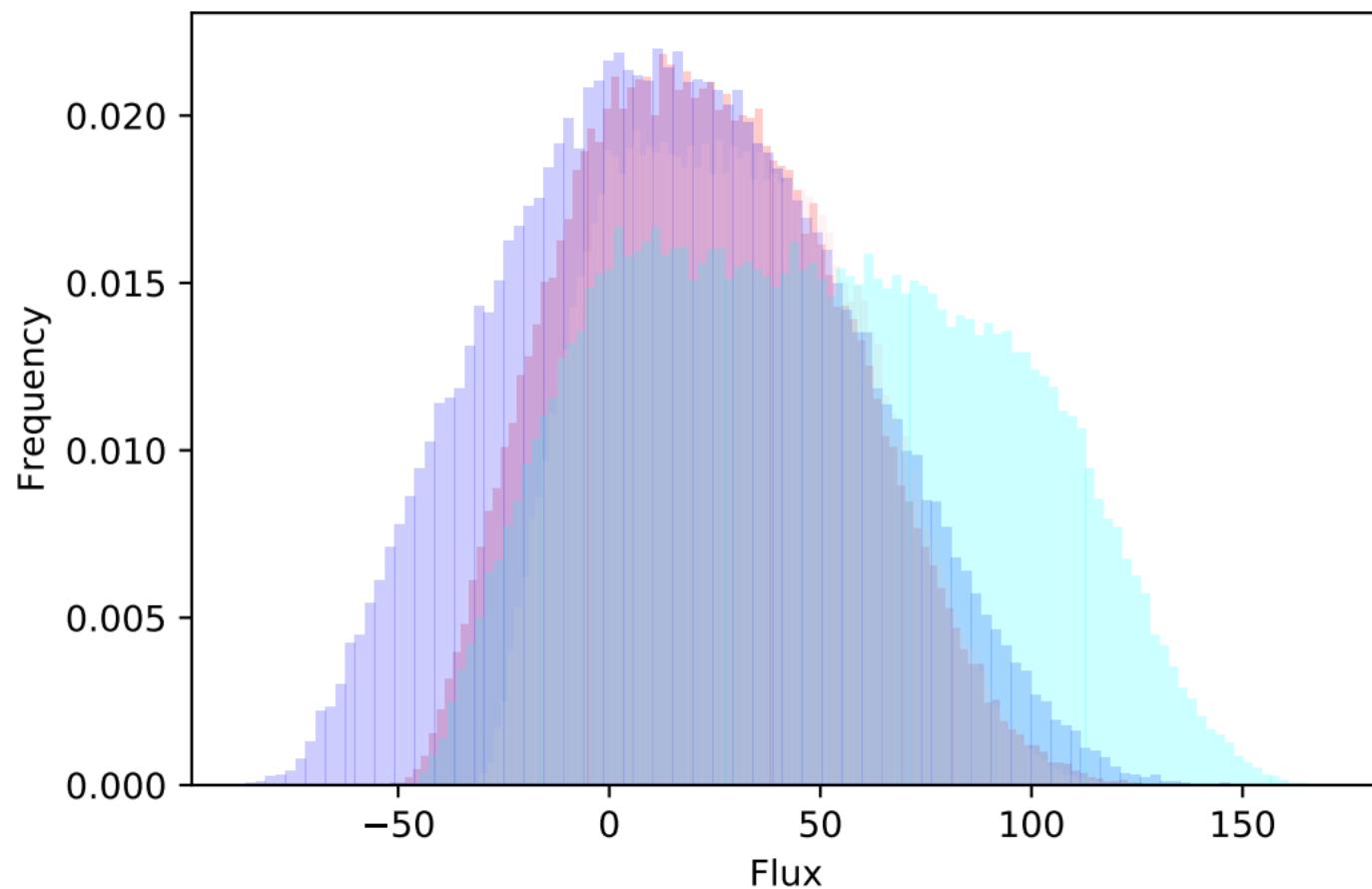


181 : 2.0 Fdrd_h + Gln_h + 2.0 H_h + KG_h --> 2.0 Fdox_h + 2.0 Glu_h
['AT5G04140', 'AT2G41220']

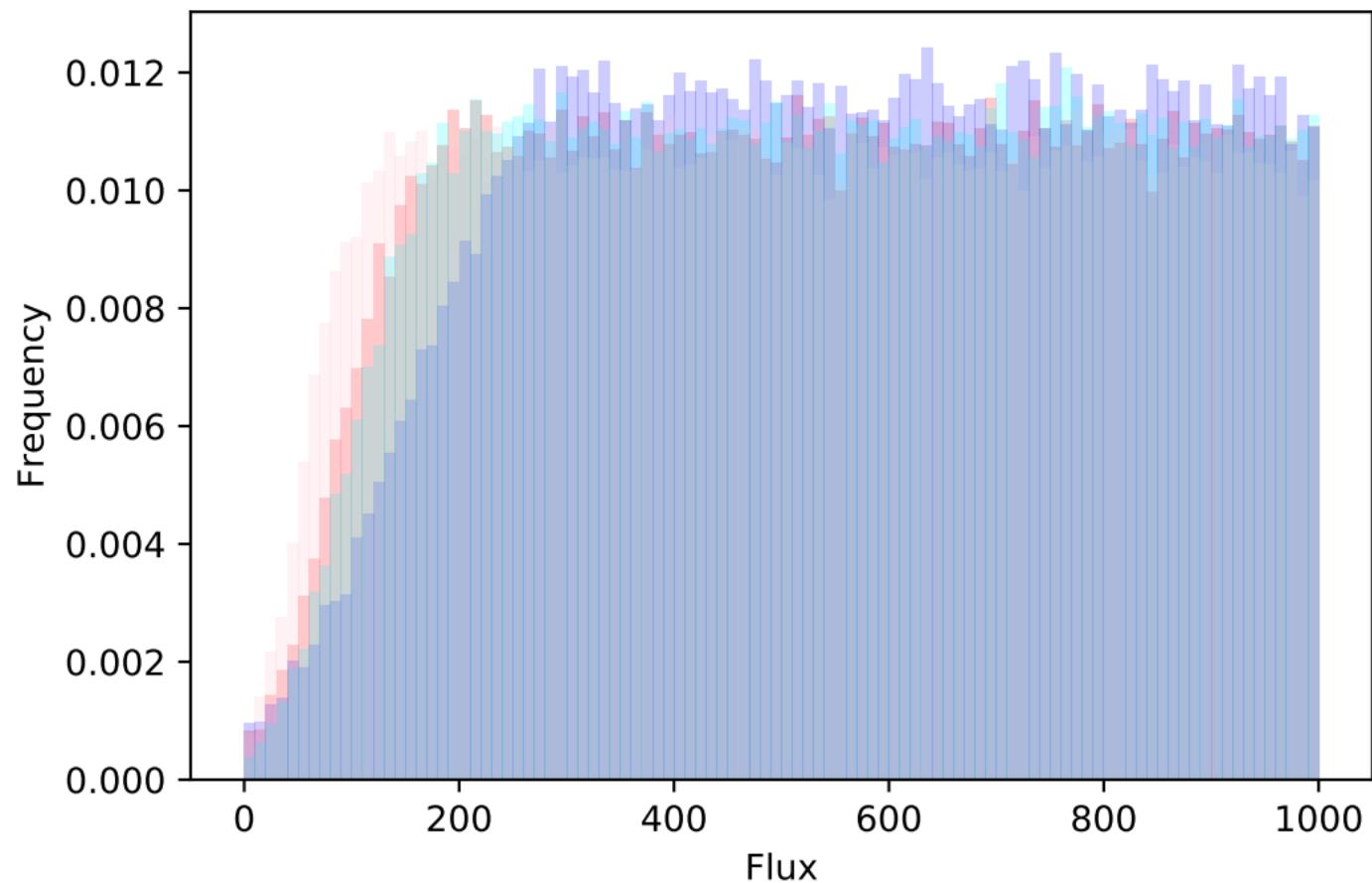


182 : H_m + KG_m + NADH_m + NH4_m --> Glu_m + H2O_m + NAD_m
['AT5G07440', '6*AT5G18170', 'AT3G03910']

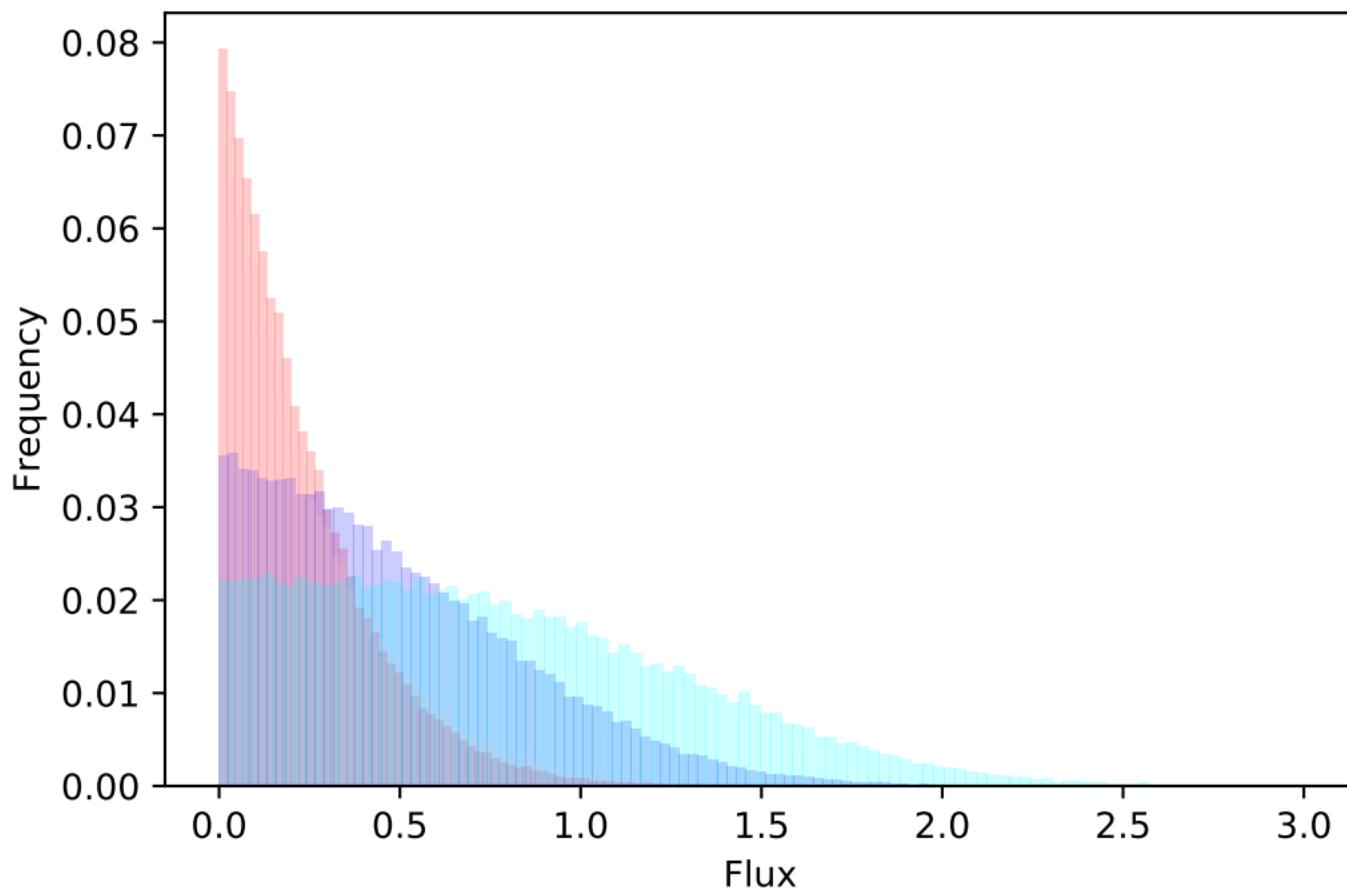




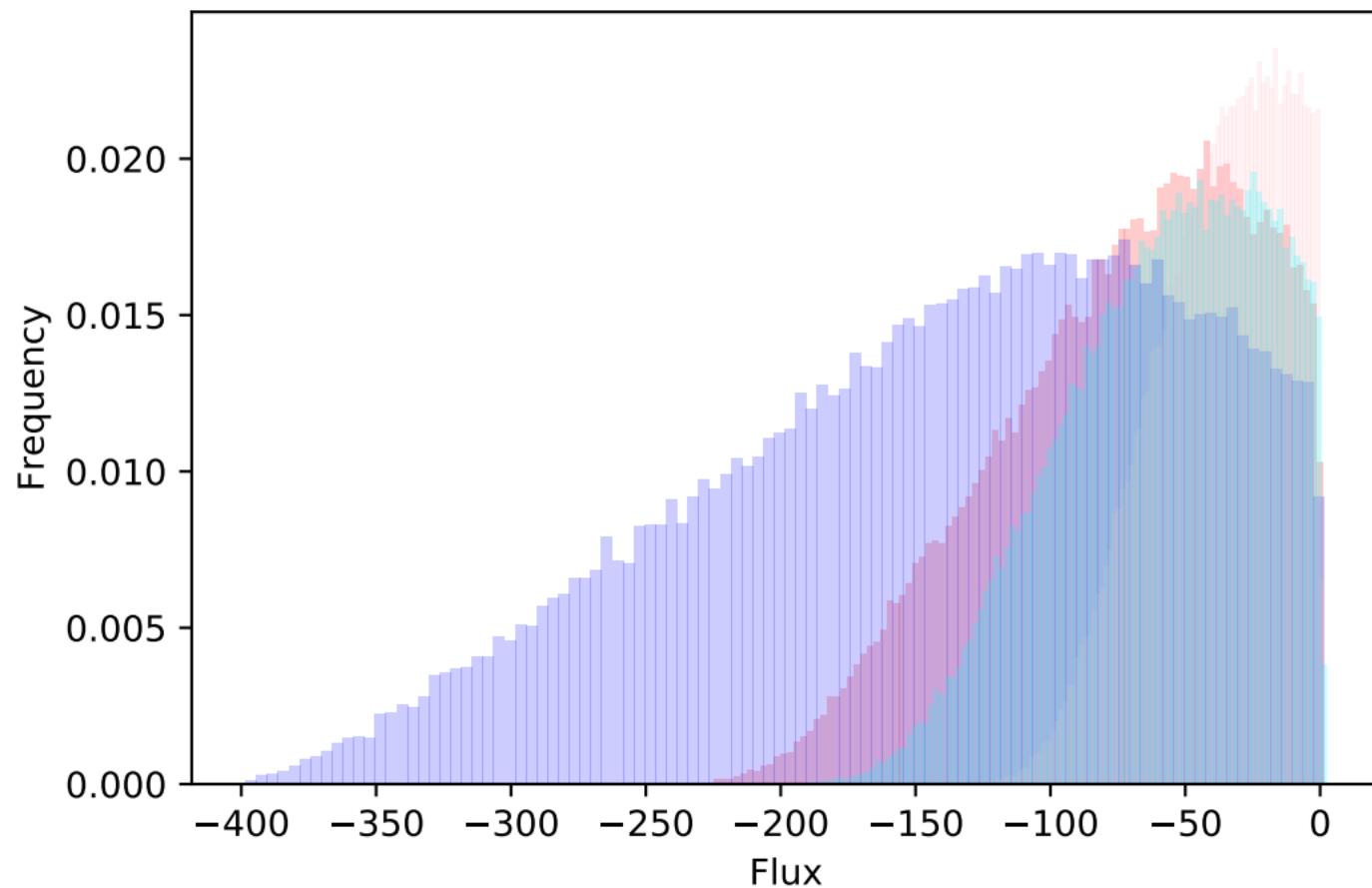
184 : Glu_m + H2O_m + NAD_m --> H_m + KG_m + NADH_m + NH4_m
['AT5G07440', '6*AT5G18170']



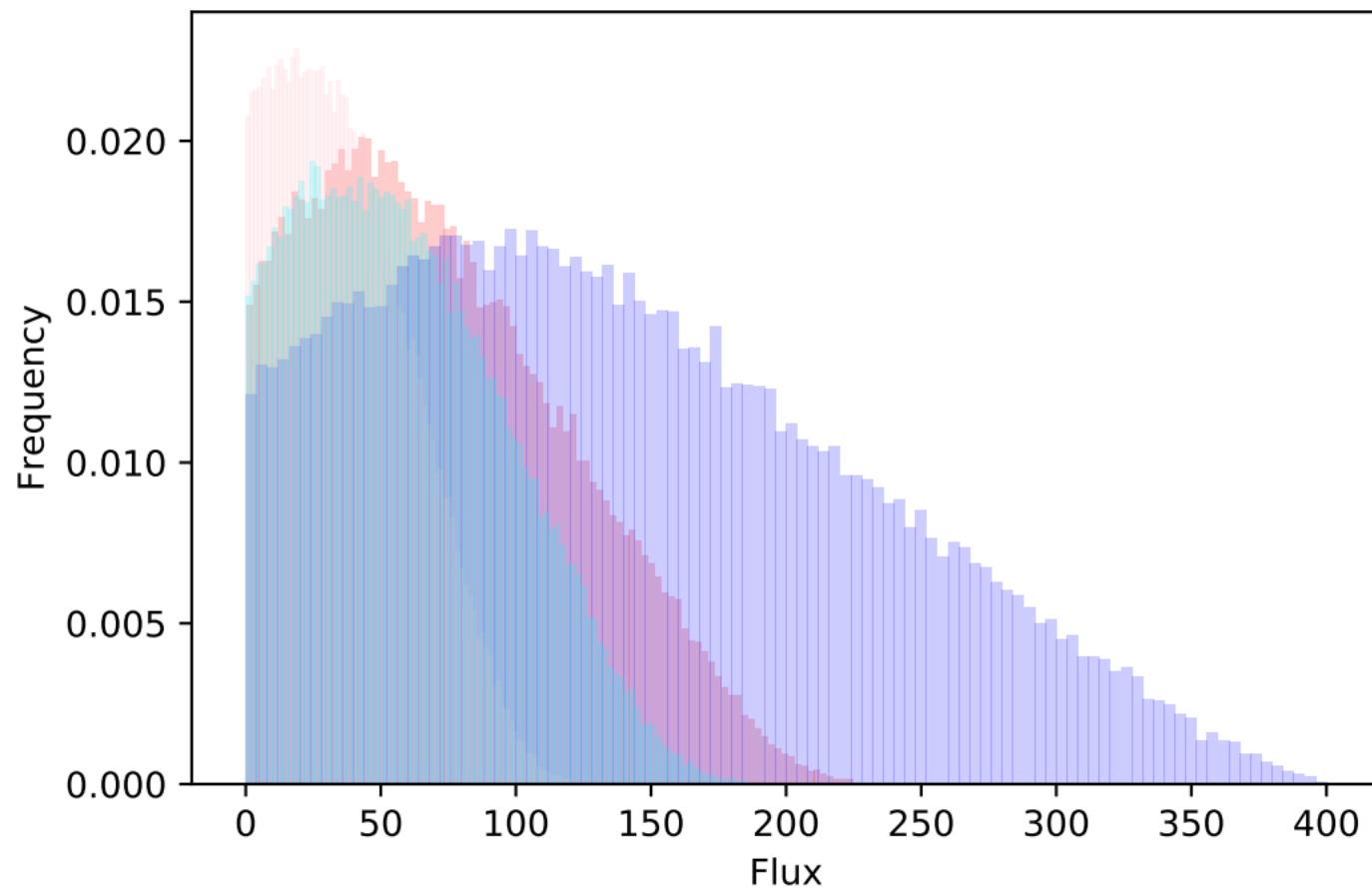
185 : Glu_c + H_c --> CO2_c + GABA_c
['AT2G02000', 'AT2G02010', 'AT3G17760', 'AT1G65960', '6*AT5G17330']



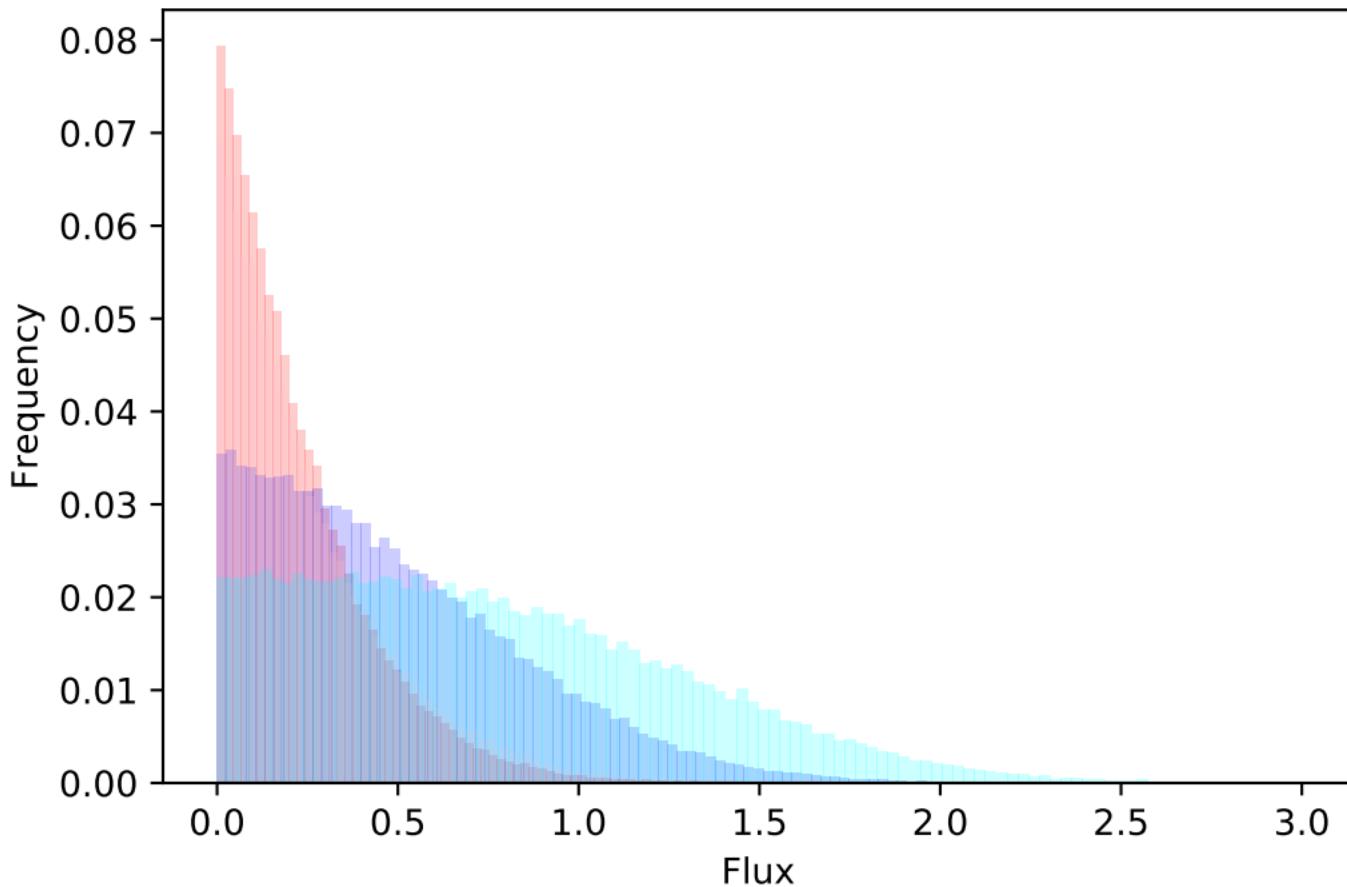
186 : GABA_m + Pyr_m <=> Ala_m + SCA_DASH_SeA_m
['2*AT3G22200']



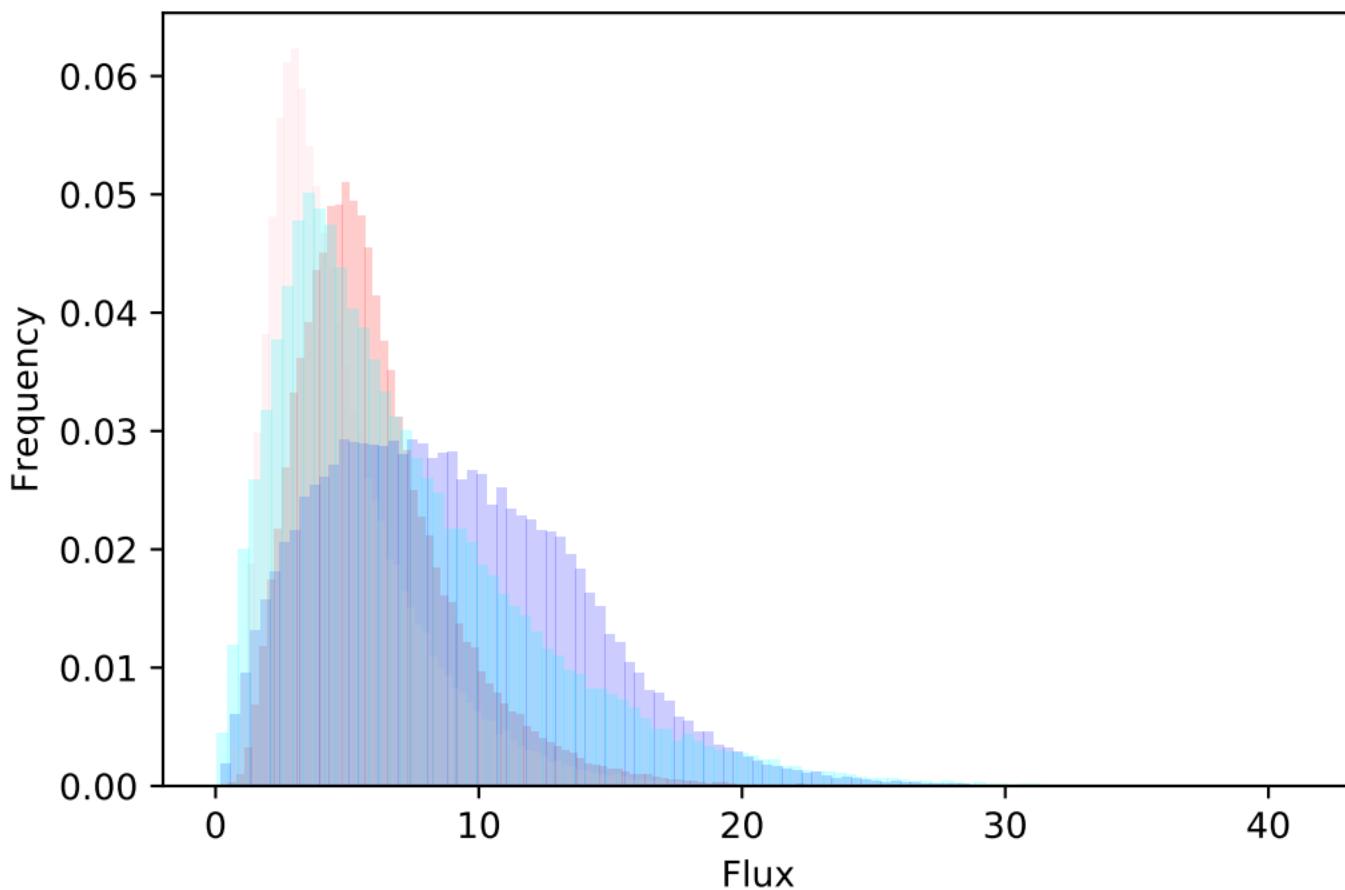
187 : GABA_m + KG_m --> Glu_m + SCA_DASH_SeA_m
[2*AT3G22200]



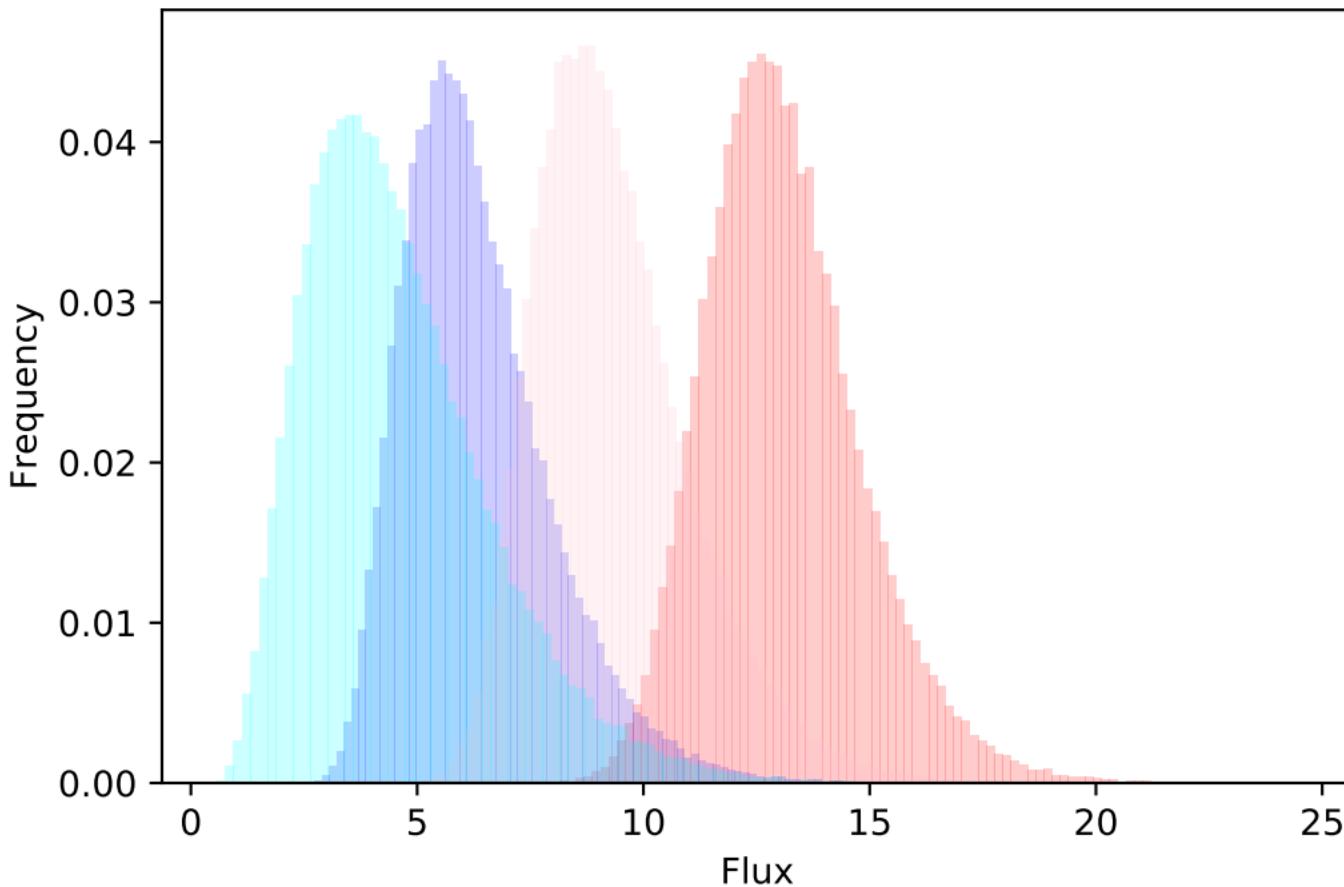
188 : H₂O_m + NAD_m + SCA_DASH_SeA_m --> 2.0 H_m + NADH_m + SCA_m
['4*AT1G79440']



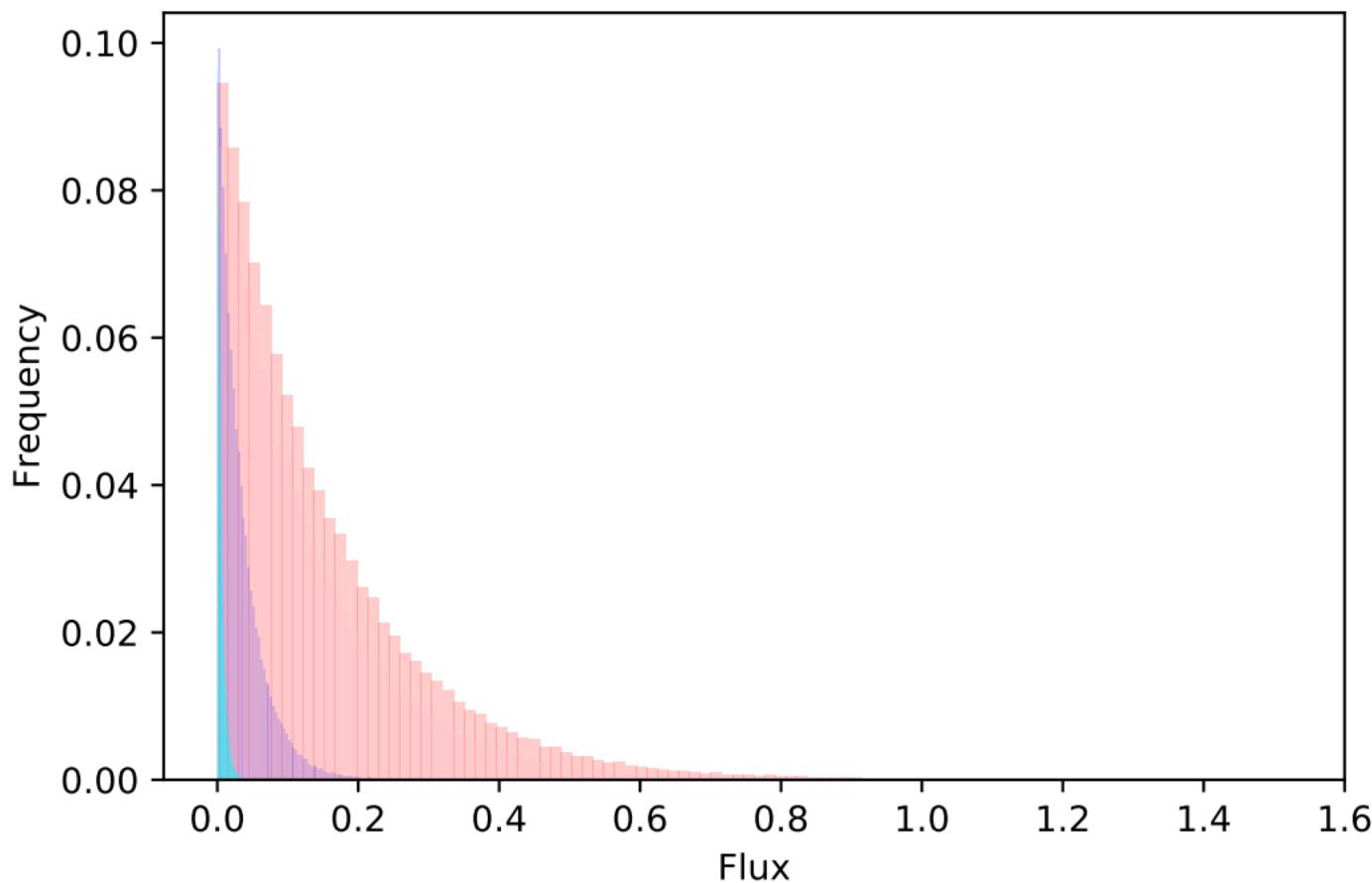
189 : ATP_c + Glu_c + NH4_c --> ADP_c + Gln_c + H_c + Pi_c
['AT3G17820', 'AT1G66200', 'AT5G16570', '8*AT5G37600']



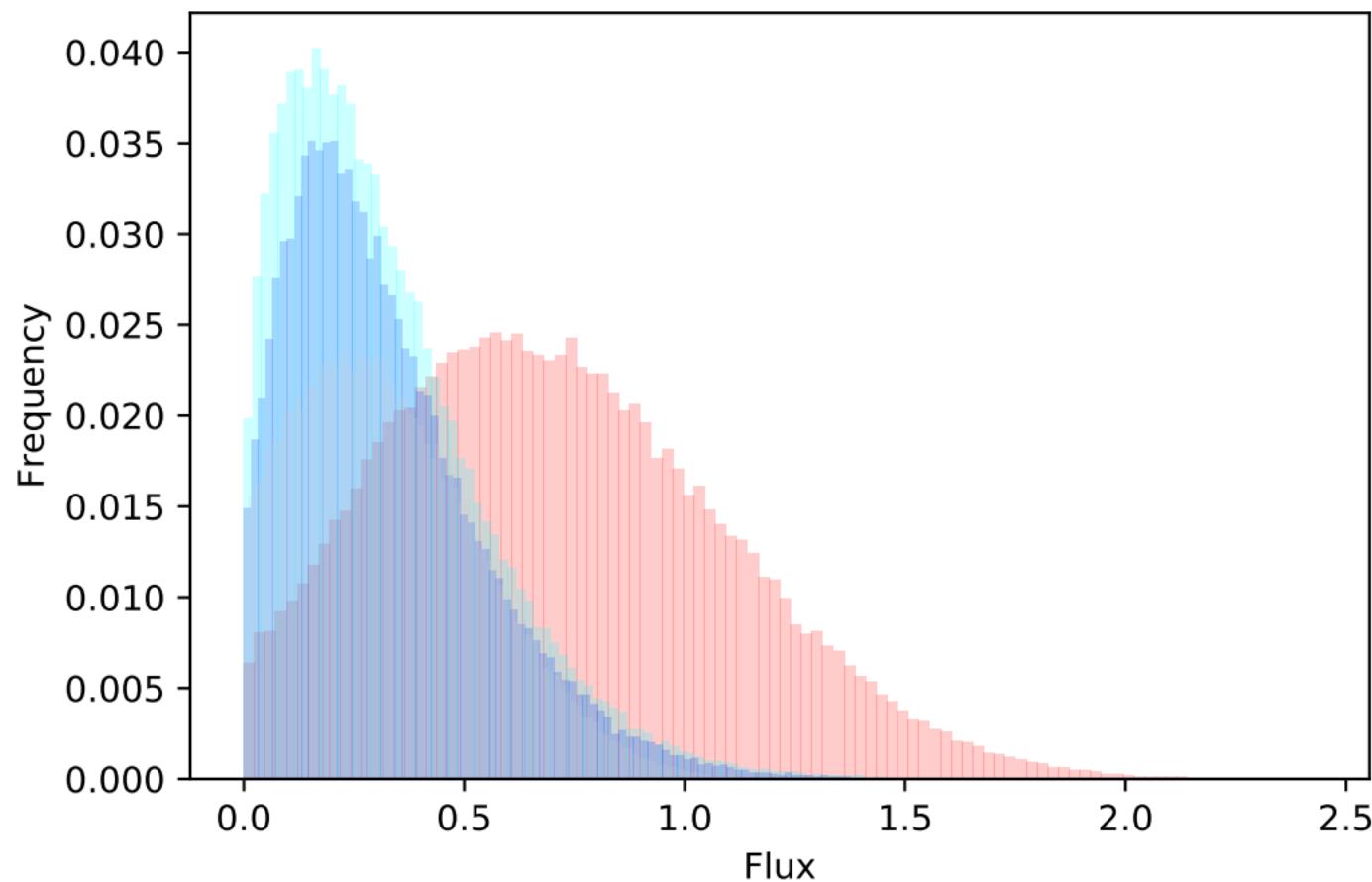
190 : ATP_h + Glu_h + NH4_h --> ADP_h + Gln_h + H_h + Pi_h
['8*AT3G17820', 'AT1G48470', 'AT5G35630']



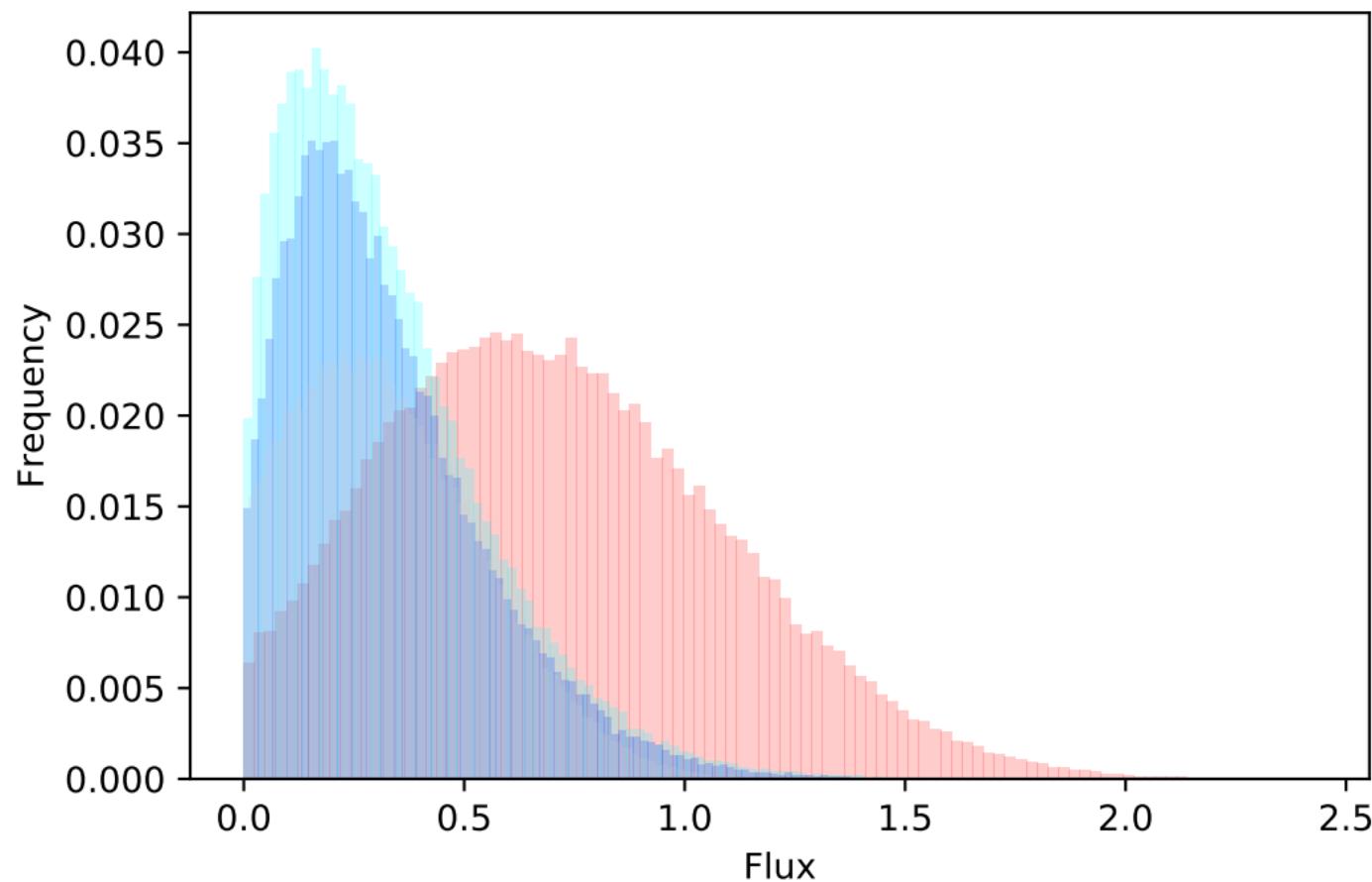
191 : ATP_m + Glu_m + NH4_m --> ADP_m + Gln_m + H_m + Pi_m
['8*AT5G35630']



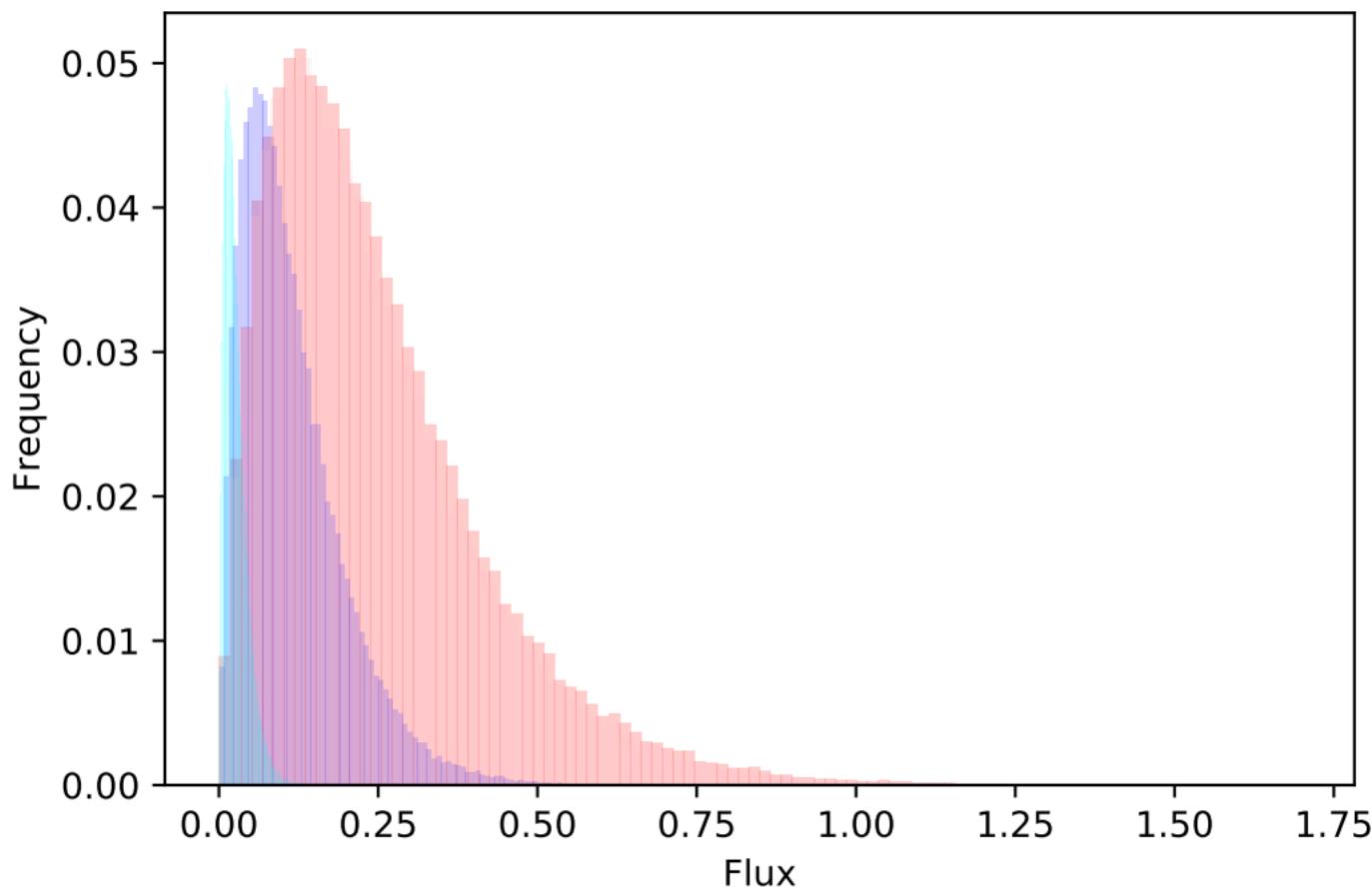
192 : Thr_c --> ACD_c + Gly_c
['AT1G08630']



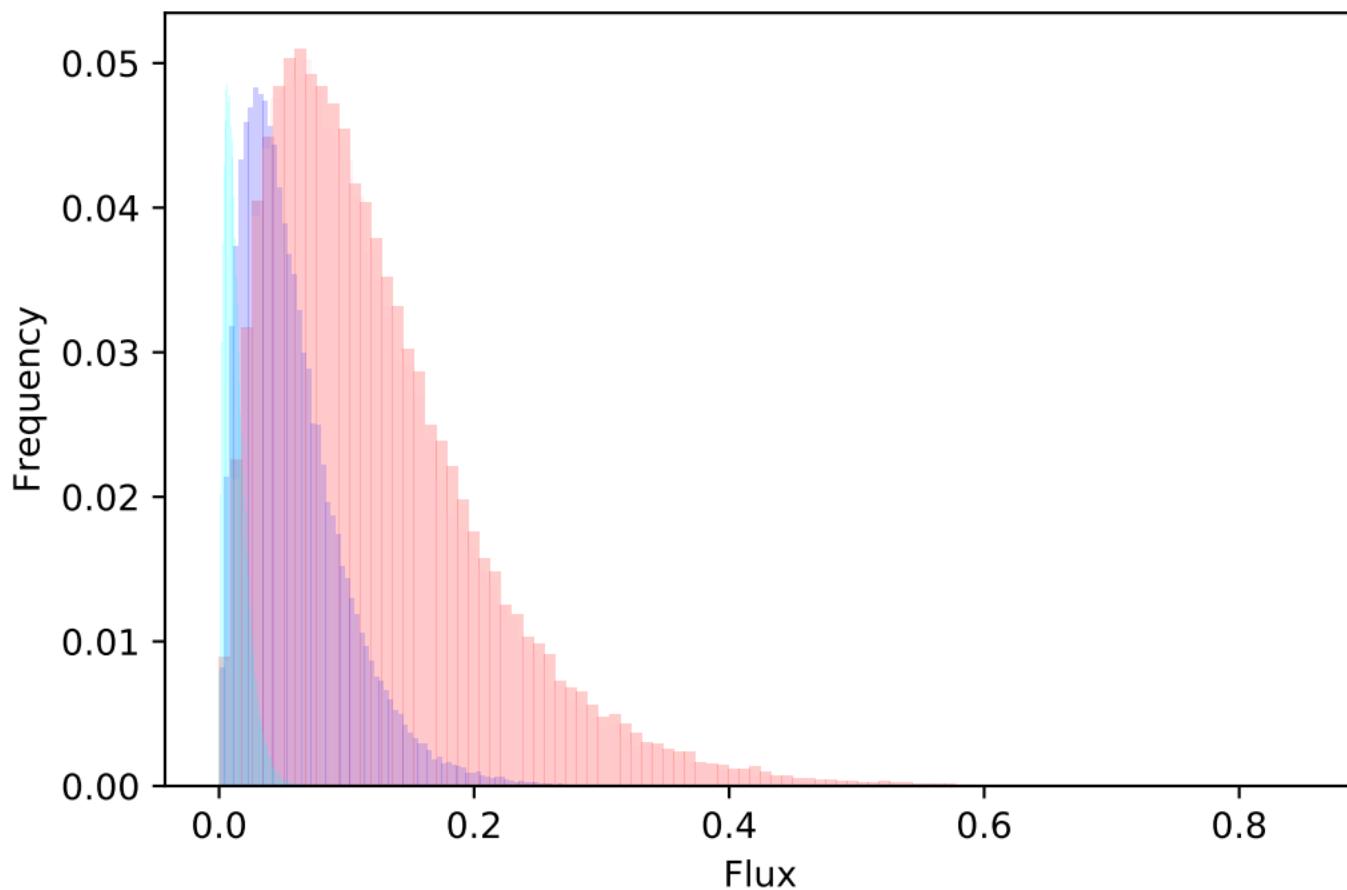
193 : ACD_c + H2O_c + NAD_c --> AC_c + H_c + NADH_c
['AT1G54100', 'AT4G36250', 'AT1G44170', 'AT3G24503', 'AT3G66658']



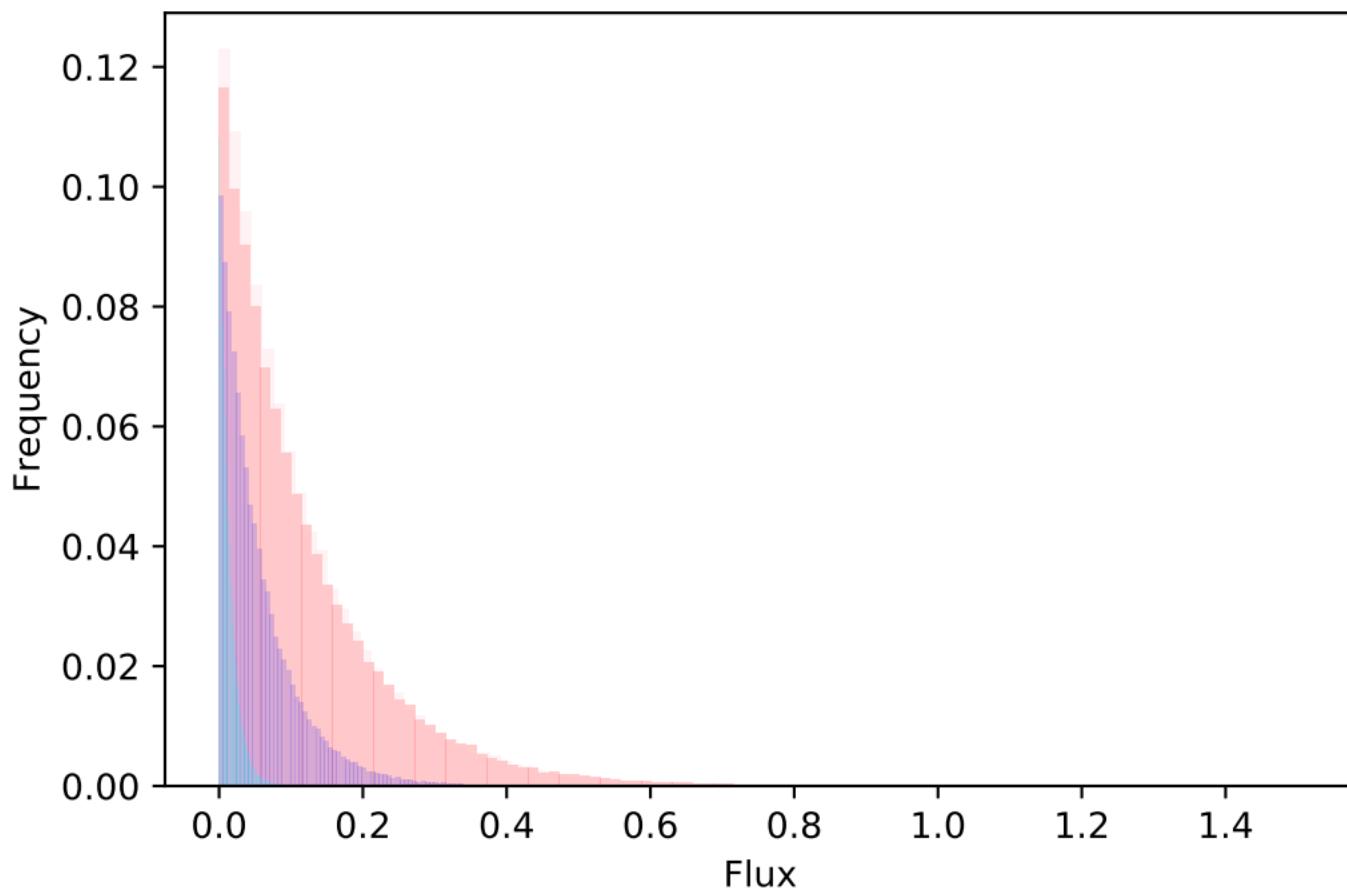
194 : GCA_h + O2_h --> GLX_h + H2O2_h
['AT3G14420', 'AT3G14415']



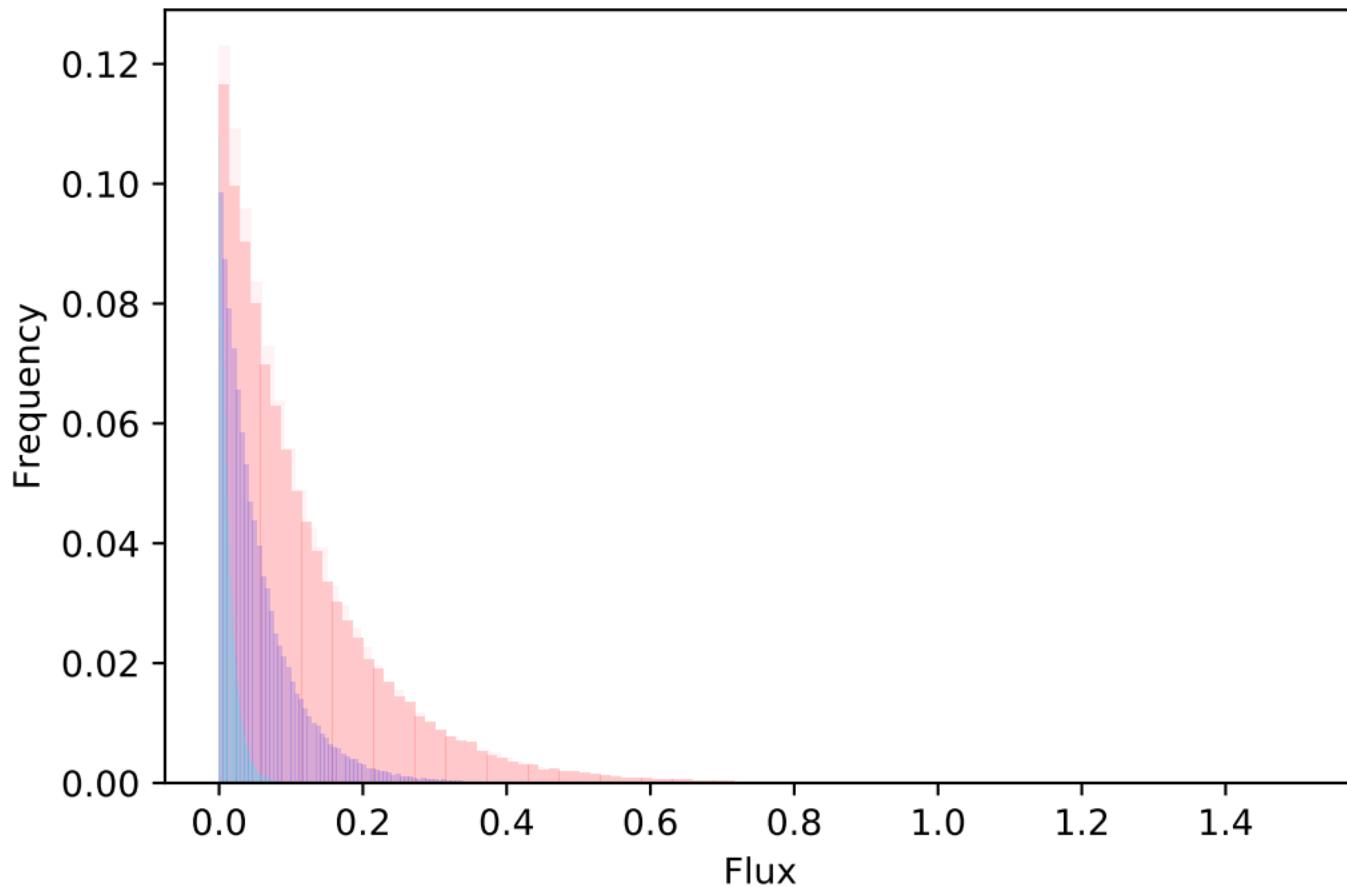
195 : 2.0 H2O2_h --> 2.0 H2O_h + O2_h
['AT1G20630', '4*AT1G20620', 'AT4G35090']



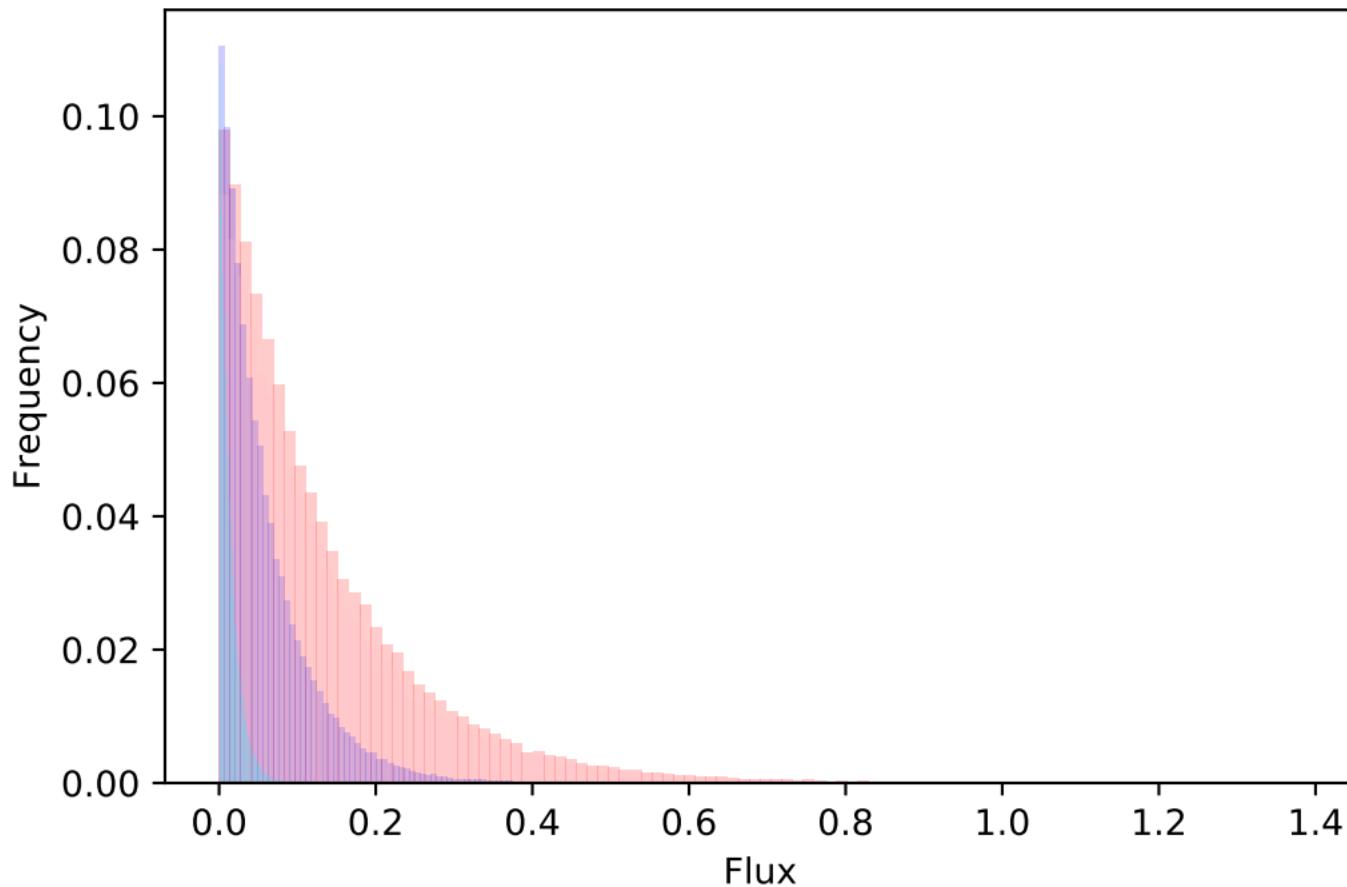
196 : GLX_h + Ser_h --> Gly_h + HPR_h
['2*AT2G13360']



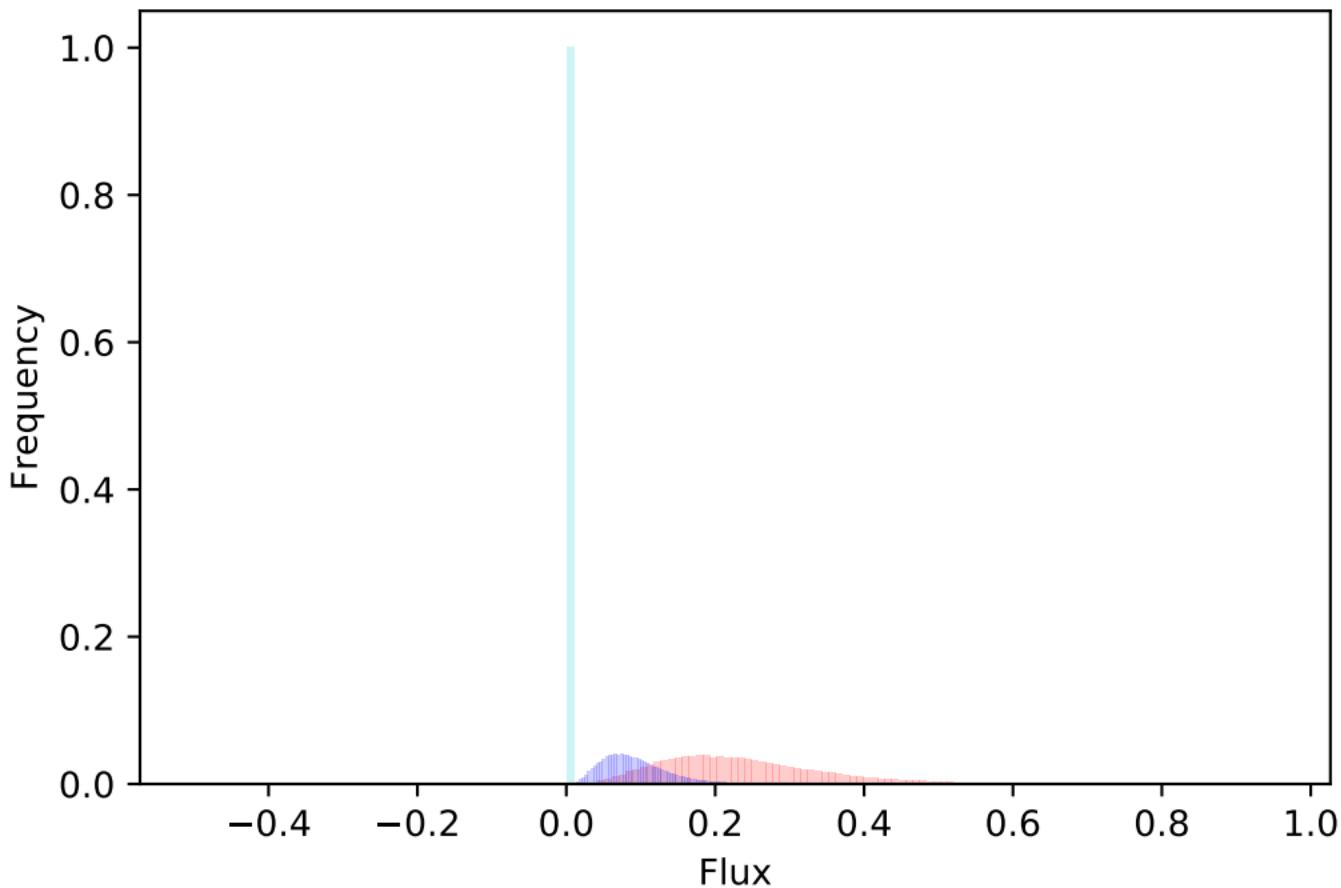
197 : HPR_h + H_h + NADH_h --> GCEA_h + NAD_h
['AT1G68010']



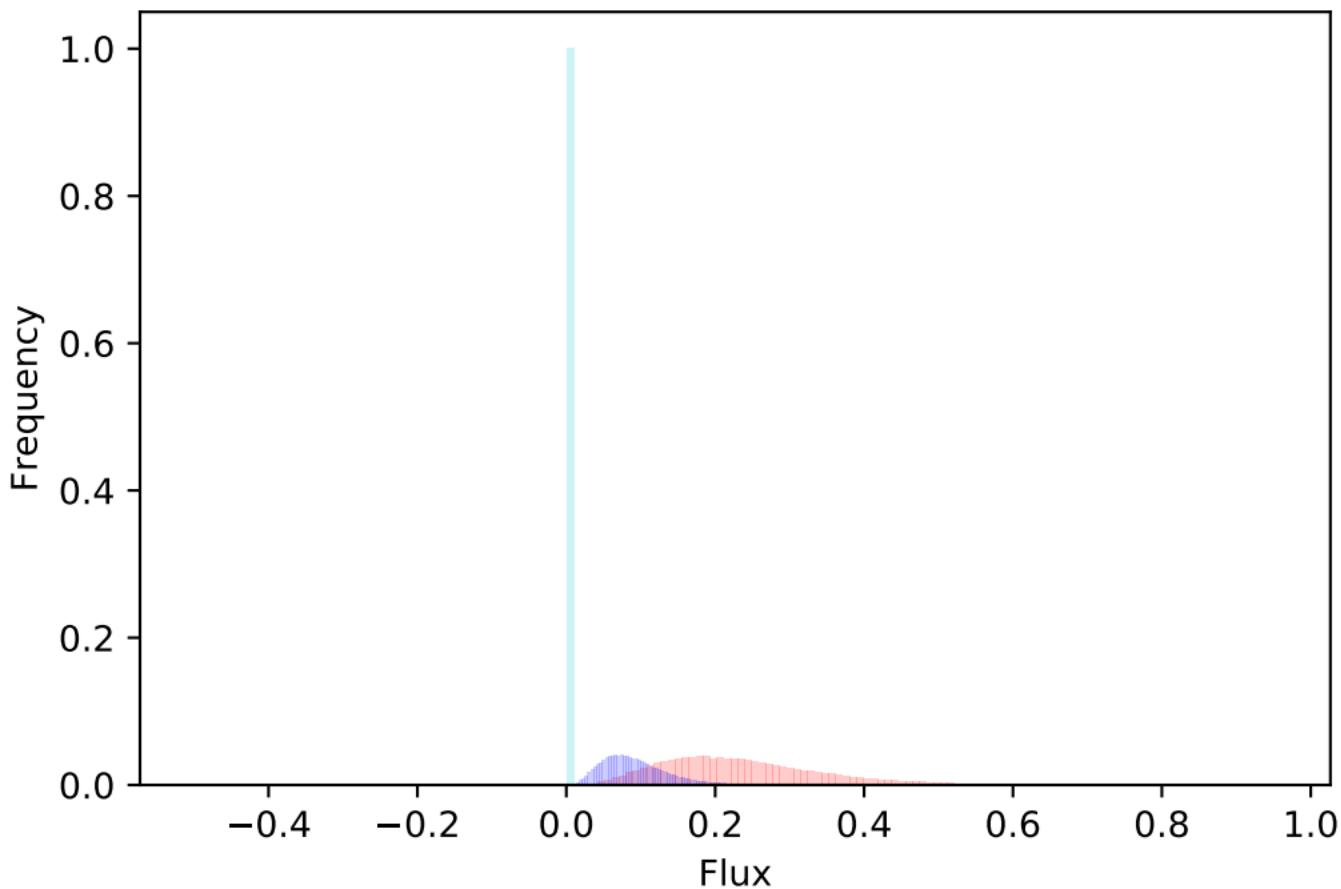
198 : GLX_h + Glu_h --> Gly_h + KG_h
['AT1G23310', 'AT1G70580']



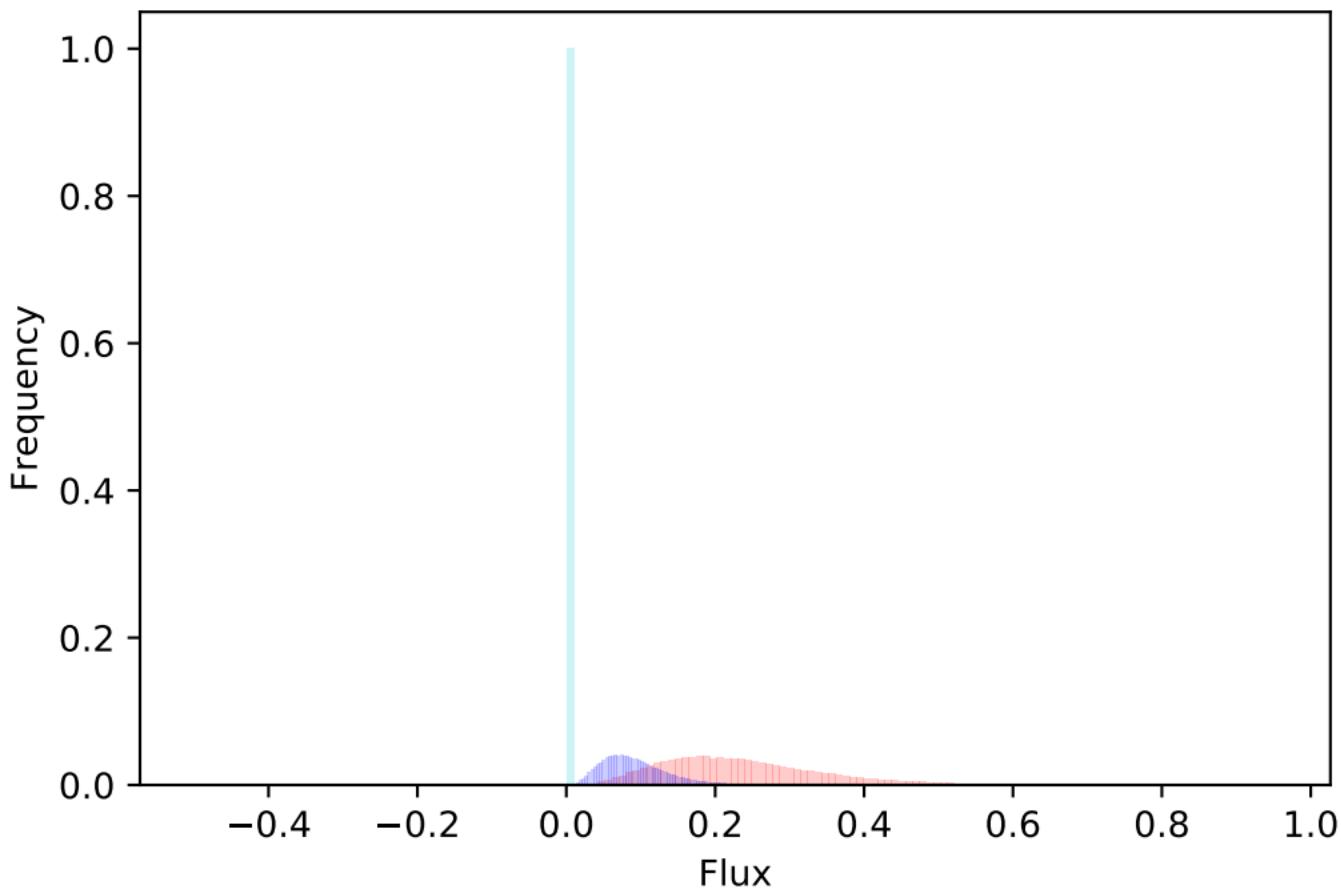
199 : ATP_h + PRPP_h --> H_h + PPi_h + PR_DASH_ATP_h
['AT1G58080', 'AT1G09795']



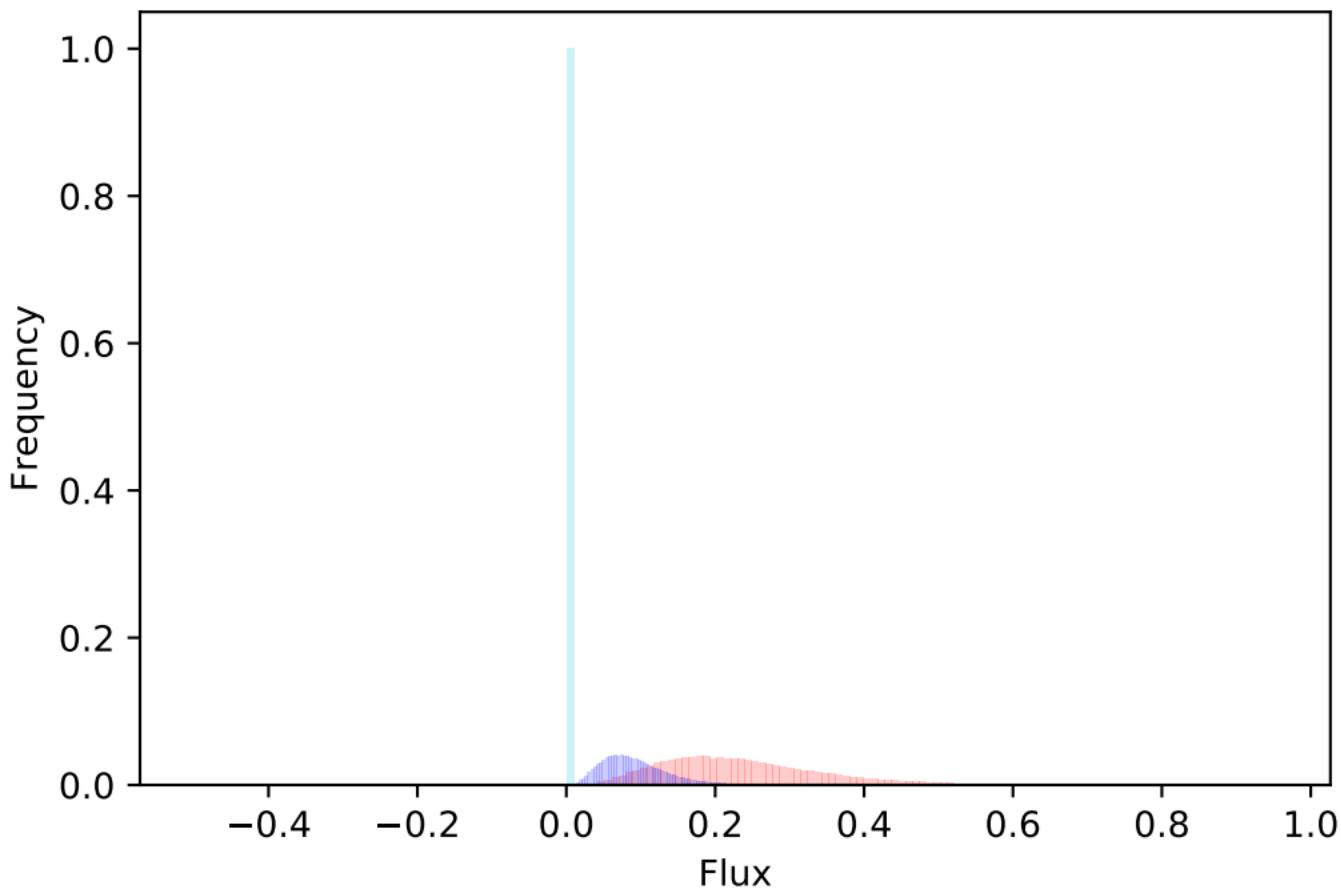
200 : H2O_h + PR_DASH_ATP_h --> 2.0 H_h + PPi_h + PR_DASH_AMP_h
[AT1G31860]



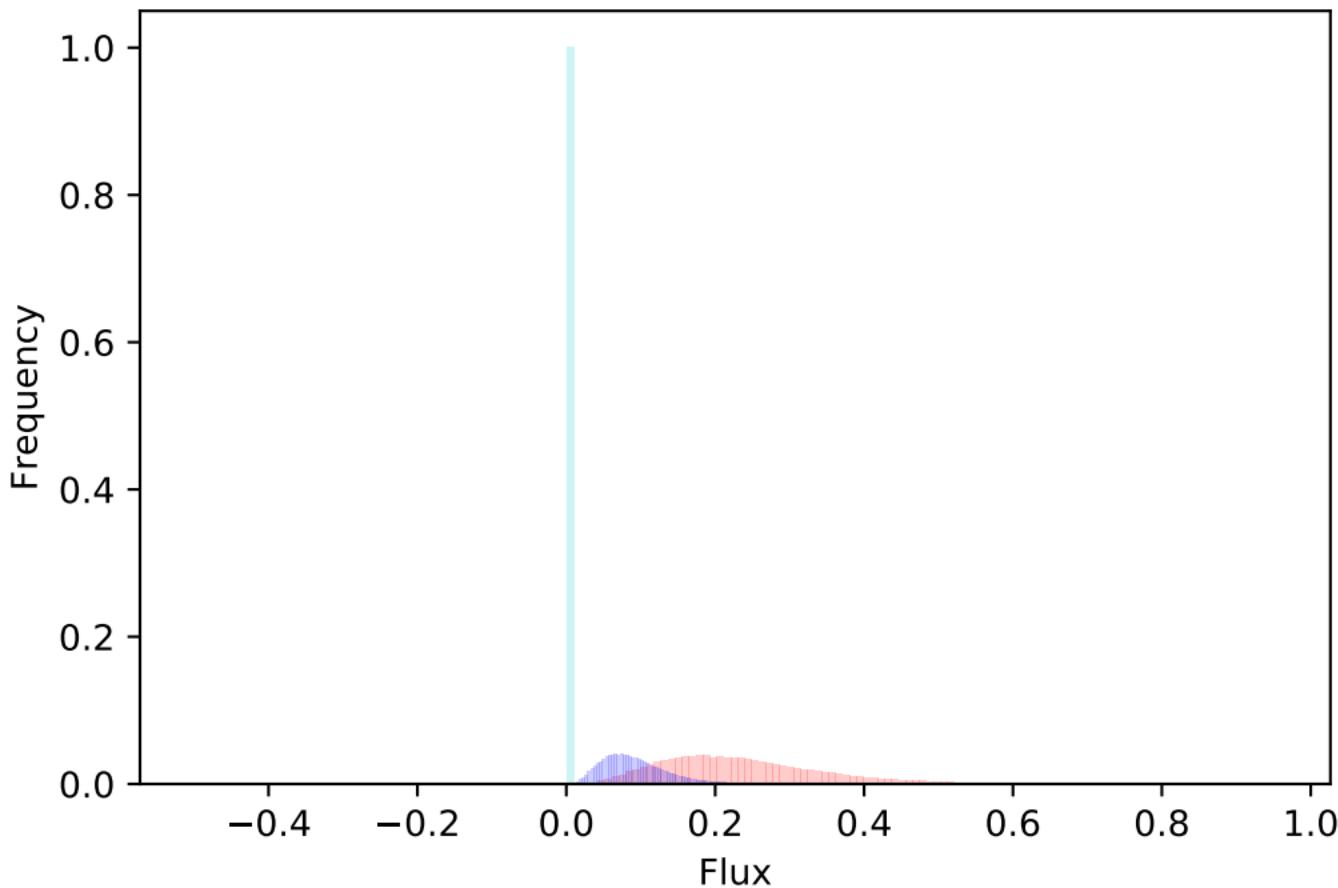
201 : H2O_h + PR_DASH_AMP_h --> P_DASH_AICAR_DASH_P_h
[AT1G31860]



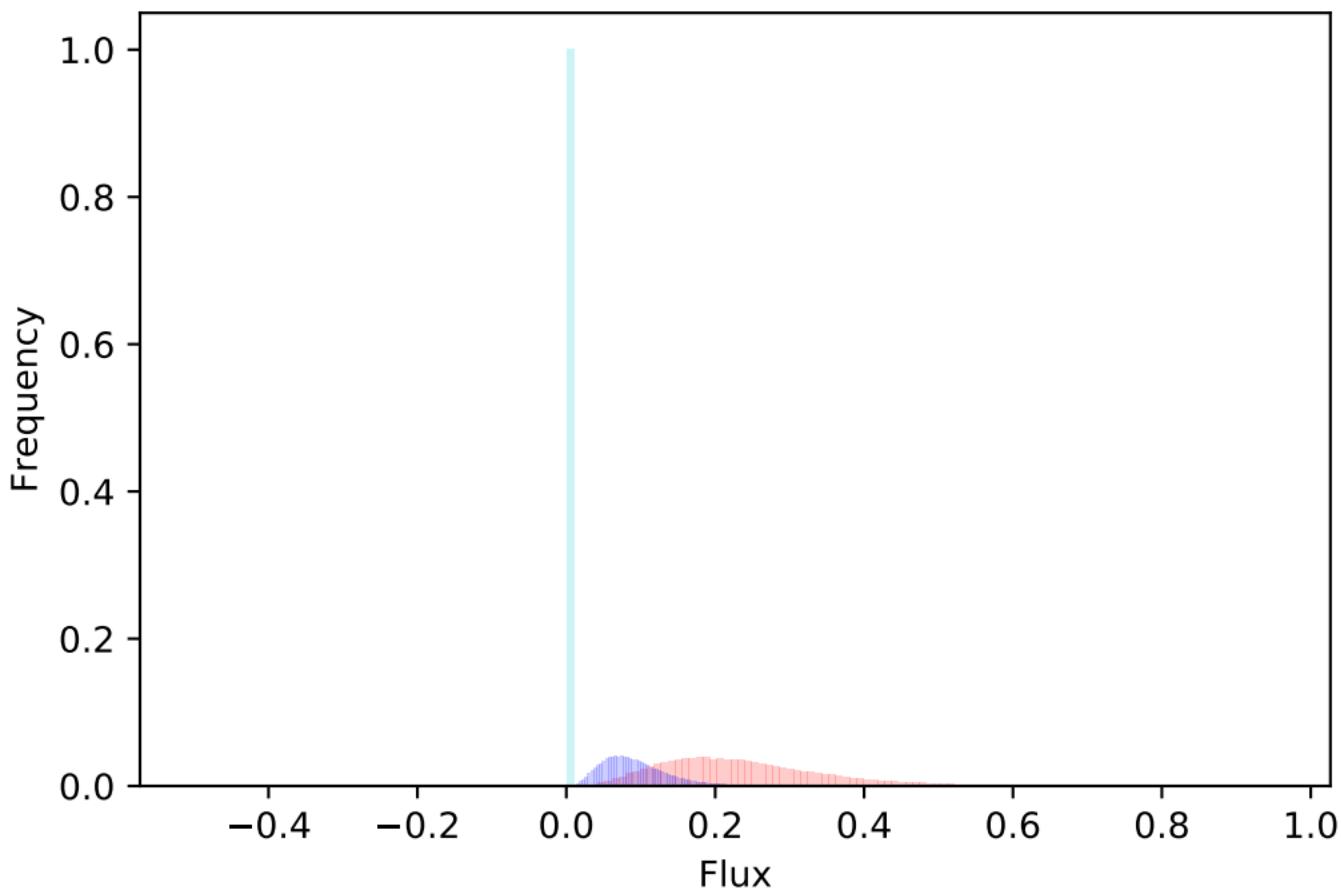
202 : P_DASH_AICAR_DASH_P_h --> Pu_DASH_AICAR_DASH_P_h
['AT2G36230']



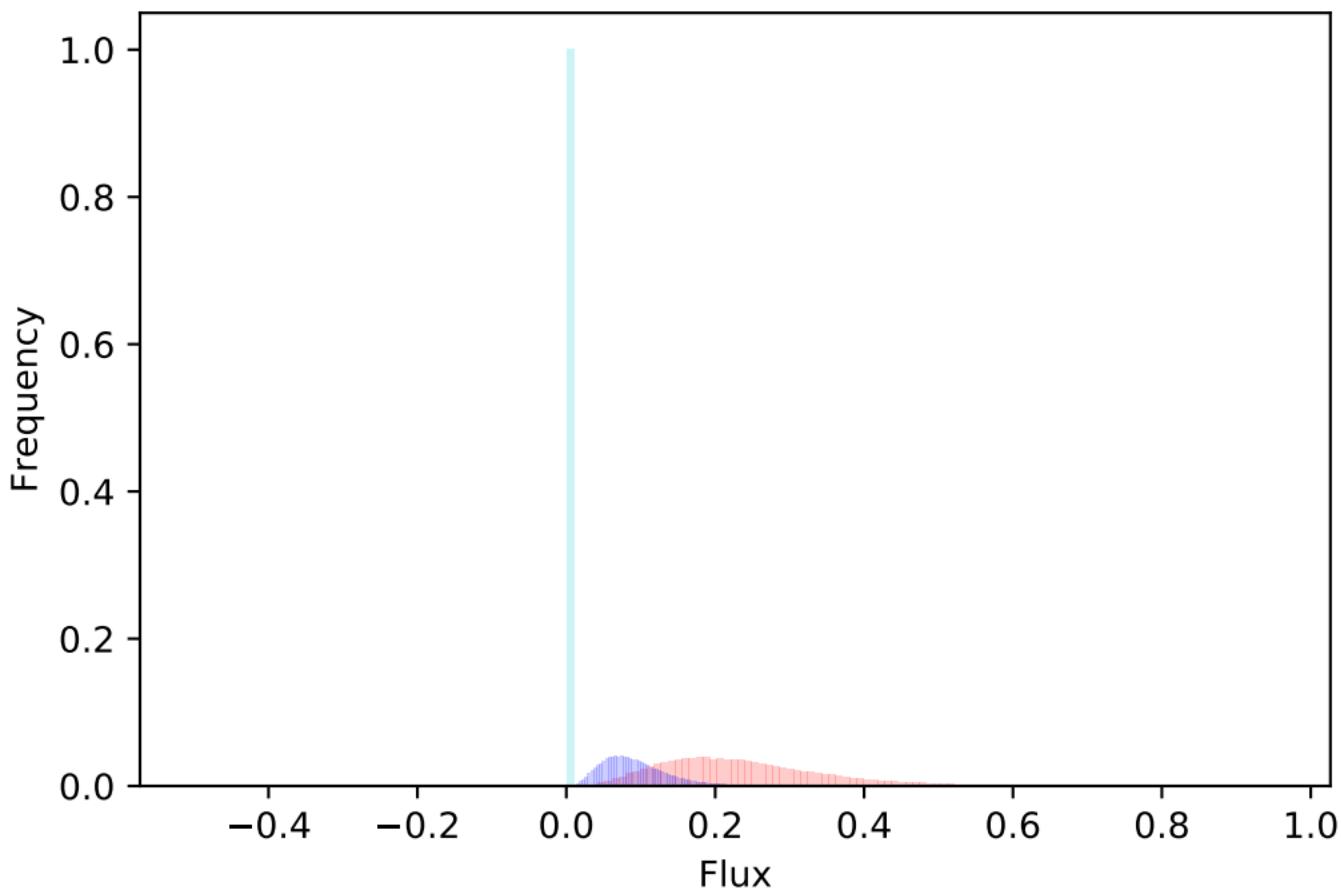
203 : Gln_h + Pu_DASH_AICAR_DASH_P_h --> AICAR_h + EIGP_h + Glu_h
['AT4G26900']



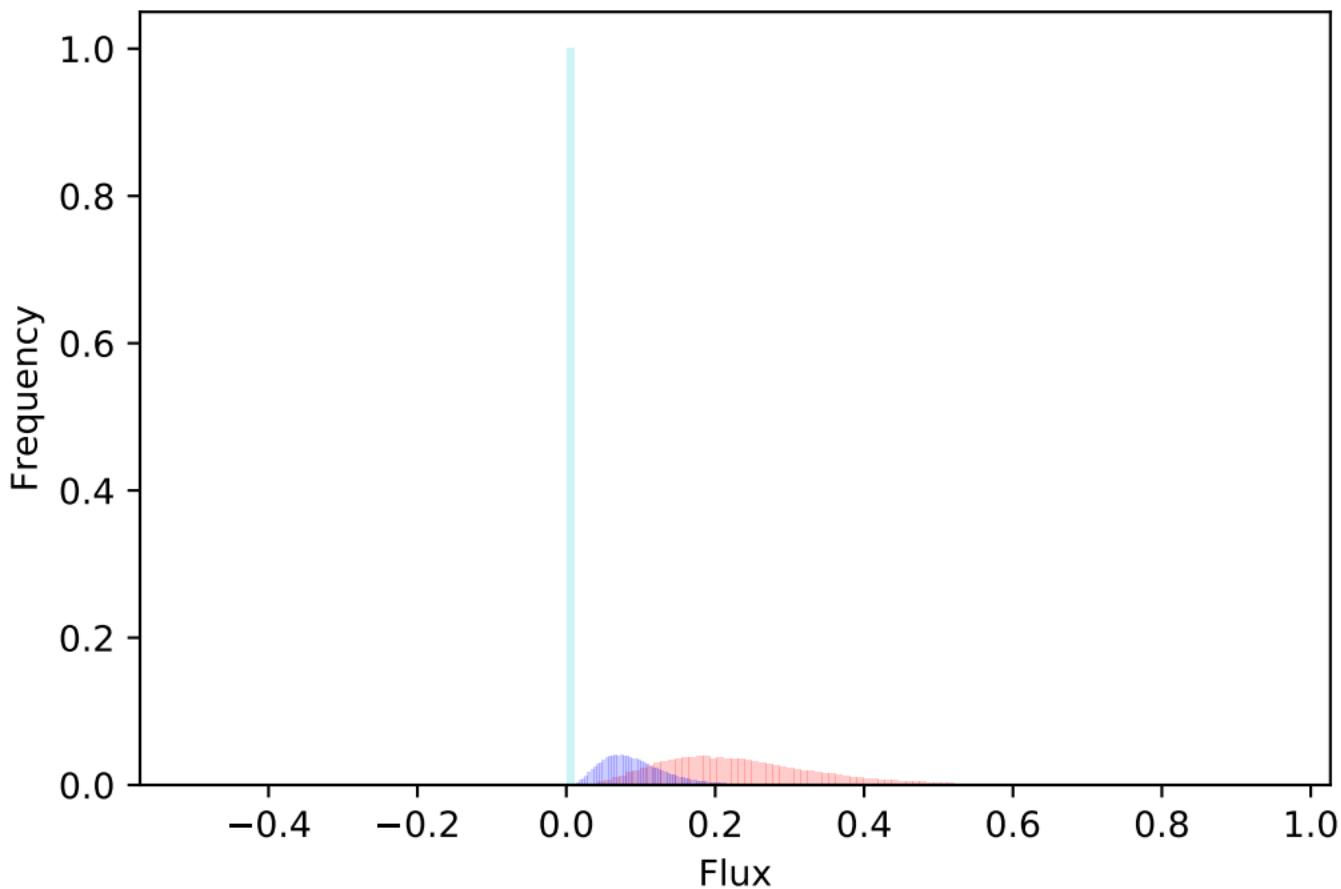
204 : EIGP_h --> H2O_h + IA_DASH_P_h
['AT3G22425', 'AT4G14910']



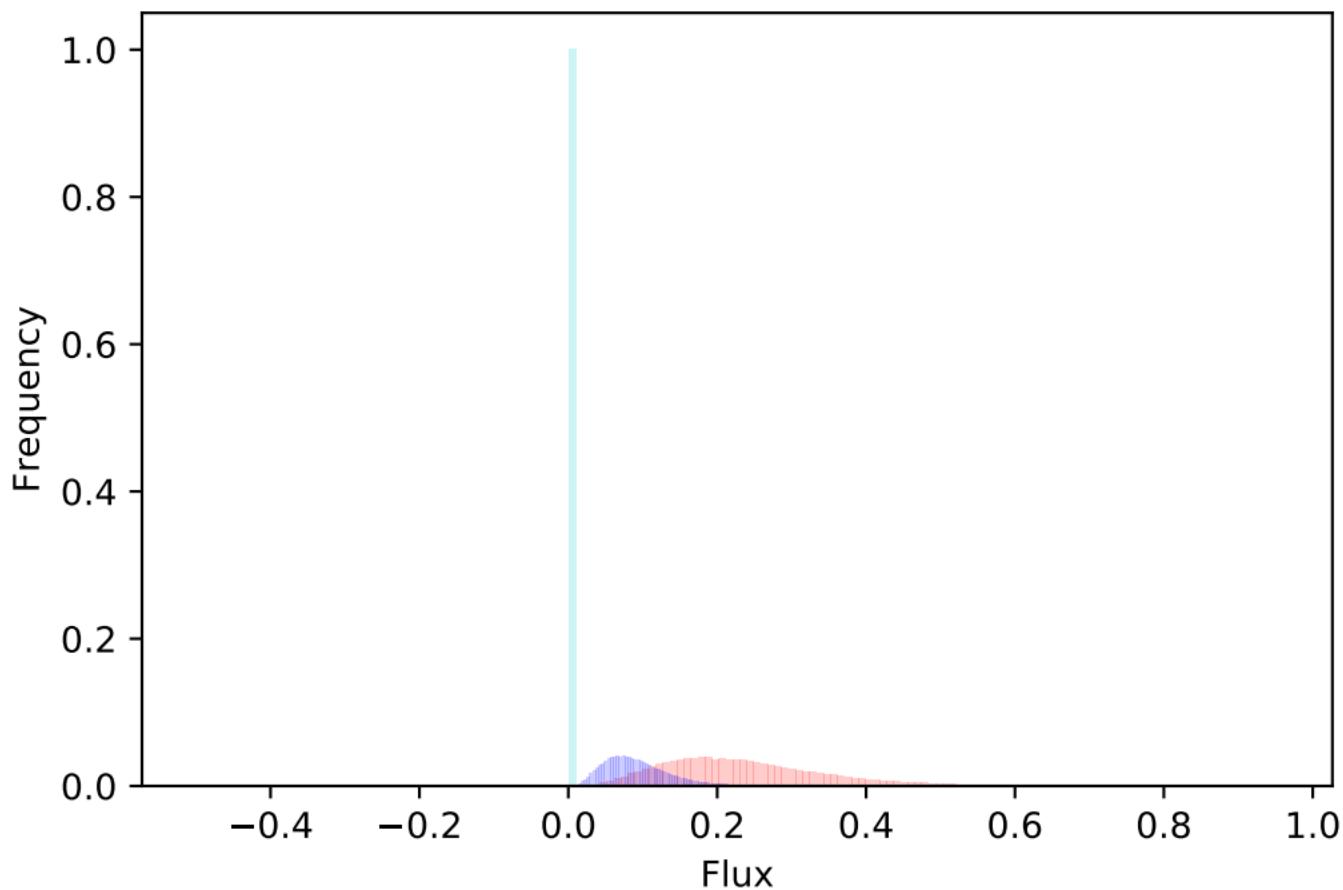
205 : Glu_h + IA_DASH_P_h --> Hisol_DASH_P_h + KG_h
['AT1G71920', 'AT5G10330']



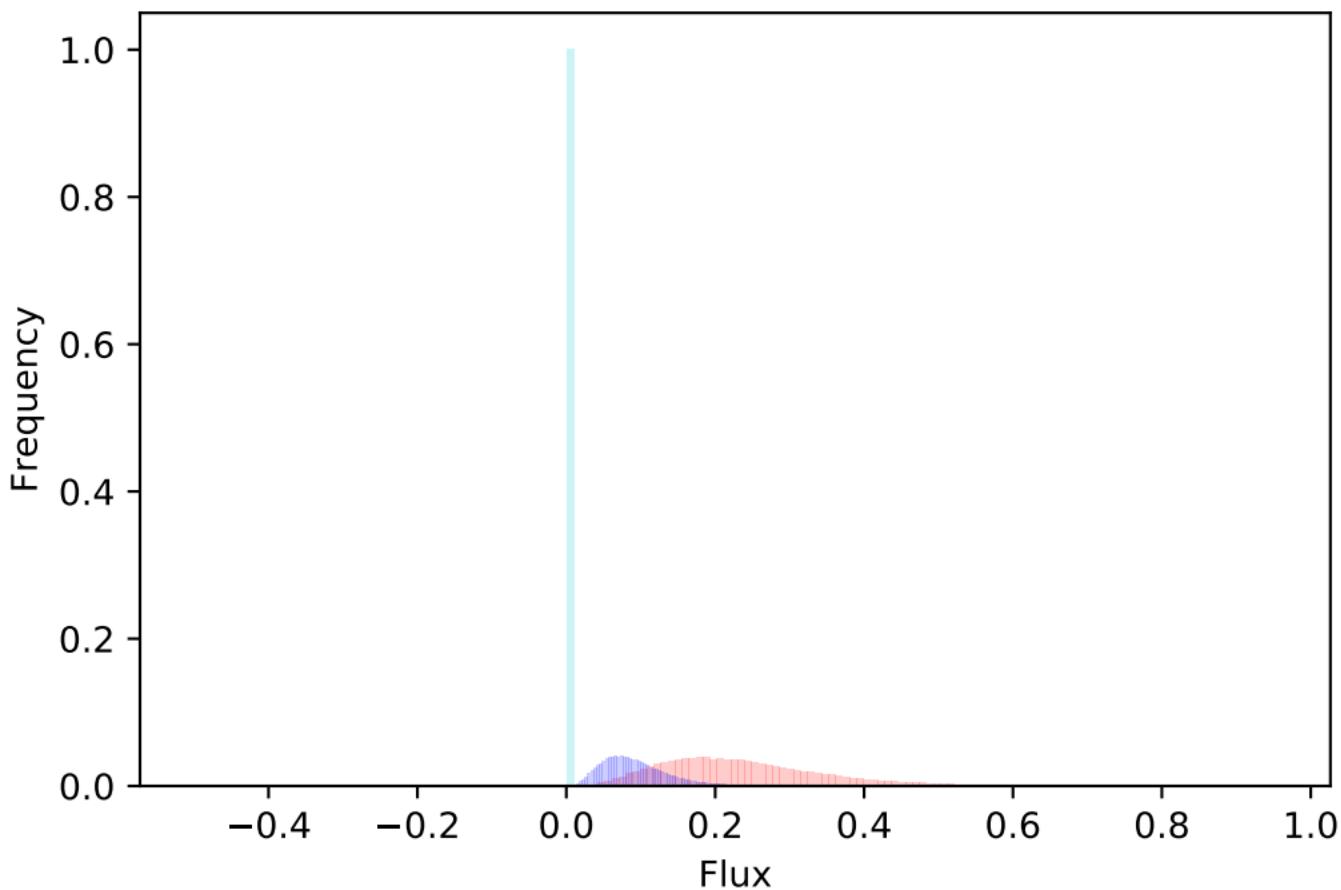
206 : H₂O_h + Hisol_DASH_P_h --> Hisol_h + Pi_h
['AT4G39120']



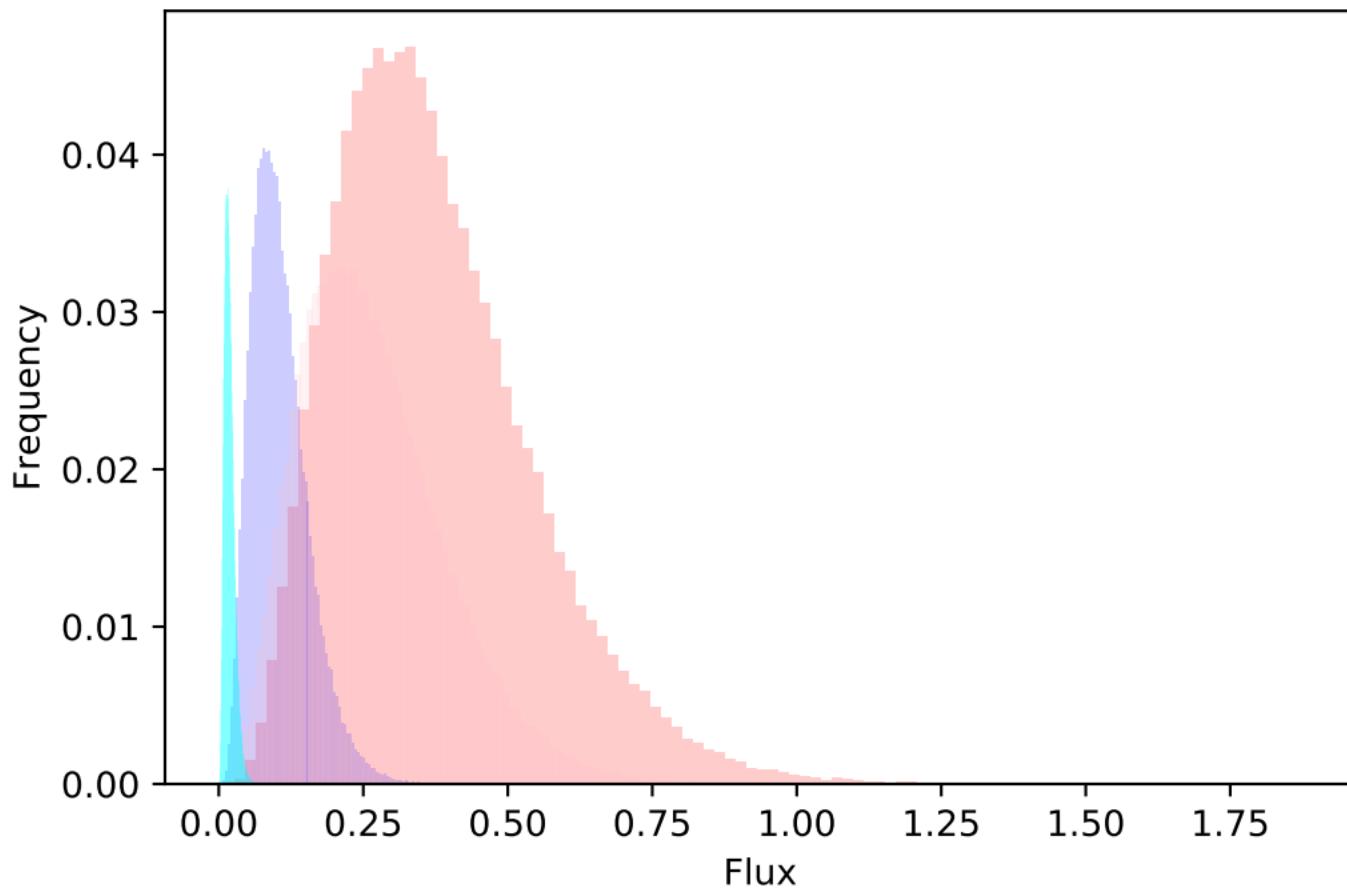
207 : Hisol_h + NAD_h --> 2.0 H_h + Hisal_h + NADH_h
['AT5G63890']



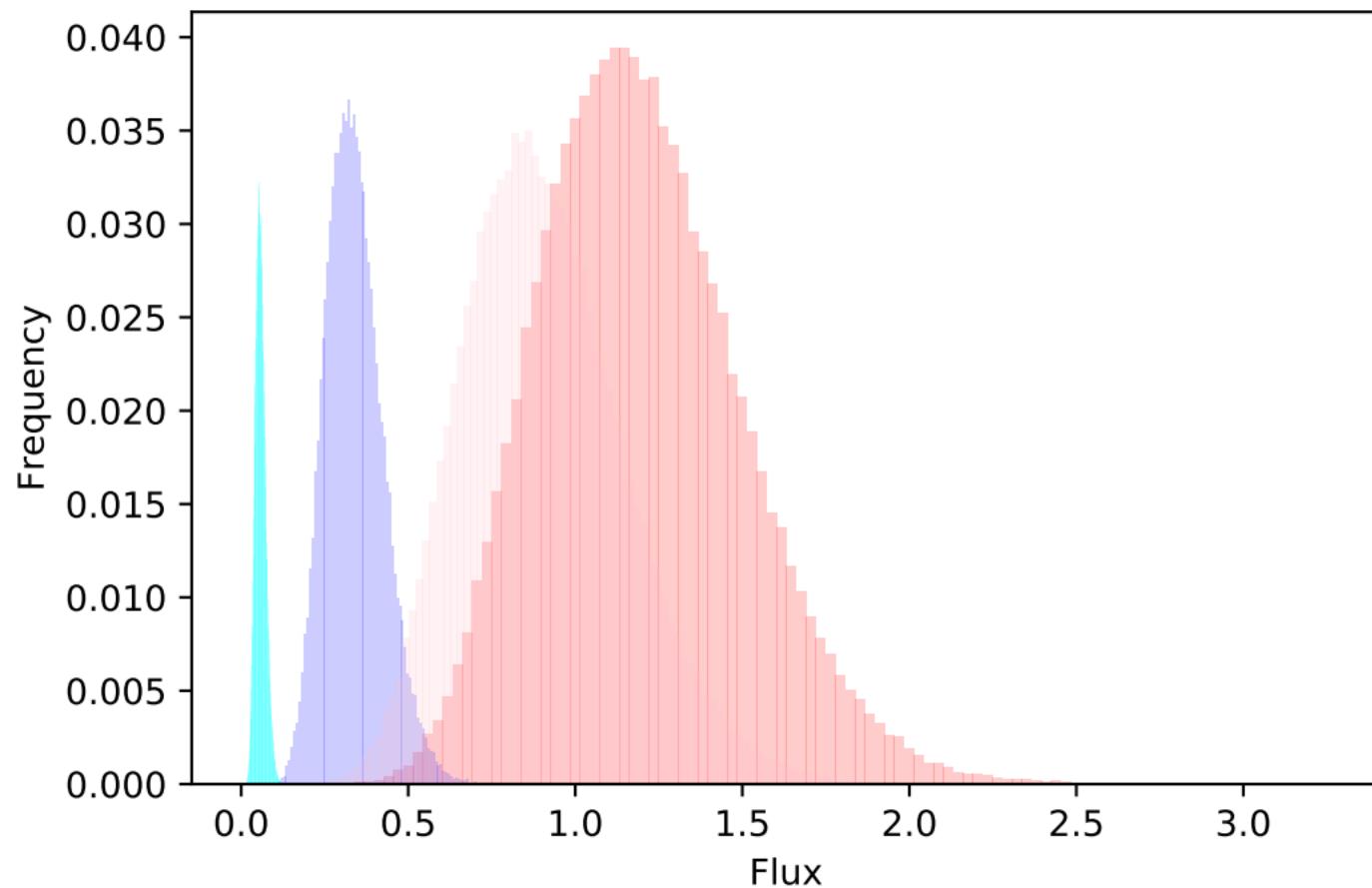
208 : H₂O_h + Hisal_h + NAD_h --> H_h + His_h + NADH_h
['AT5G63890']



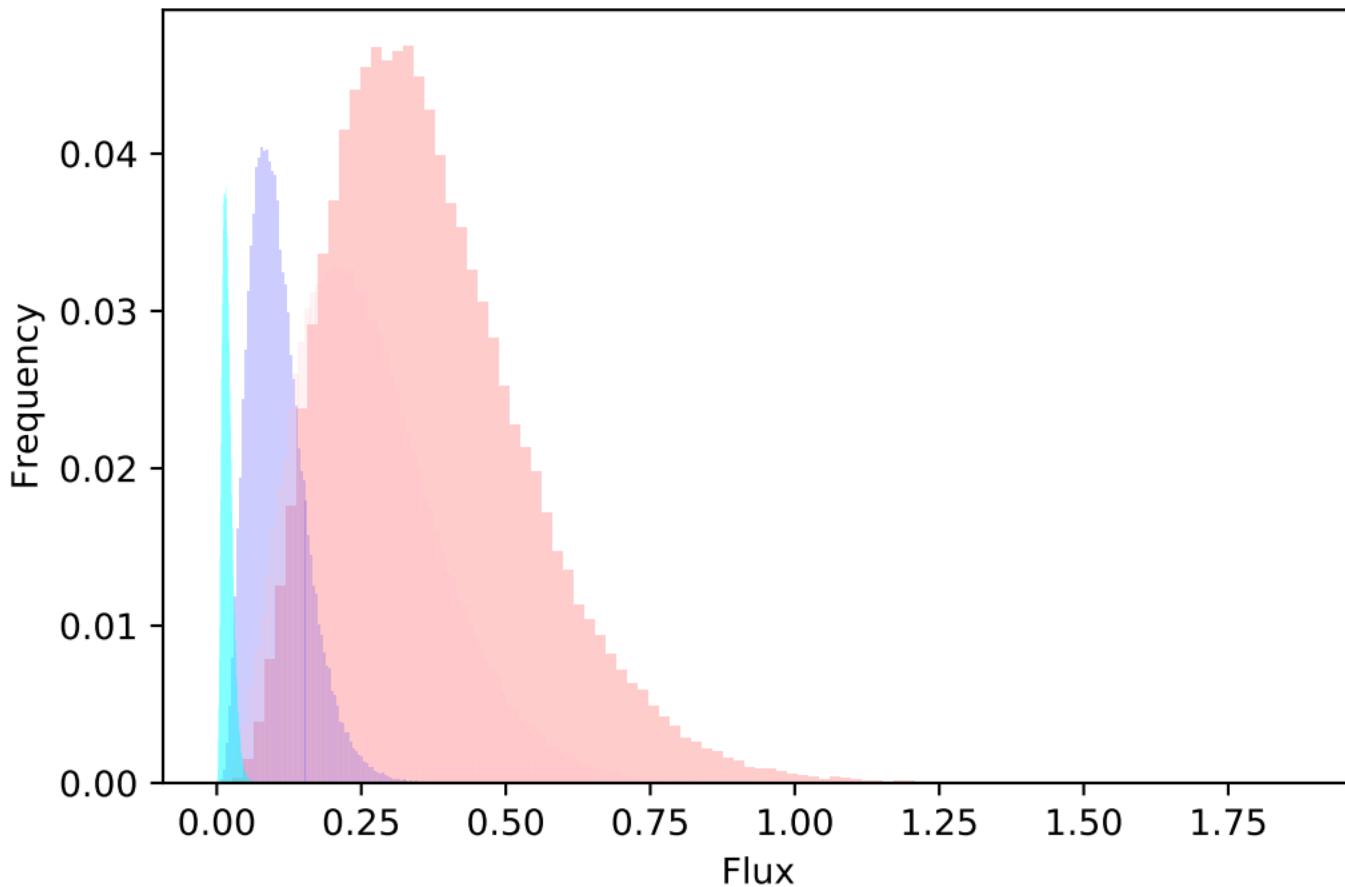
209 : Thr_h --> NH4_h + OB_h
['4*AT3G10050']



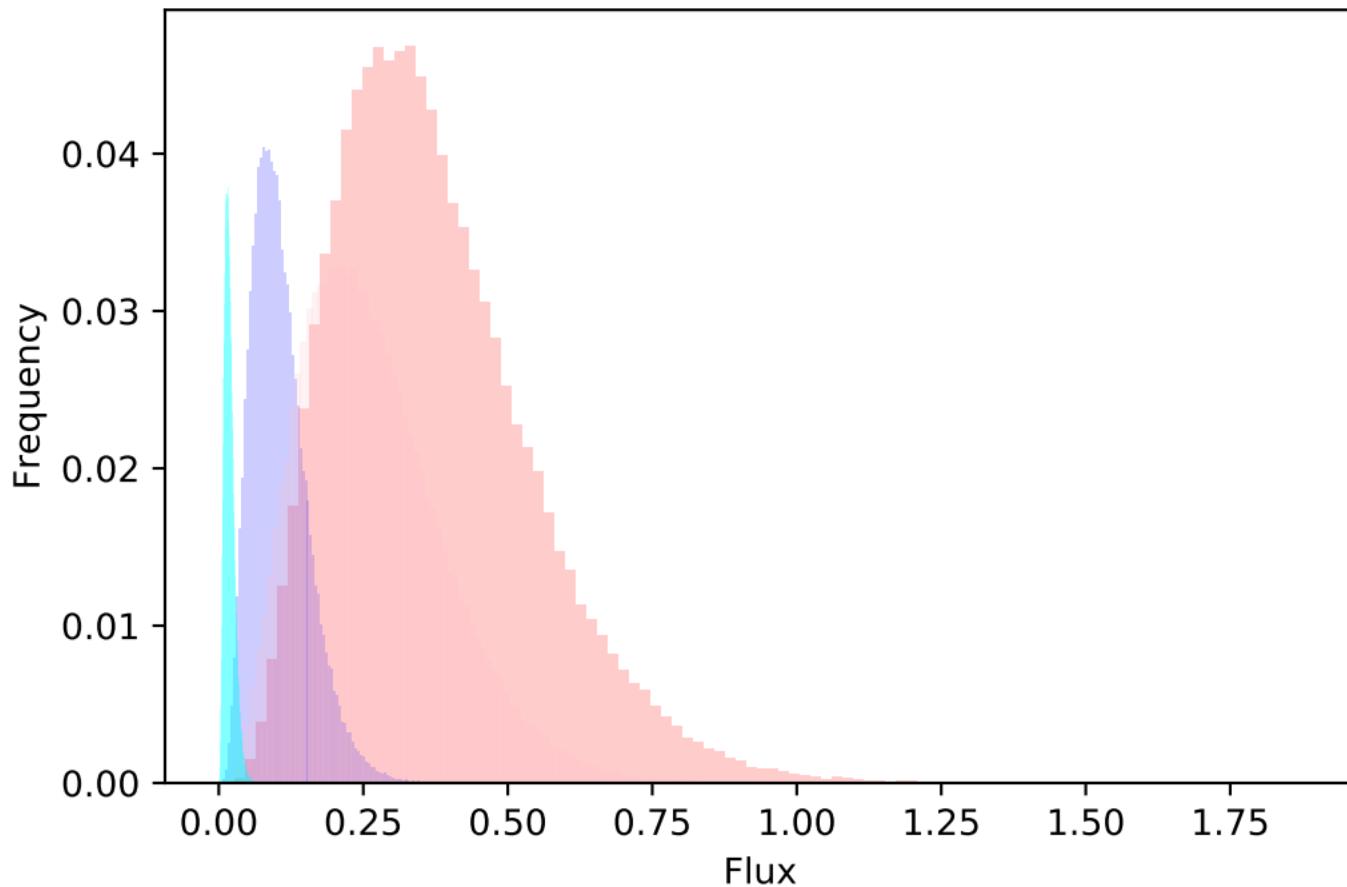
210 : H_h + Pyr_h + ThPP_h --> CO2_h + H_DASH_Eth_DASH_ThPP_h
['2*AT3G48560']



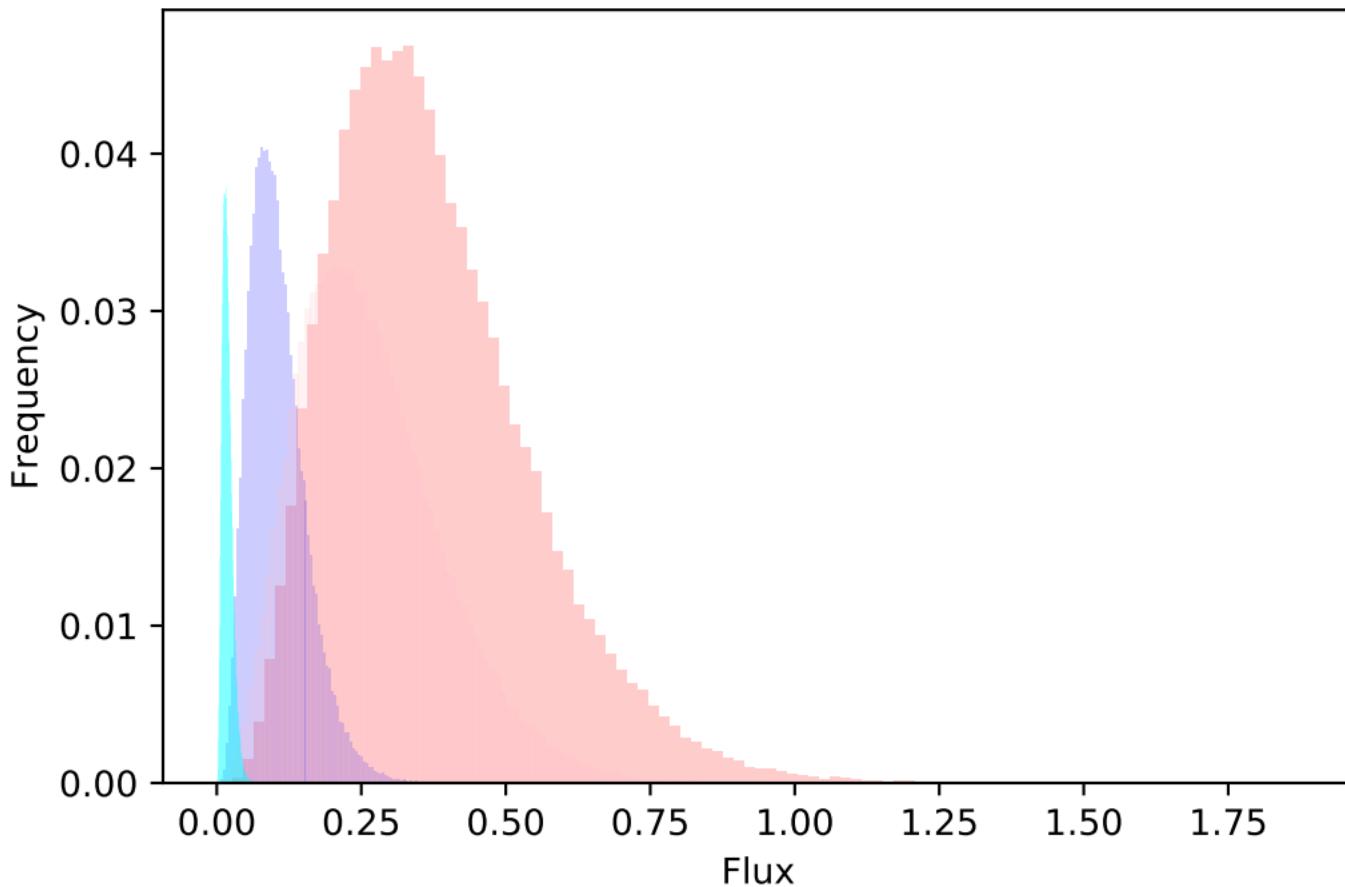
211 : H_DASH_Eth_DASH_ThPP_h + OB_h --> AHB_h + ThPP_h
['2*AT3G48560']



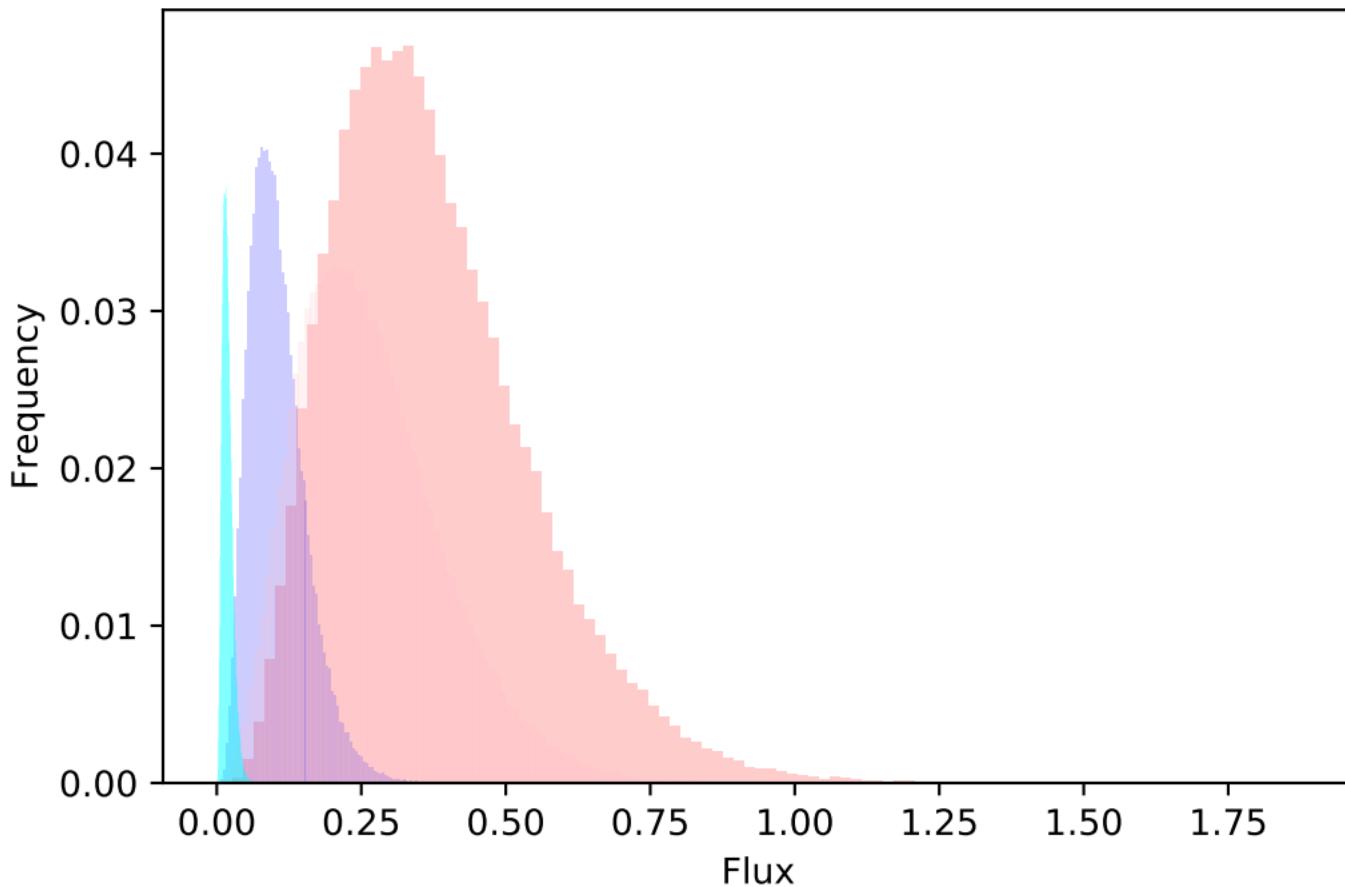
212 : AHB_h <=> HMOP_h
['AT3G58610']



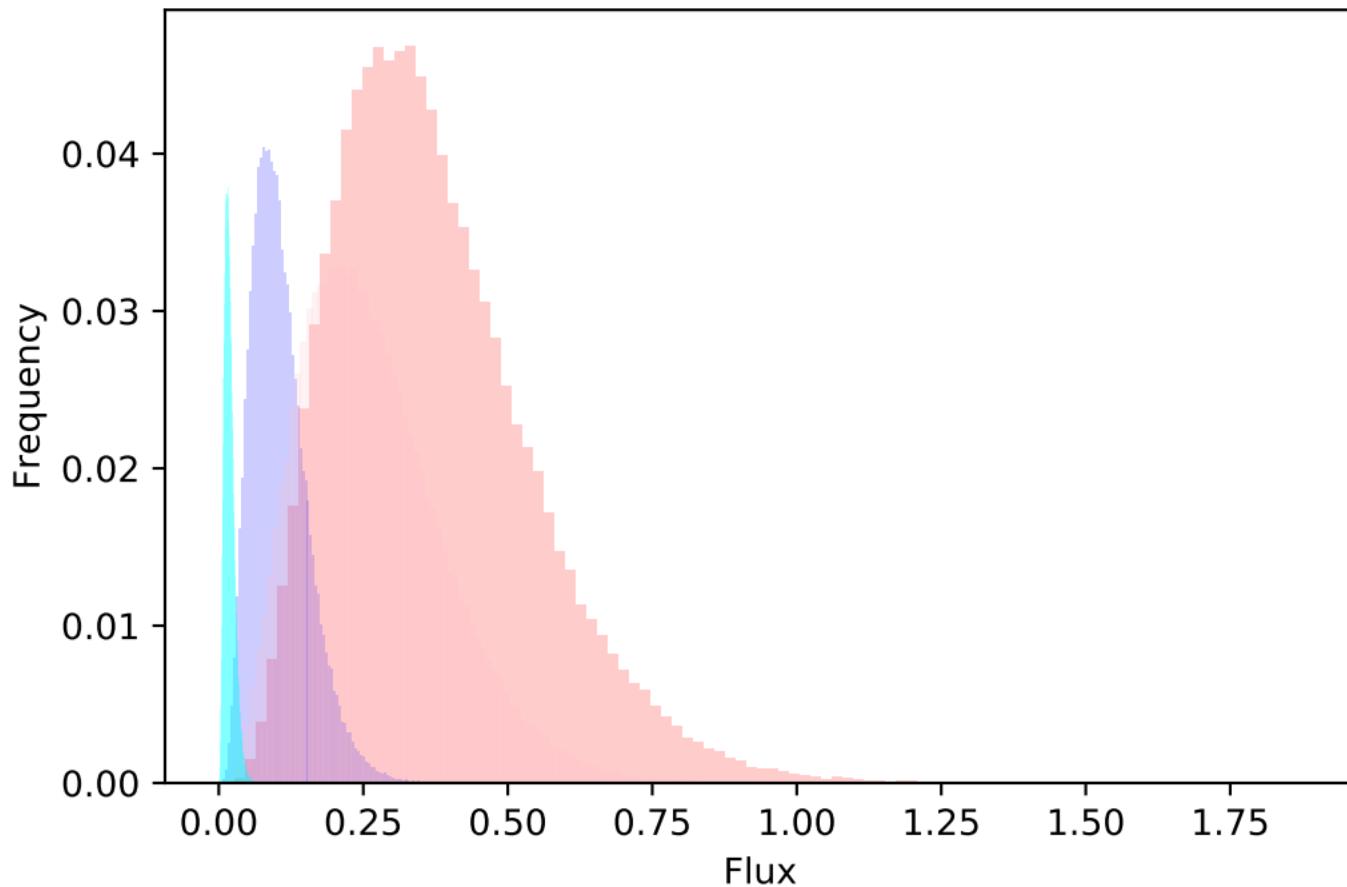
213 : HMOP_h + H_h + NADPH_h --> DHMP_h + NADP_h
['AT3G58610']



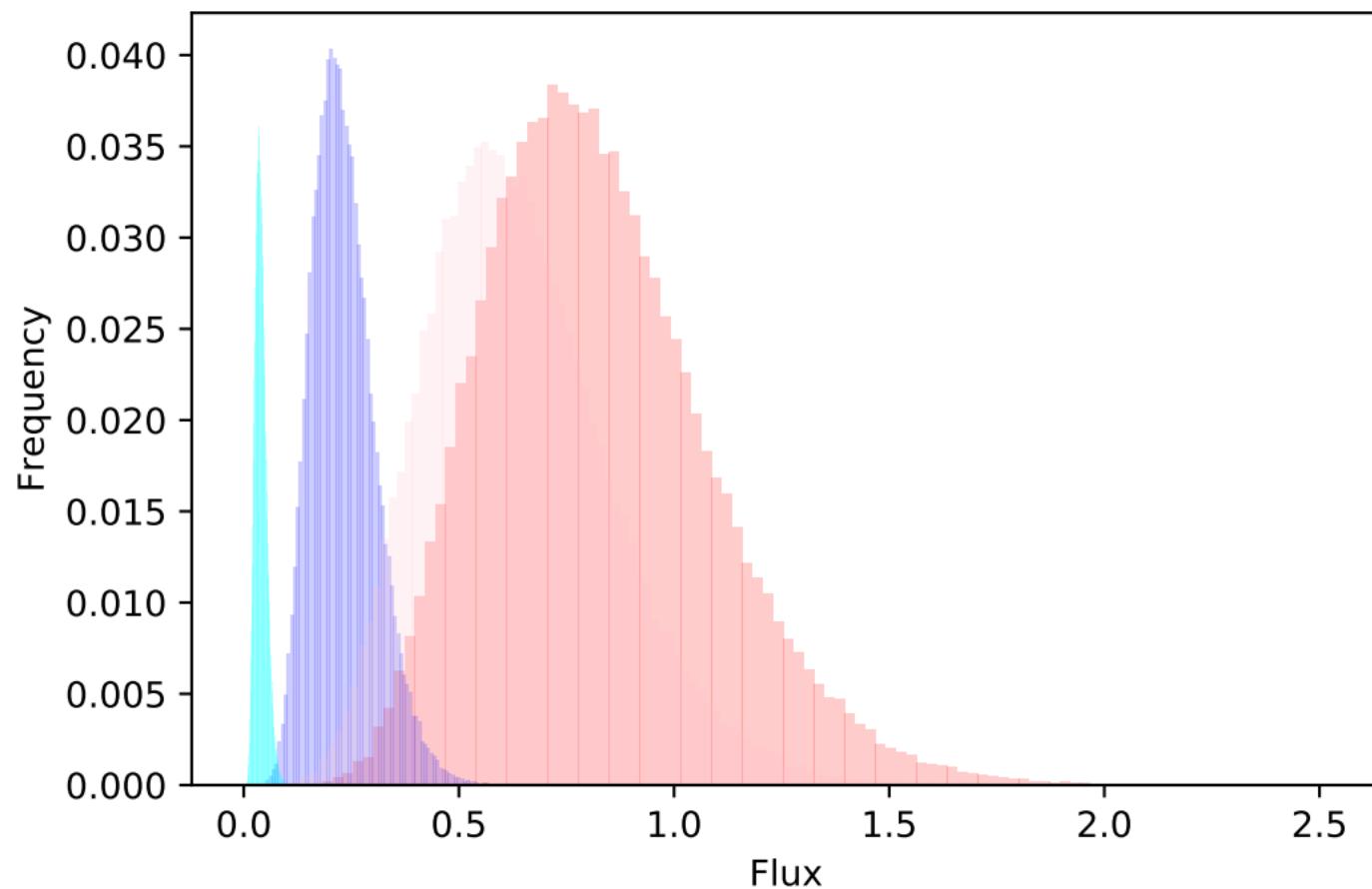
214 : DHMP_h --> H2O_h + MOP_h
['AT3G23940']



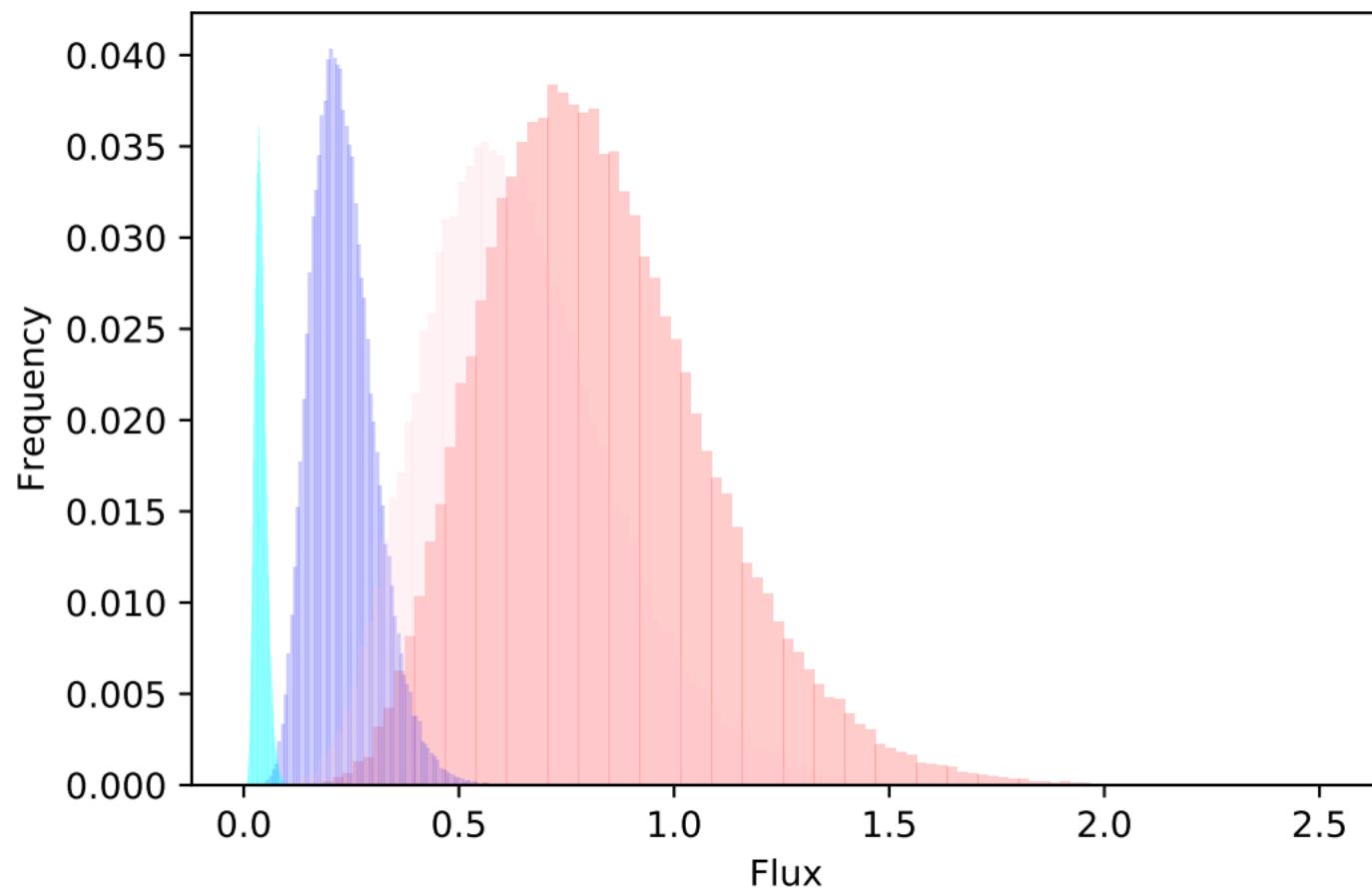
215 : Glu_h + MOP_h <=> Ile_h + KG_h
['AT5G65780', 'AT1G10070', 'AT3G49680']



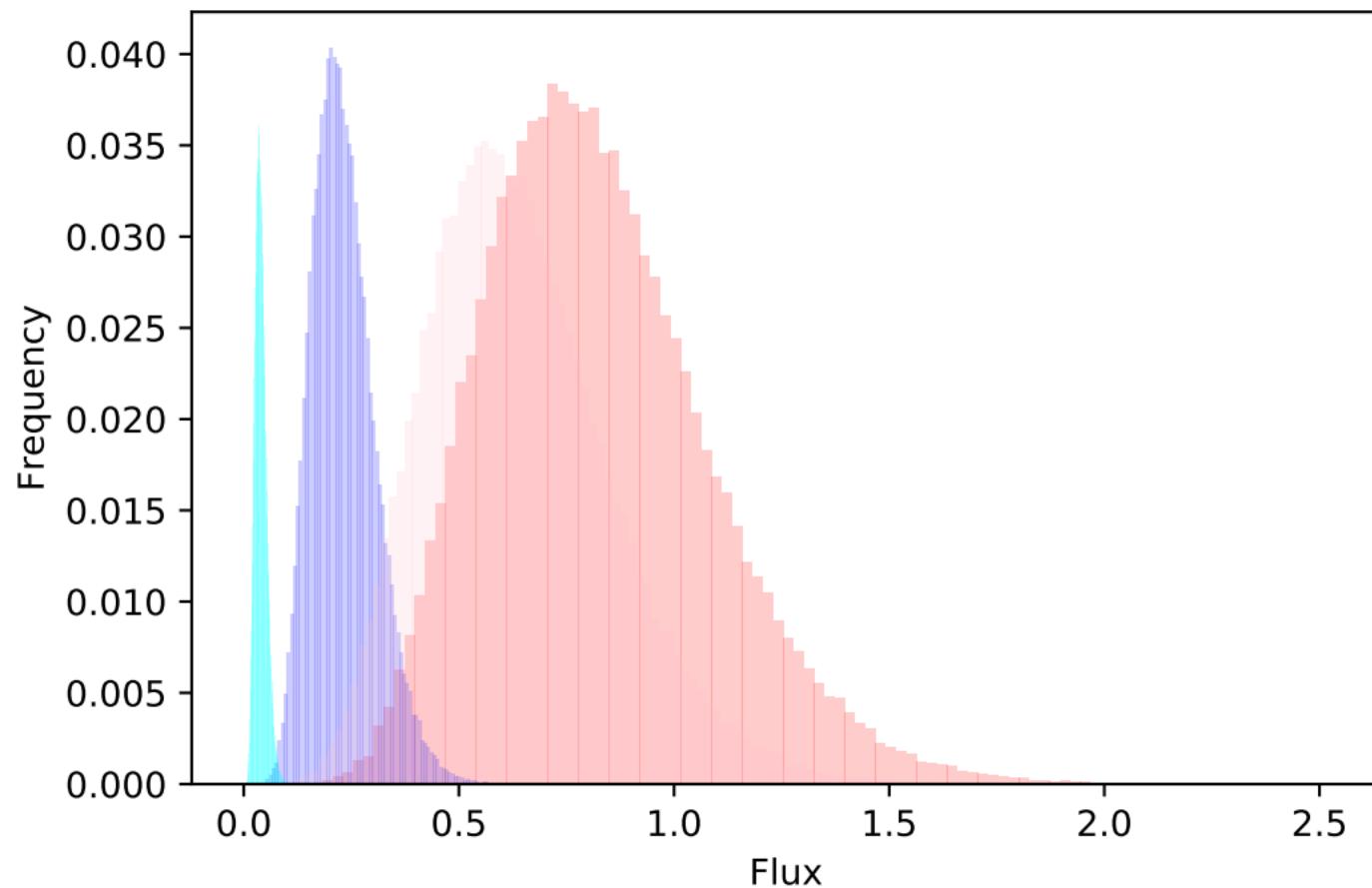
216 : H_DASH_Eth_DASH_ThPP_h + Pyr_h --> AL_h + ThPP_h
['2*AT3G48560']



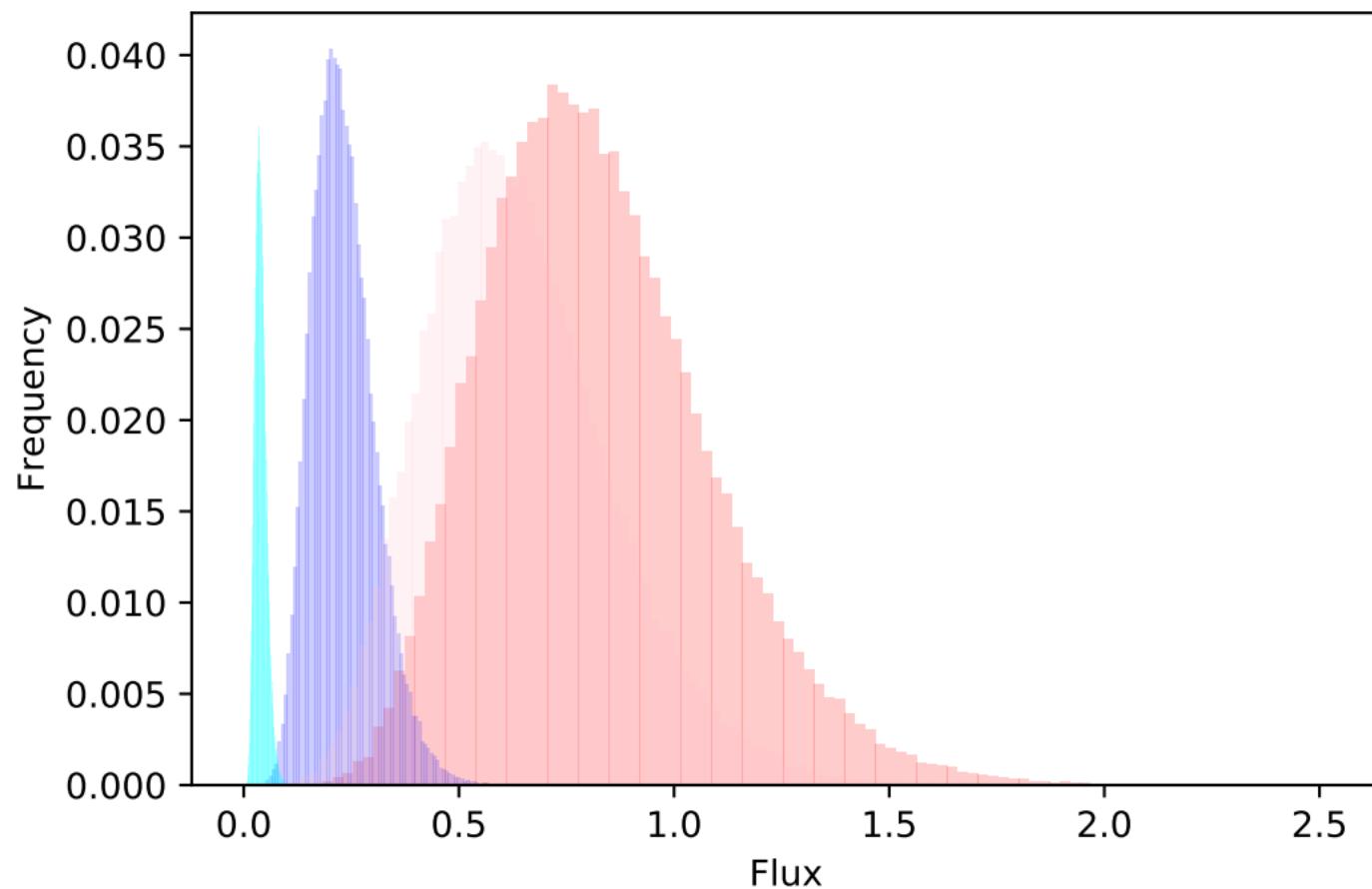
217 : AL_h <=> HMOB_h
['AT3G58610']



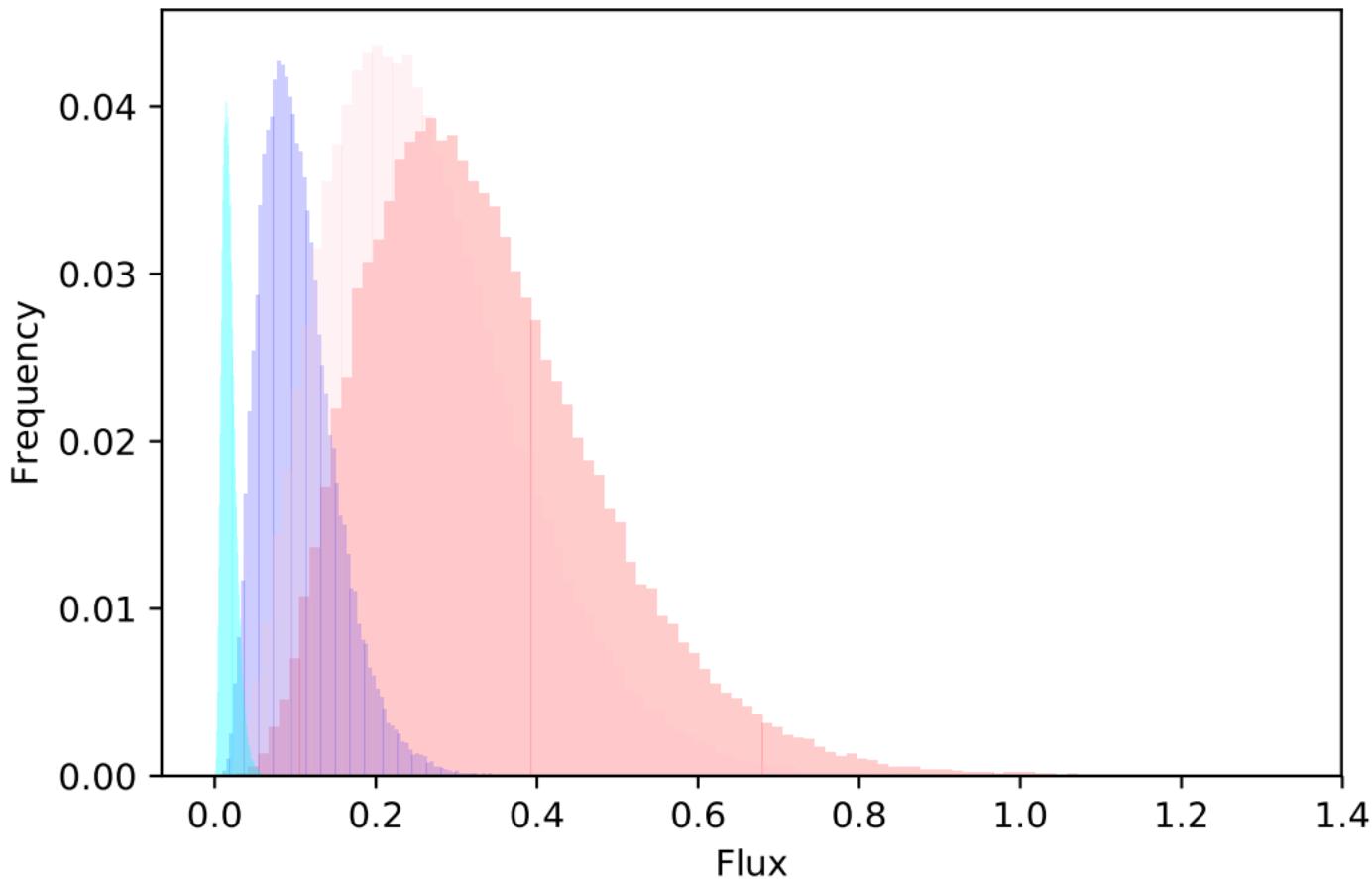
218 : HMOB_h + H_h + NADPH_h --> DHMB_h + NADP_h
['AT3G58610']



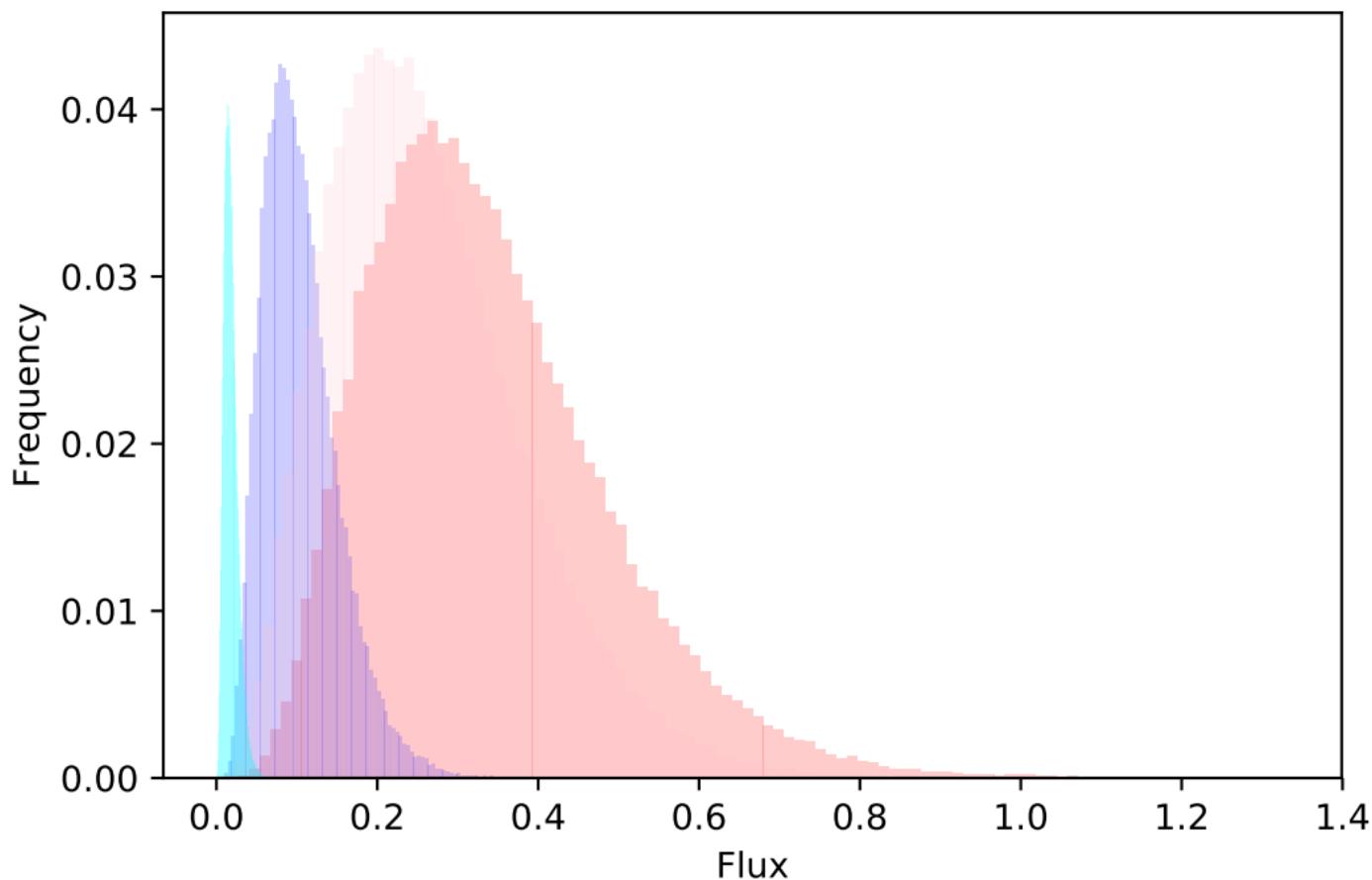
219 : DHMB_h --> H2O_h + MOB_h
['AT3G23940']



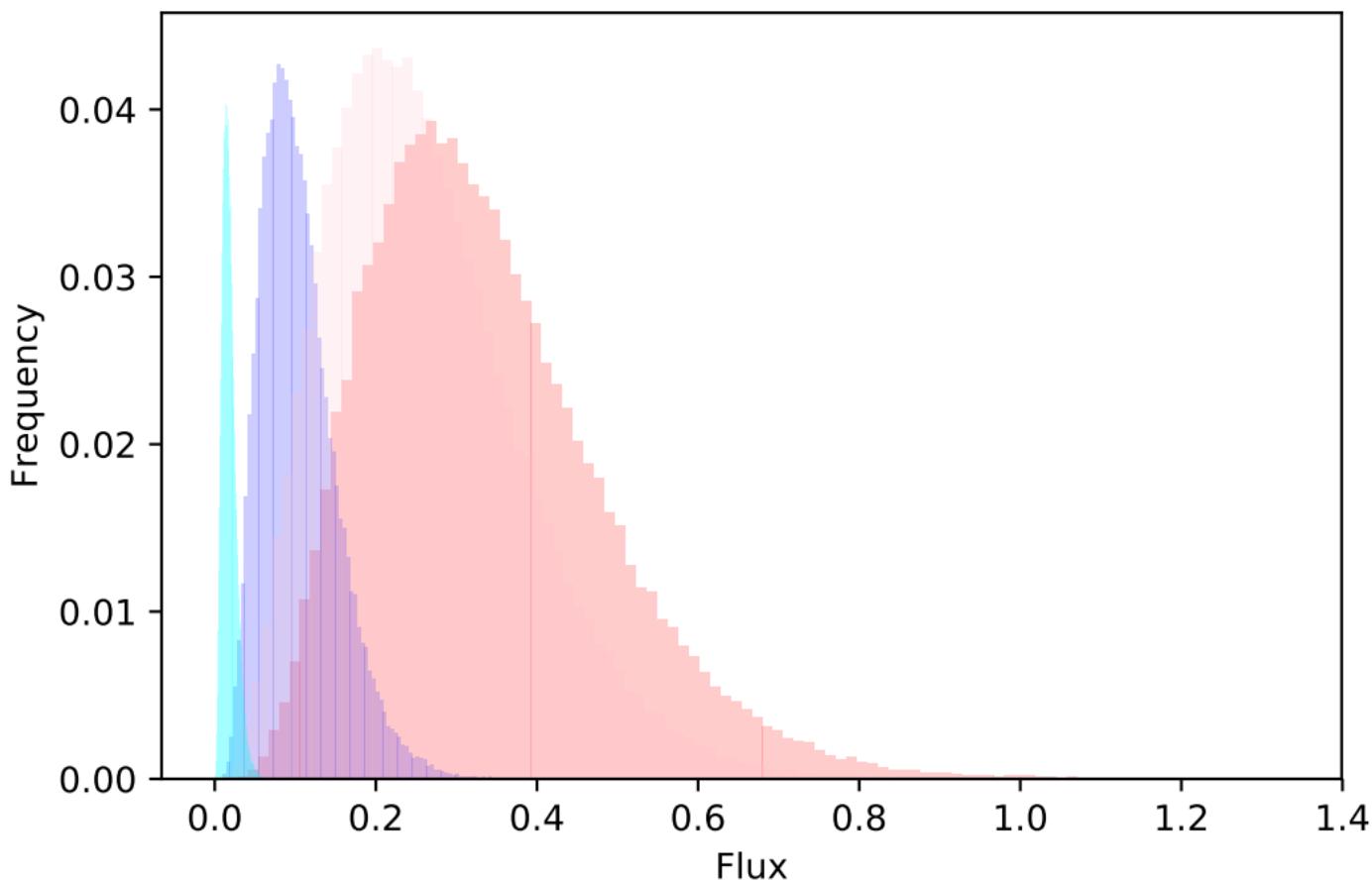
220 : A_DASH_CoA_h + H2O_h + MOB_h --> 2IPM_h + CoA_h + H_h
['4*AT1G74040', '2*AT1G18500']



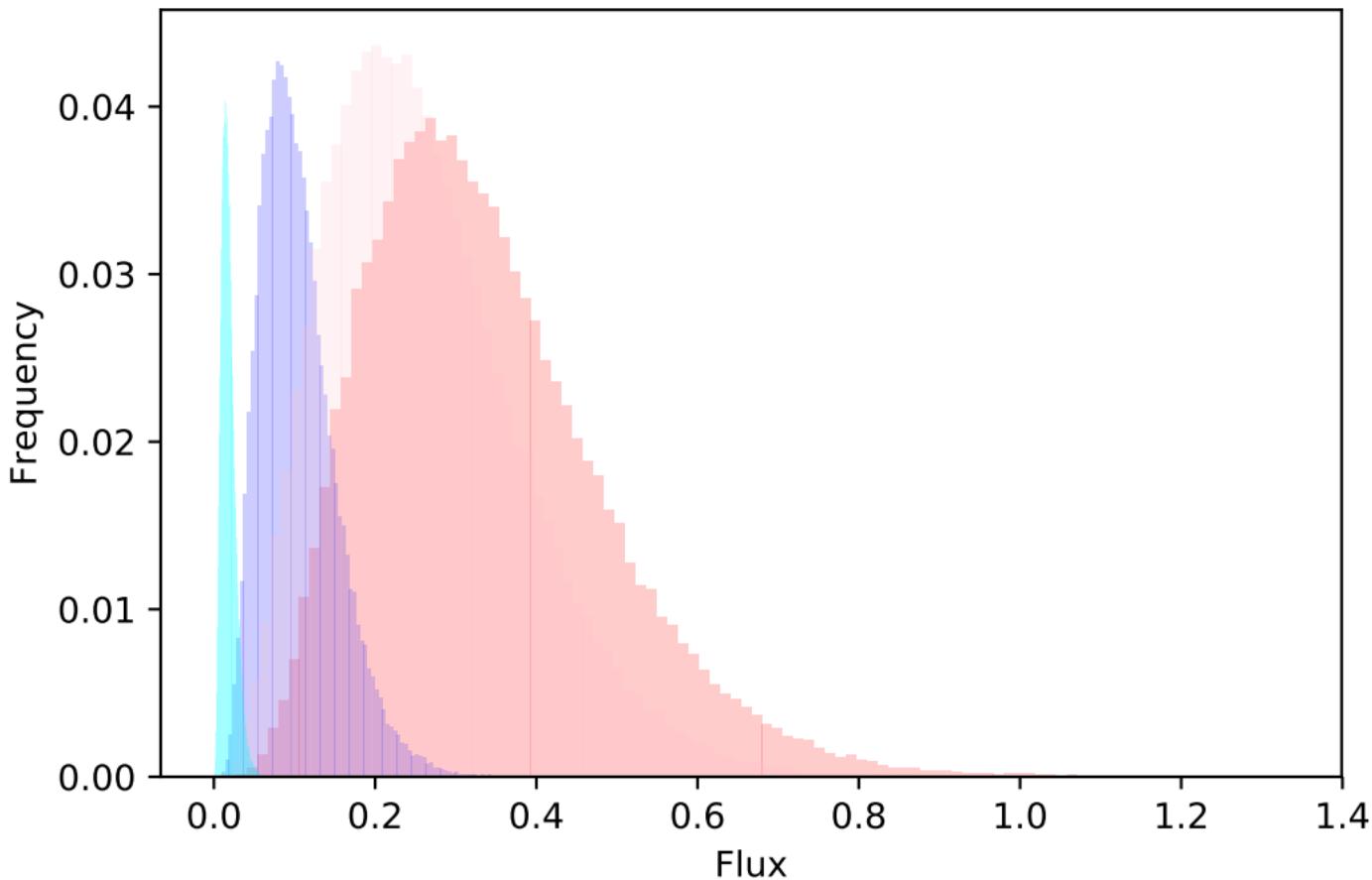
221 : 2IPM_h --> H2O_h + IPM_h
['AT3G58990', 'AT2G43090', 'AT4G13430', 'AT2G43100']

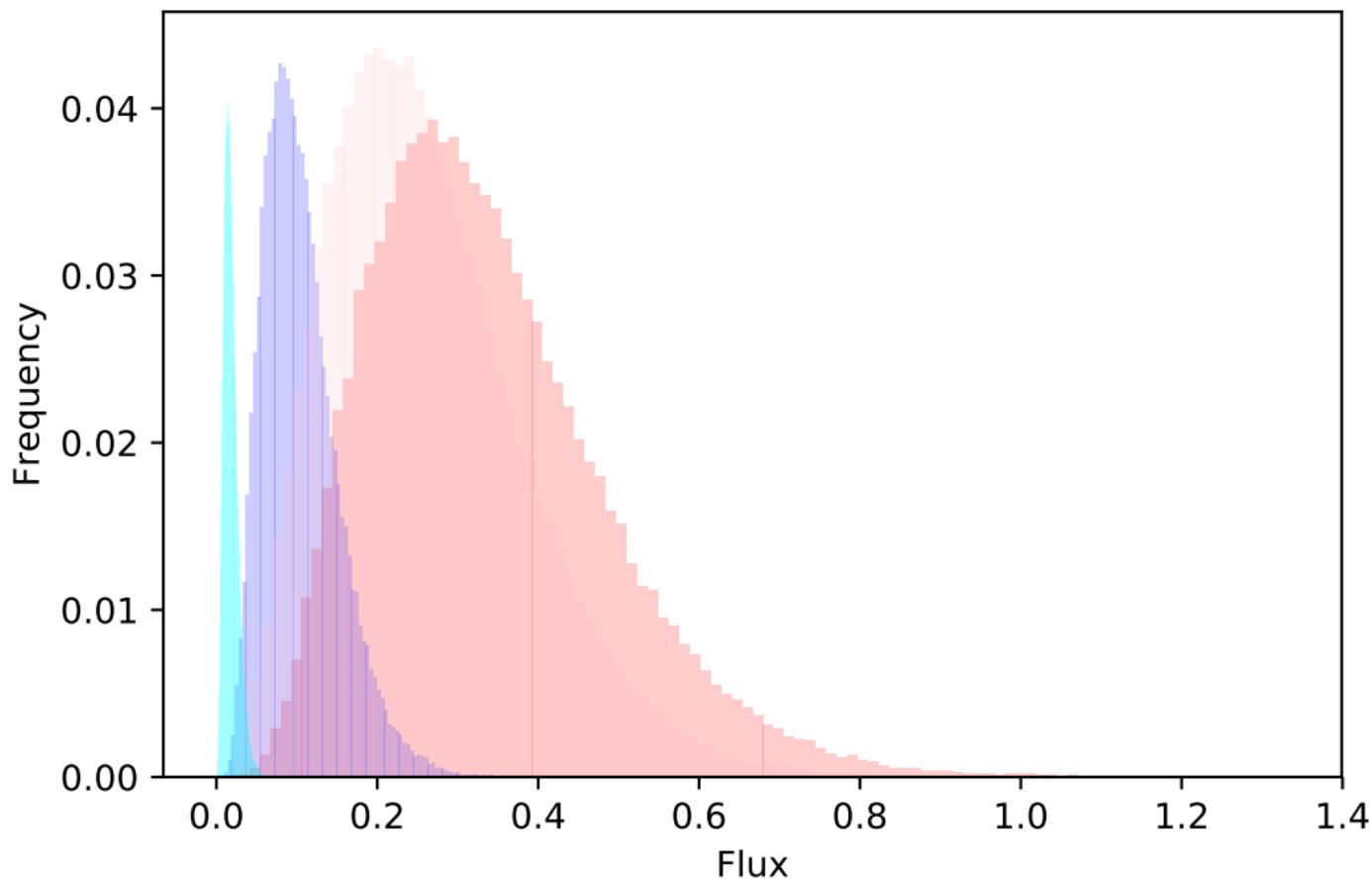
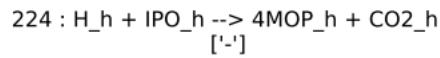


222 : H₂O_h + IPM_h --> 3IPM_h
['AT2G43100', 'AT3G58990', 'AT2G43090', 'AT4G13430']

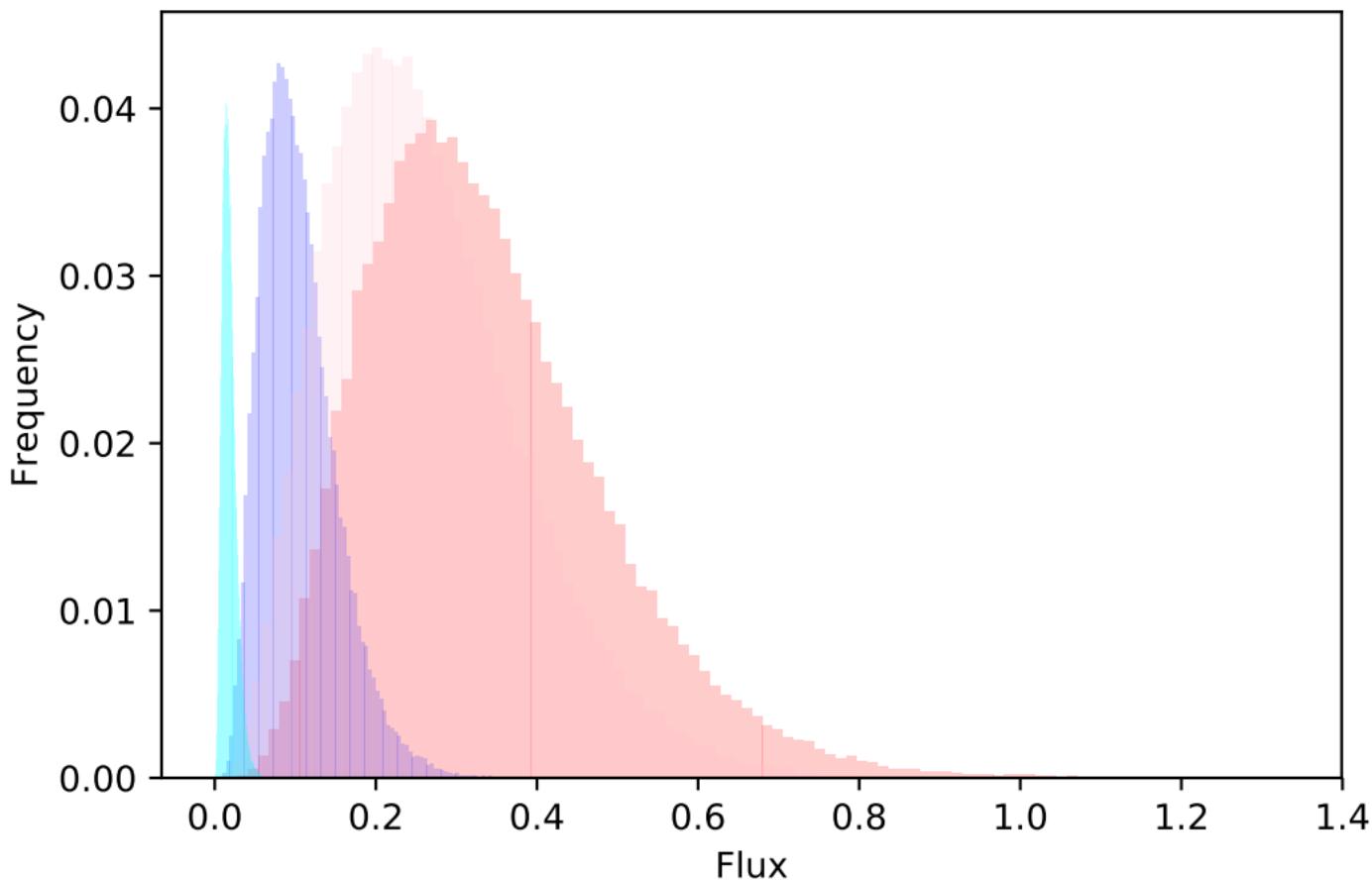


223 : 3IPM_h + NAD_h --> H_h + IPO_h + NADH_h
['AT1G80560', 'AT5G14200', 'AT1G31180']

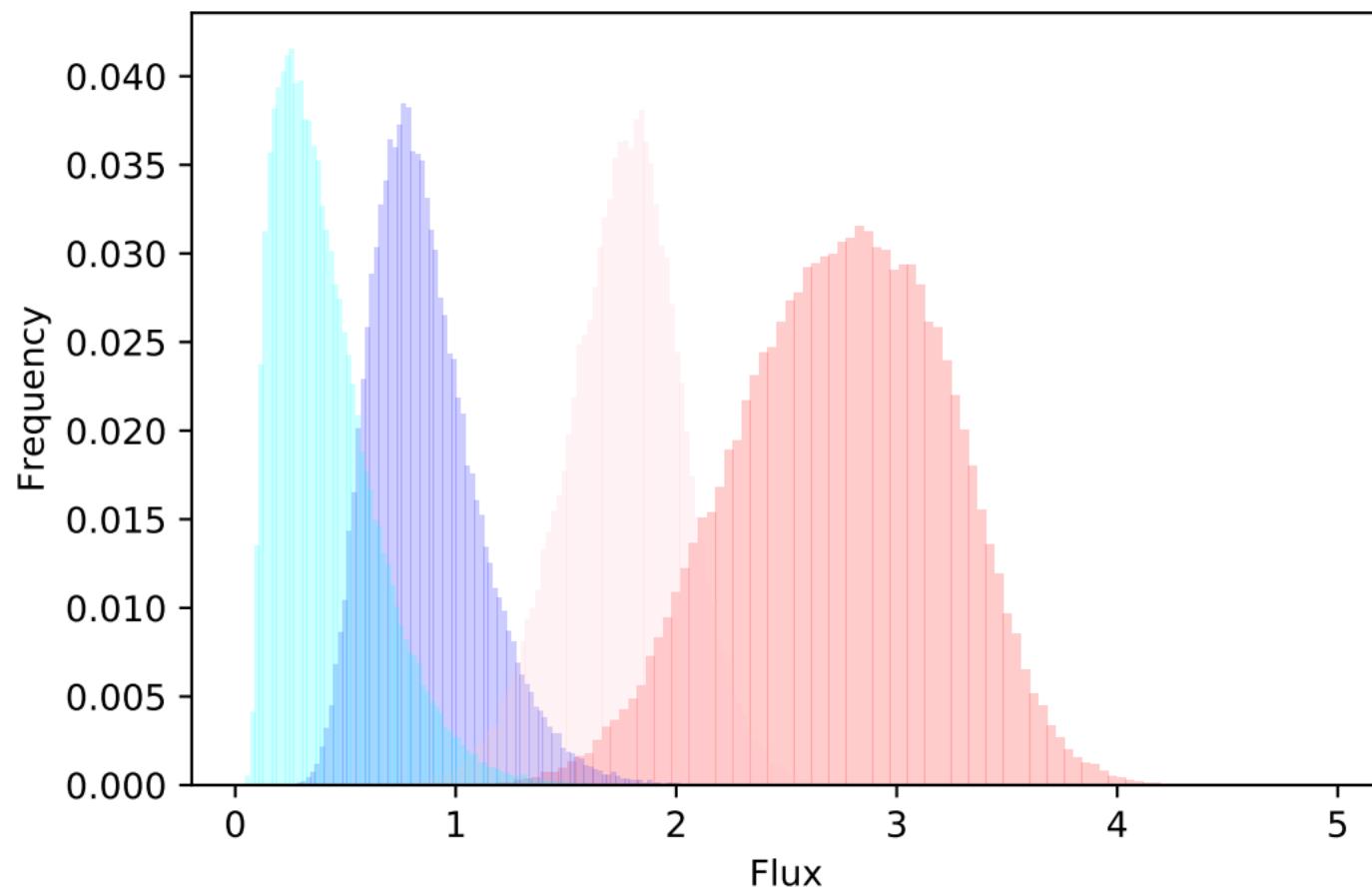




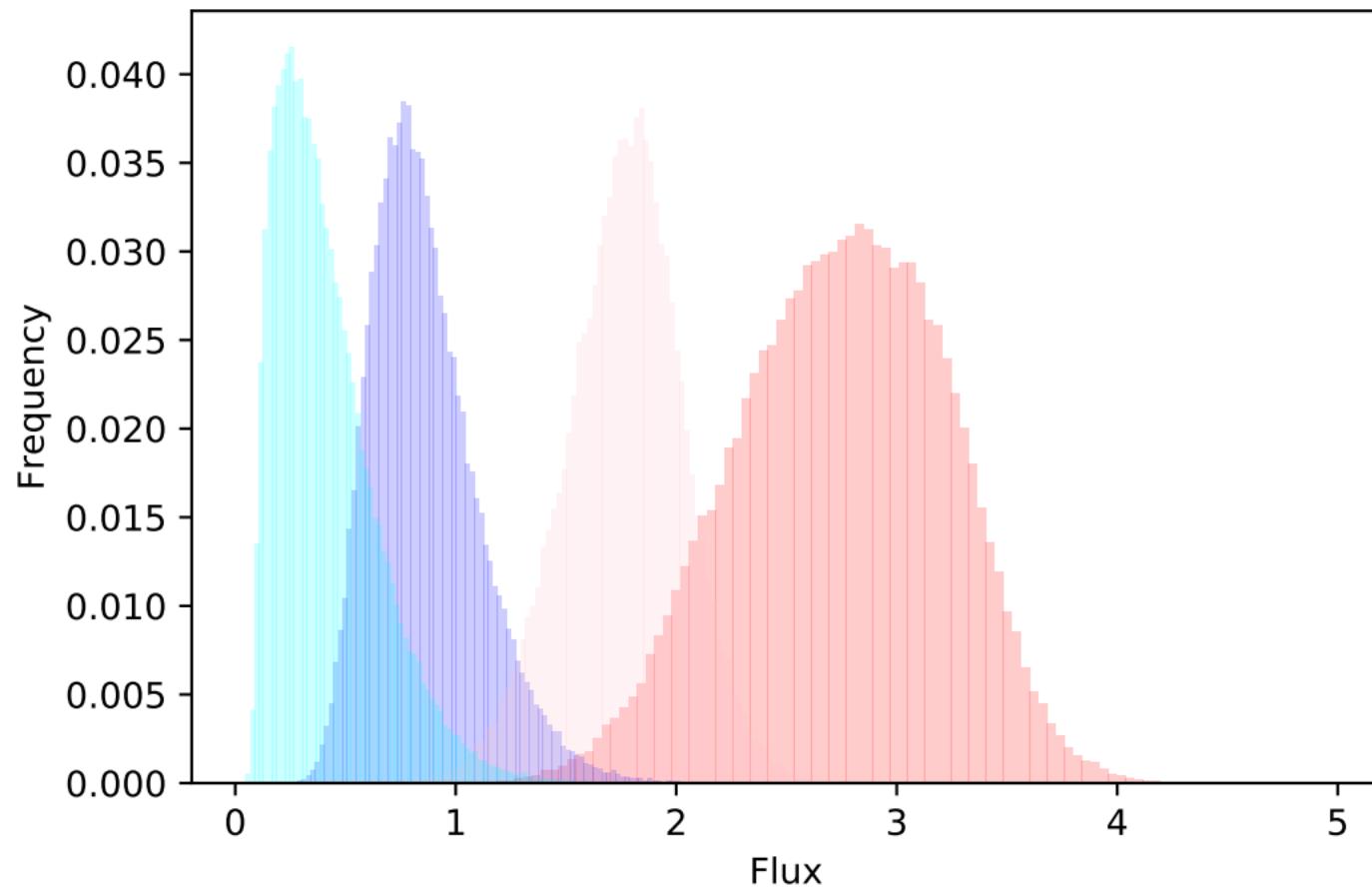
225 : 4MOP_h + Glu_h <=> KG_h + Leu_h
['AT5G65780', 'AT1G10070', 'AT3G49680']



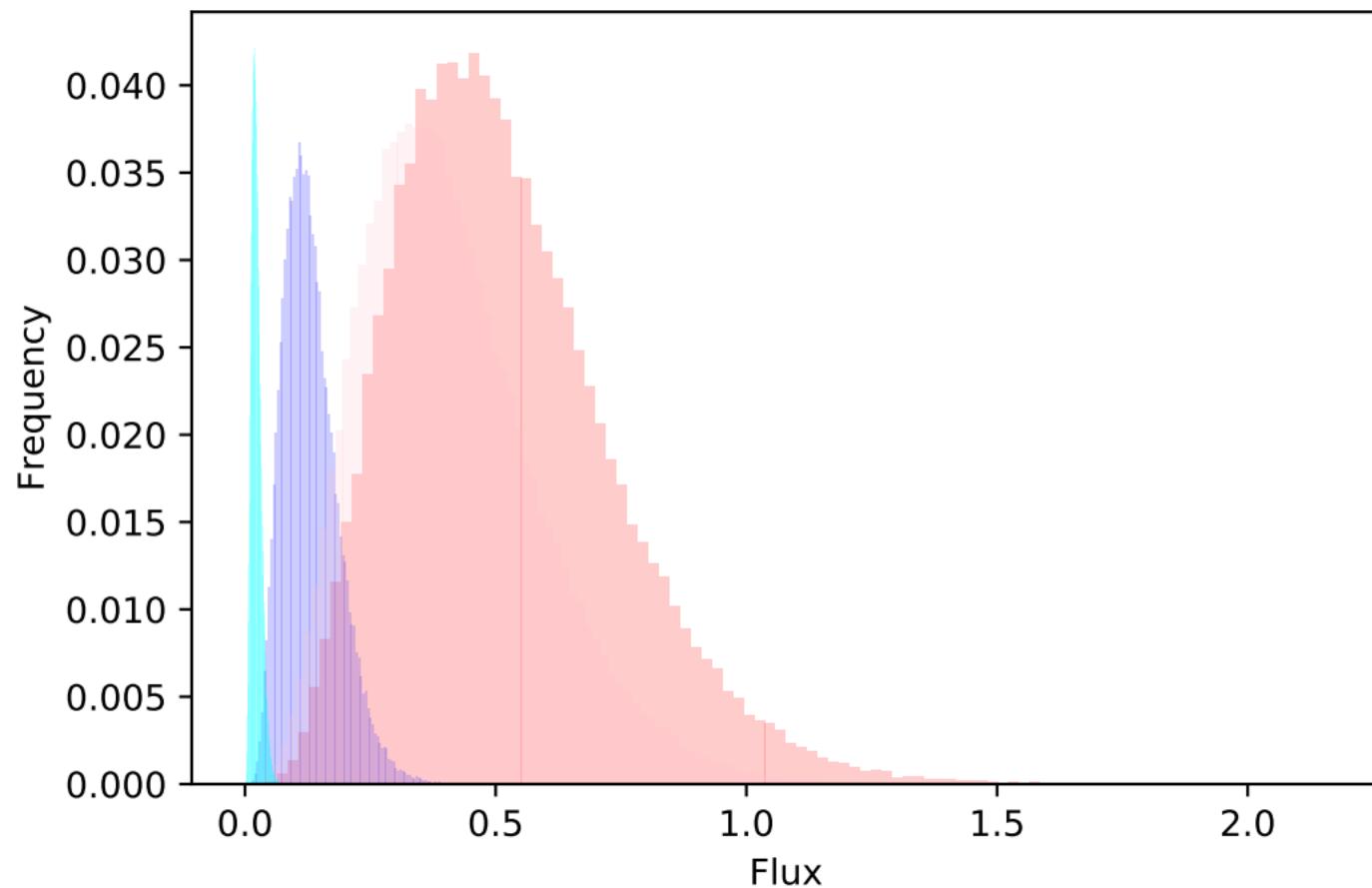
226 : ATP_h + Asp_h --> ADP_h + AspP_h
['AT3G02020', '4*AT4G19710', 'AT1G31230', 'AT5G13280', 'AT5G14060']



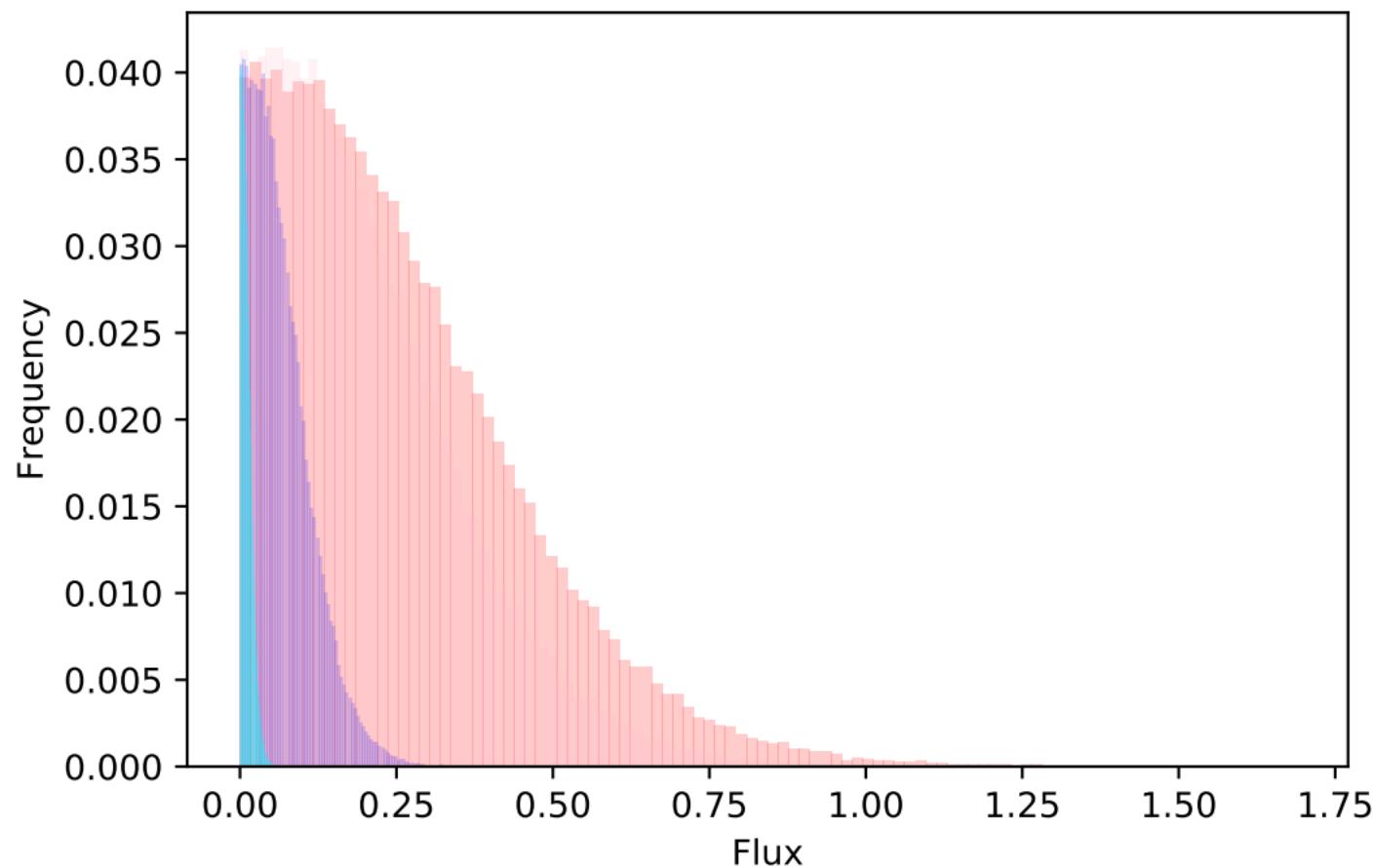
227 : AspP_h + H_h + NADPH_h --> Asp_DASH_SeA_h + NADP_h + Pi_h
['2*AT1G14810']



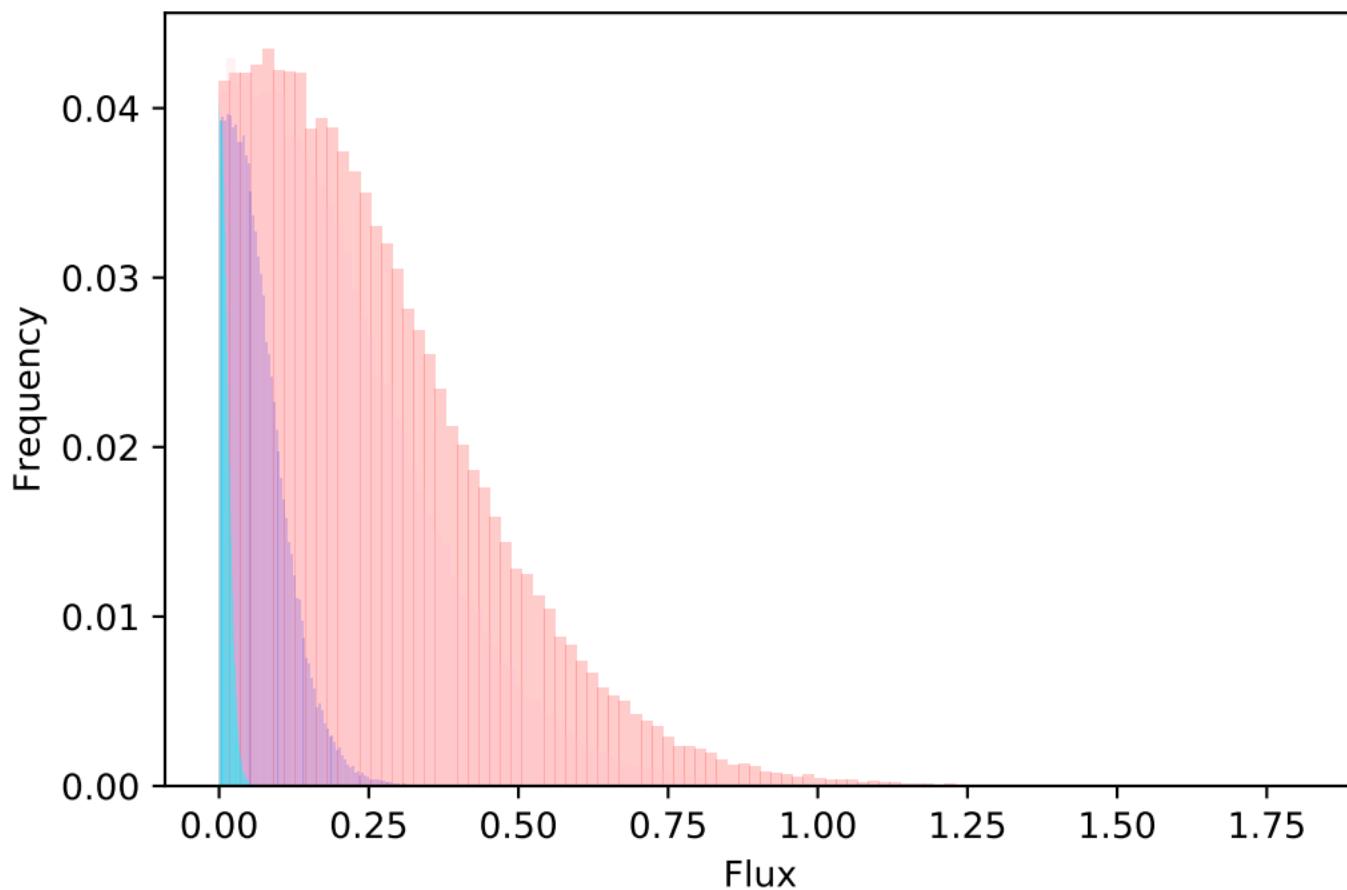
228 : Asp_DASH_SeA_h + Pyr_h --> DHD_h + 2.0 H2O_h + H_h
['AT2G45440', 'AT3G60880']



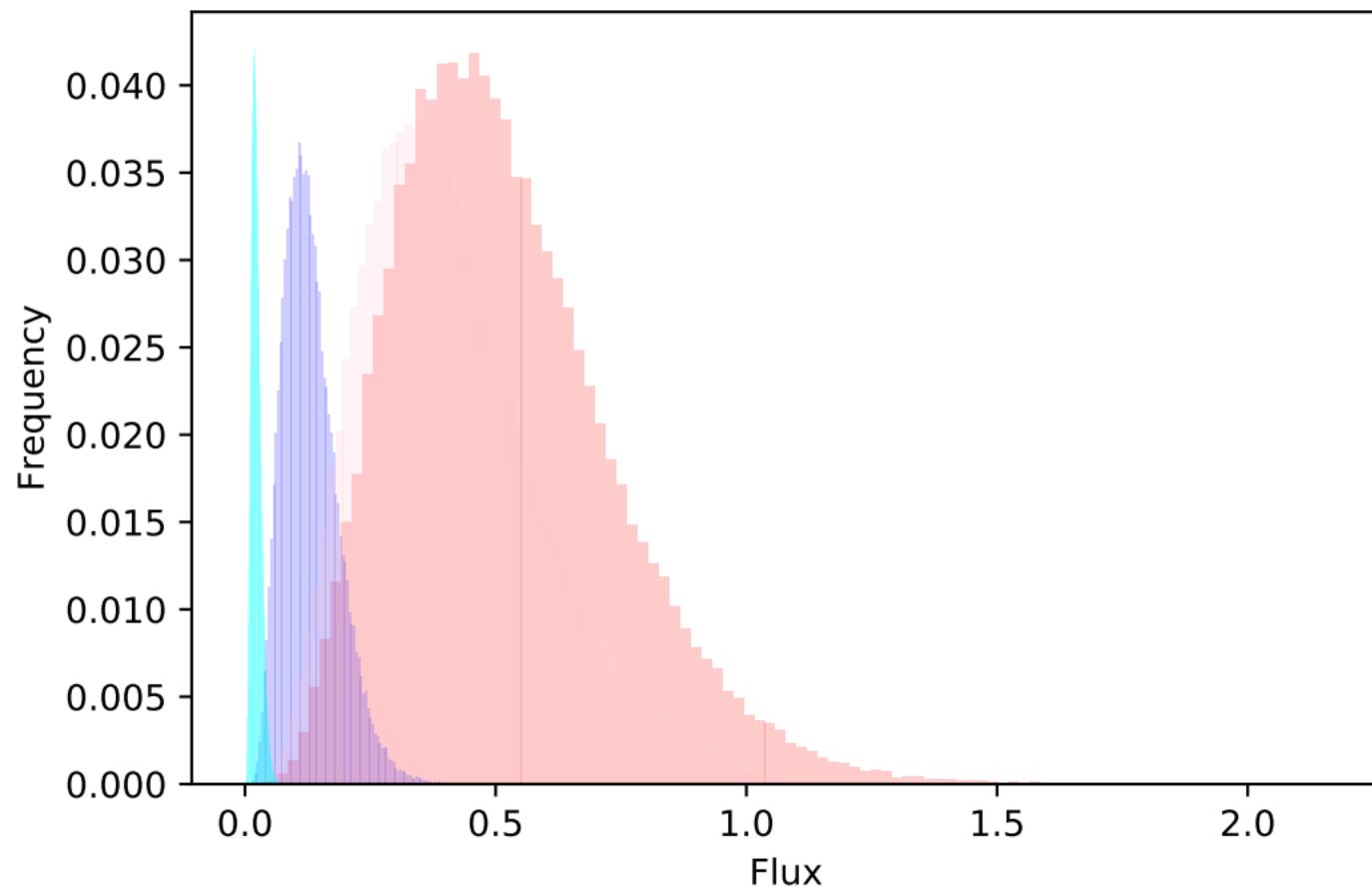
229 : DHD_h + H_h + NADH_h --> NAD_h + THD_h
['AT2G44040', 'AT3G59890', 'AT5G52100']



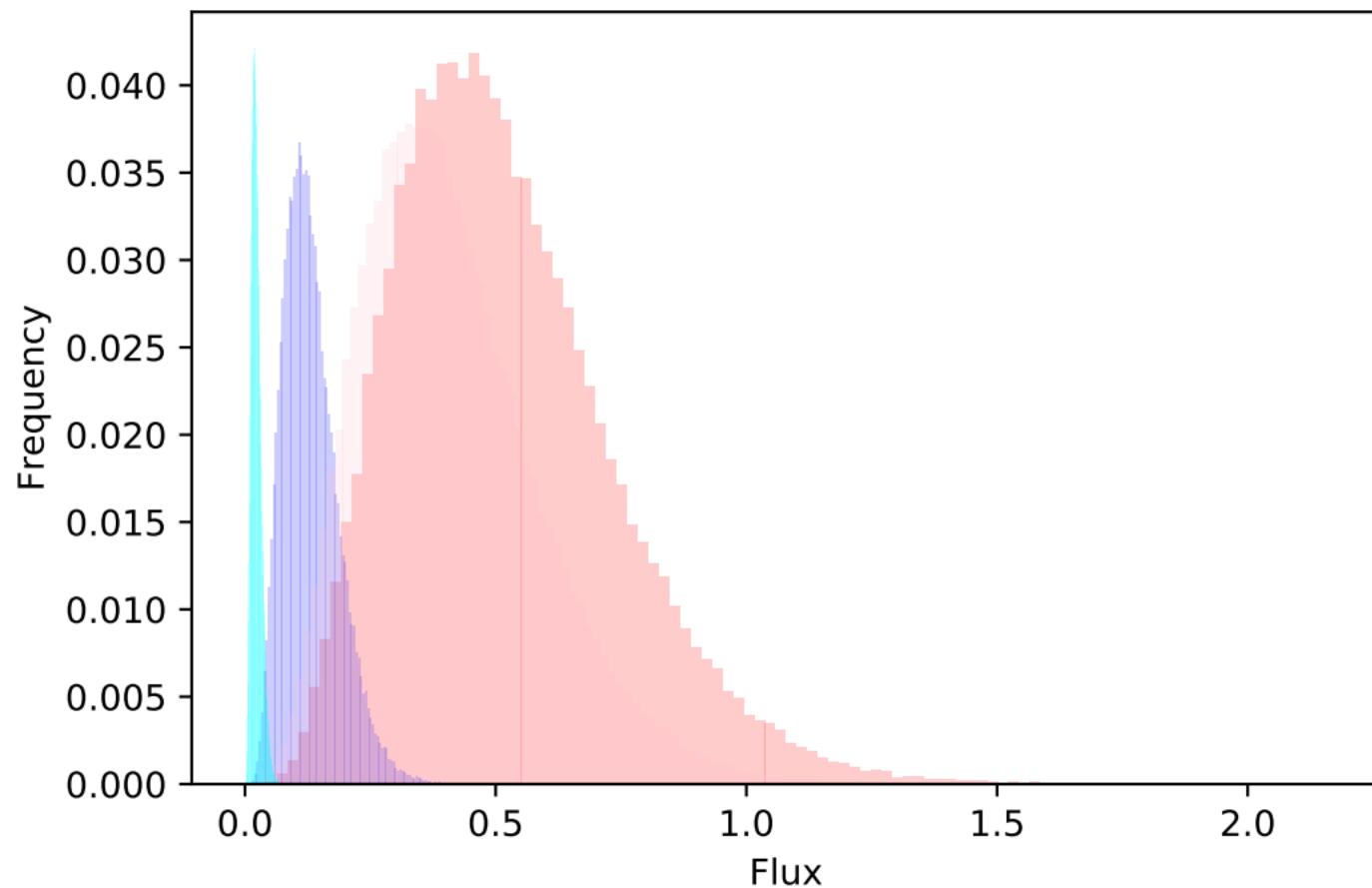
230 : DHD_h + H_h + NADPH_h --> NADP_h + THD_h
['AT2G44040', 'AT3G59890', 'AT5G52100']



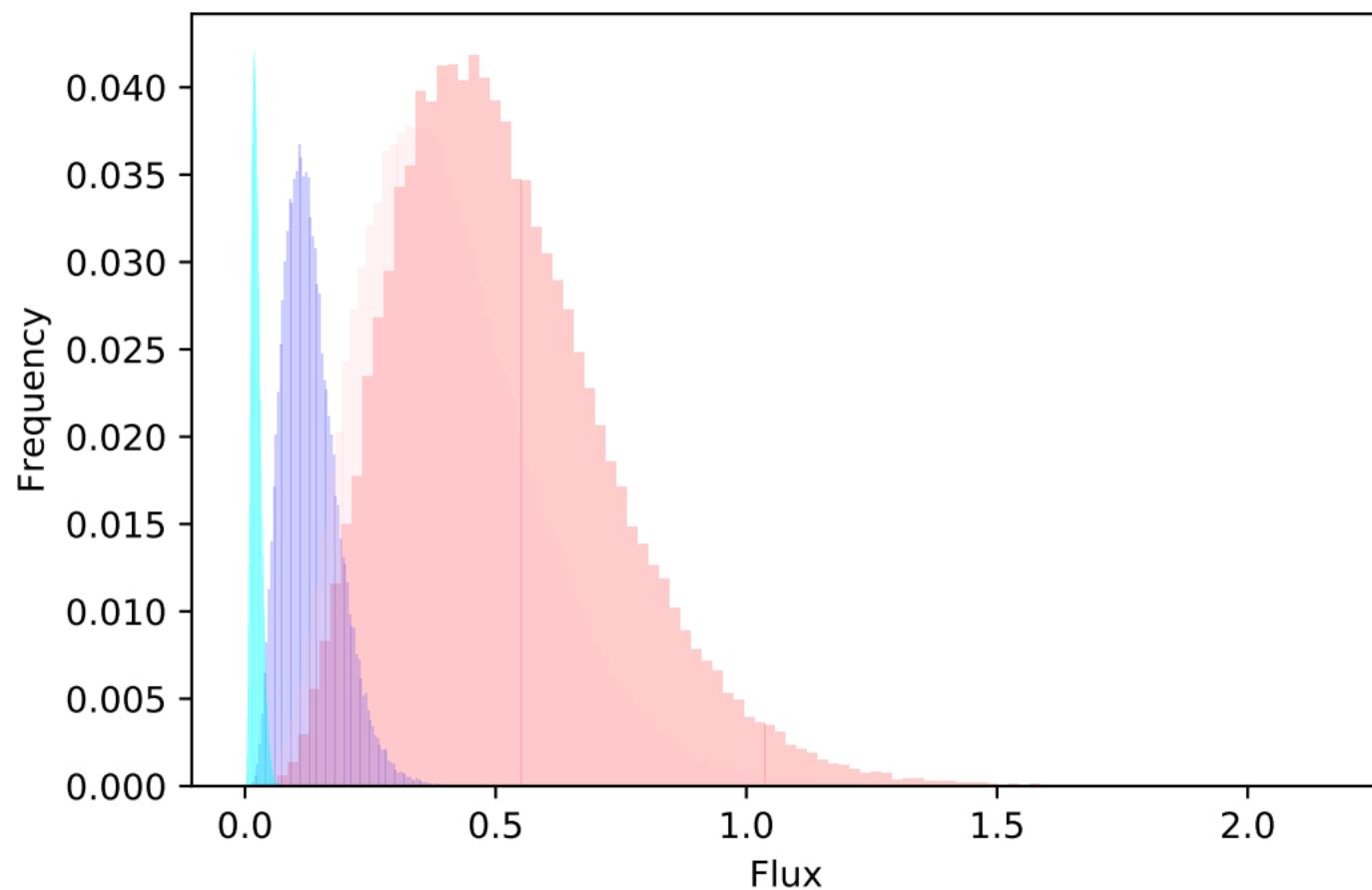
231 : Glu_h + H2O_h + H_h + THD_h --> DAP_h + KG_h
['2*AT4G33680']



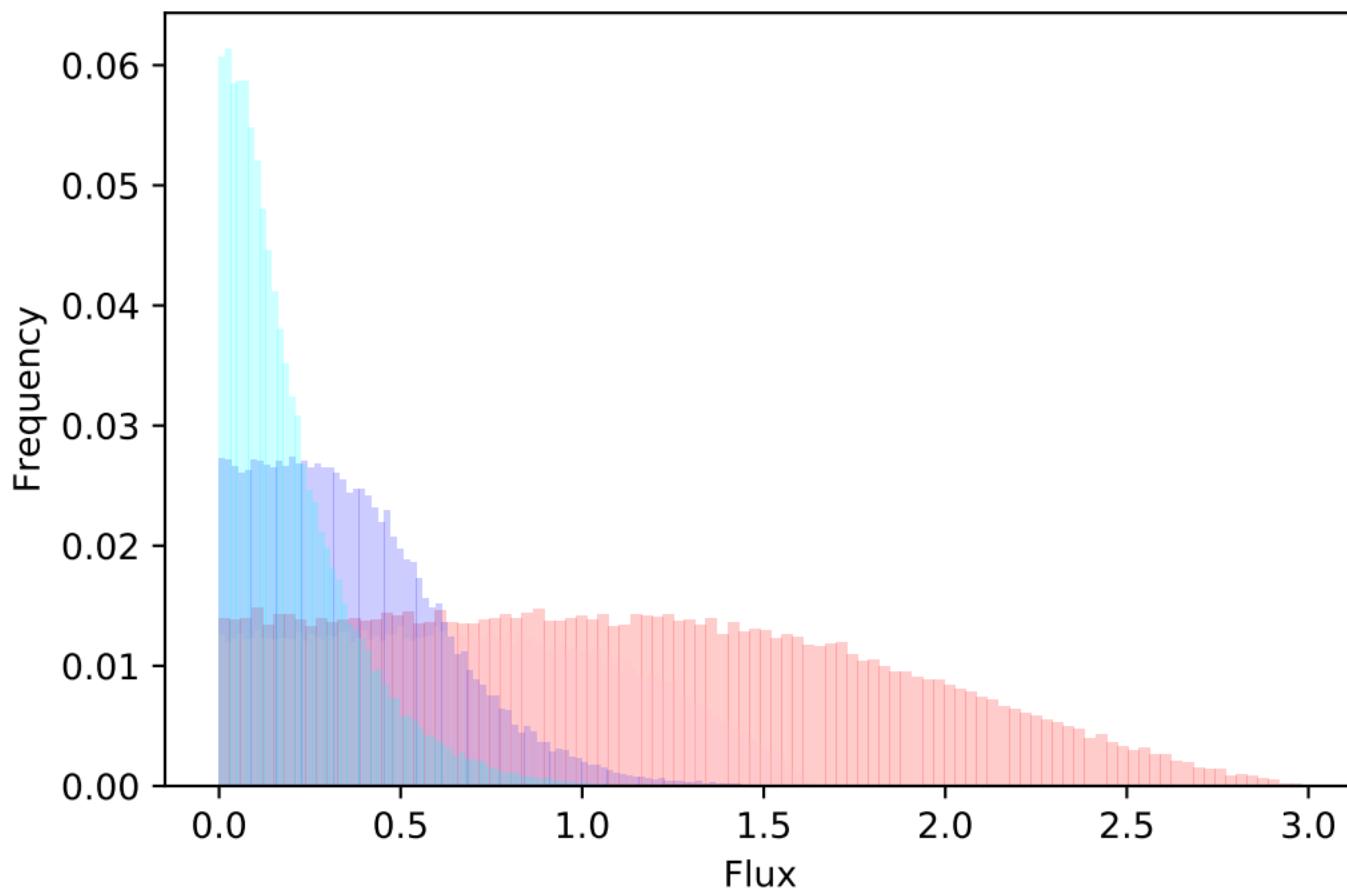
232 : DAP_h --> mDAP_h
['AT3G53580']



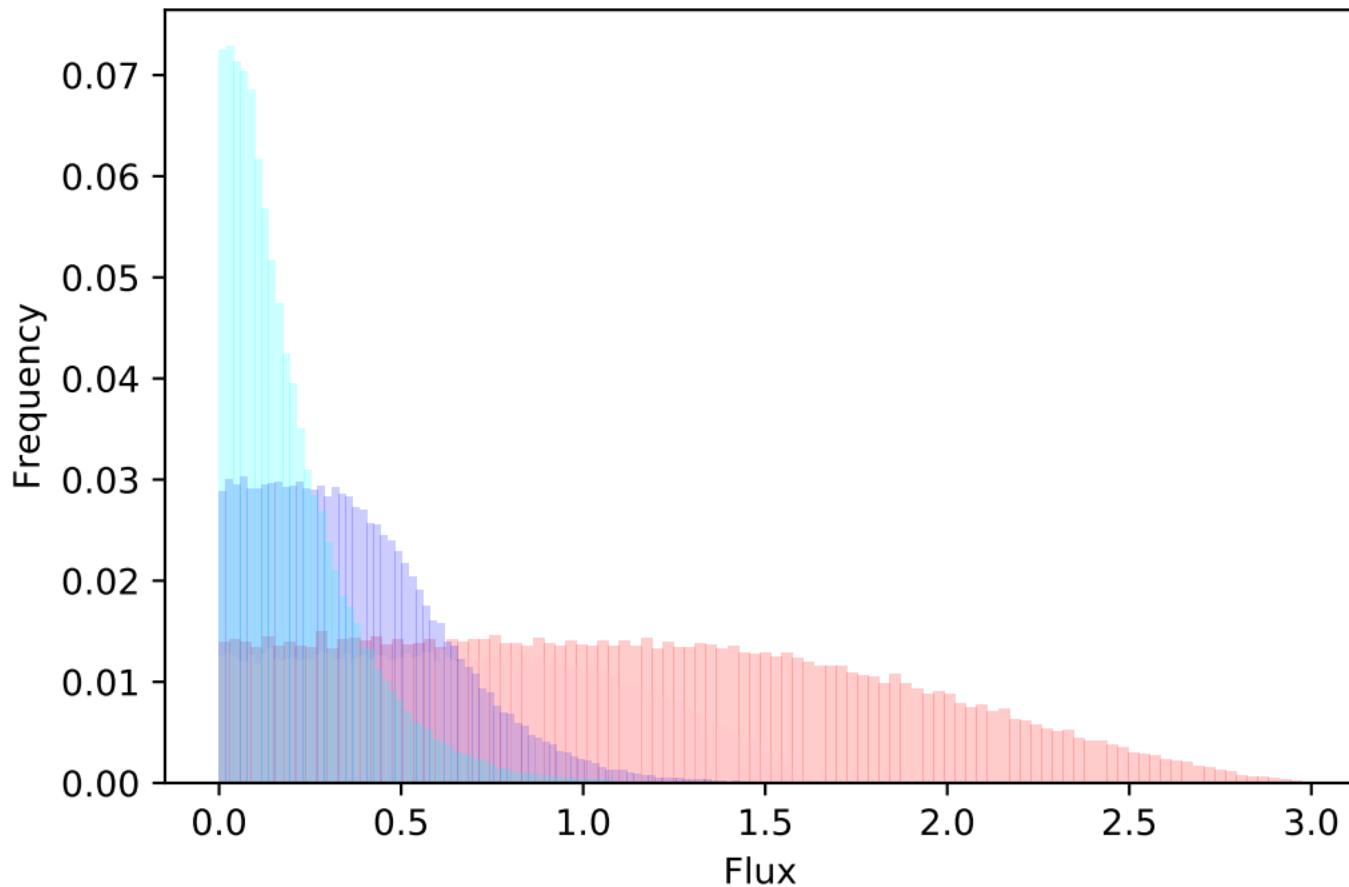
233 : H_h + mDAP_h --> CO2_h + Lys_h
['AT3G14390', 'AT5G11880']



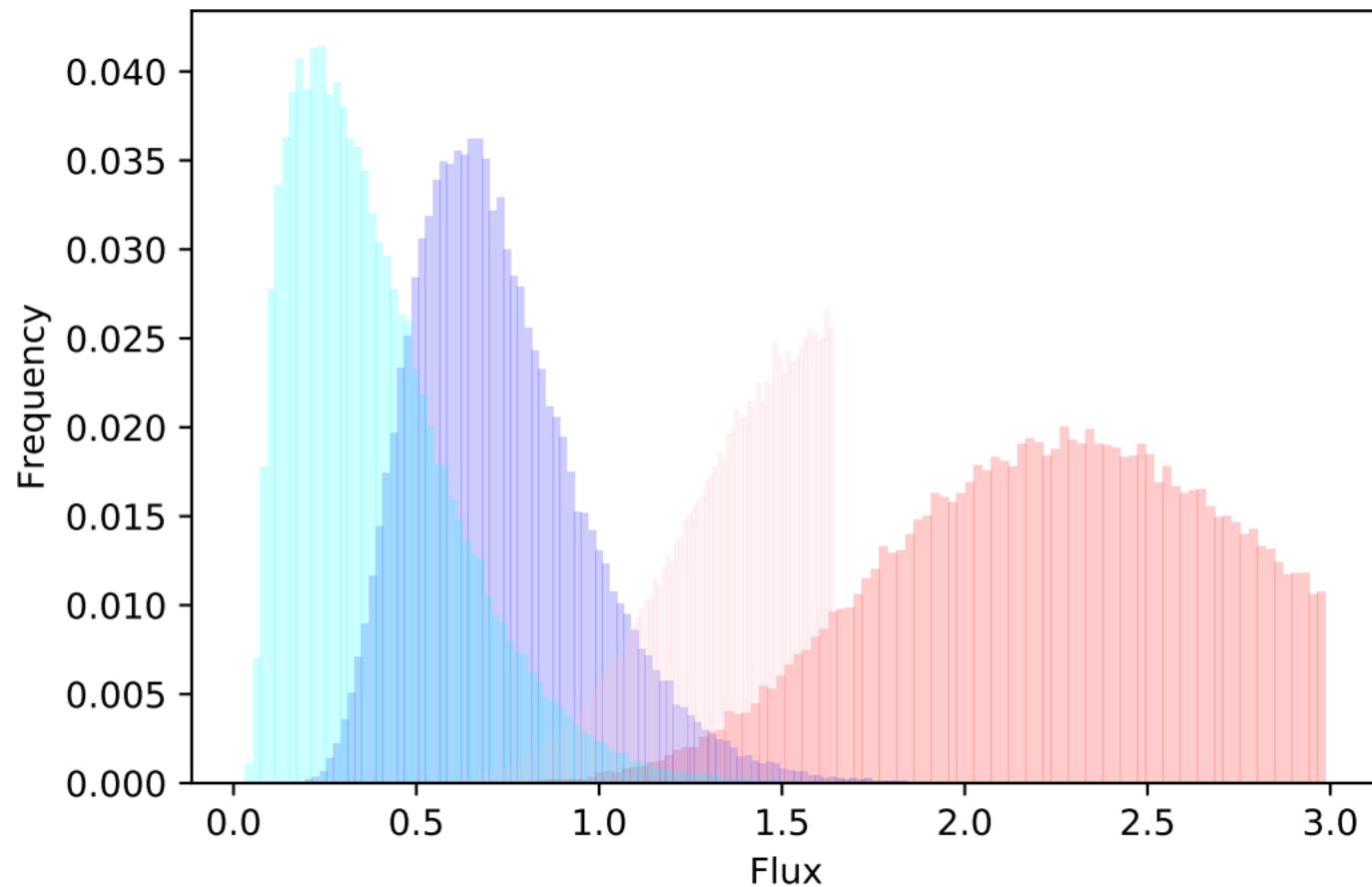
234 : Asp_DASH_SeA_h + H_h + NADPH_h --> H_DASH_Ser_h + NADP_h
['AT4G19710', '4*AT1G31230']



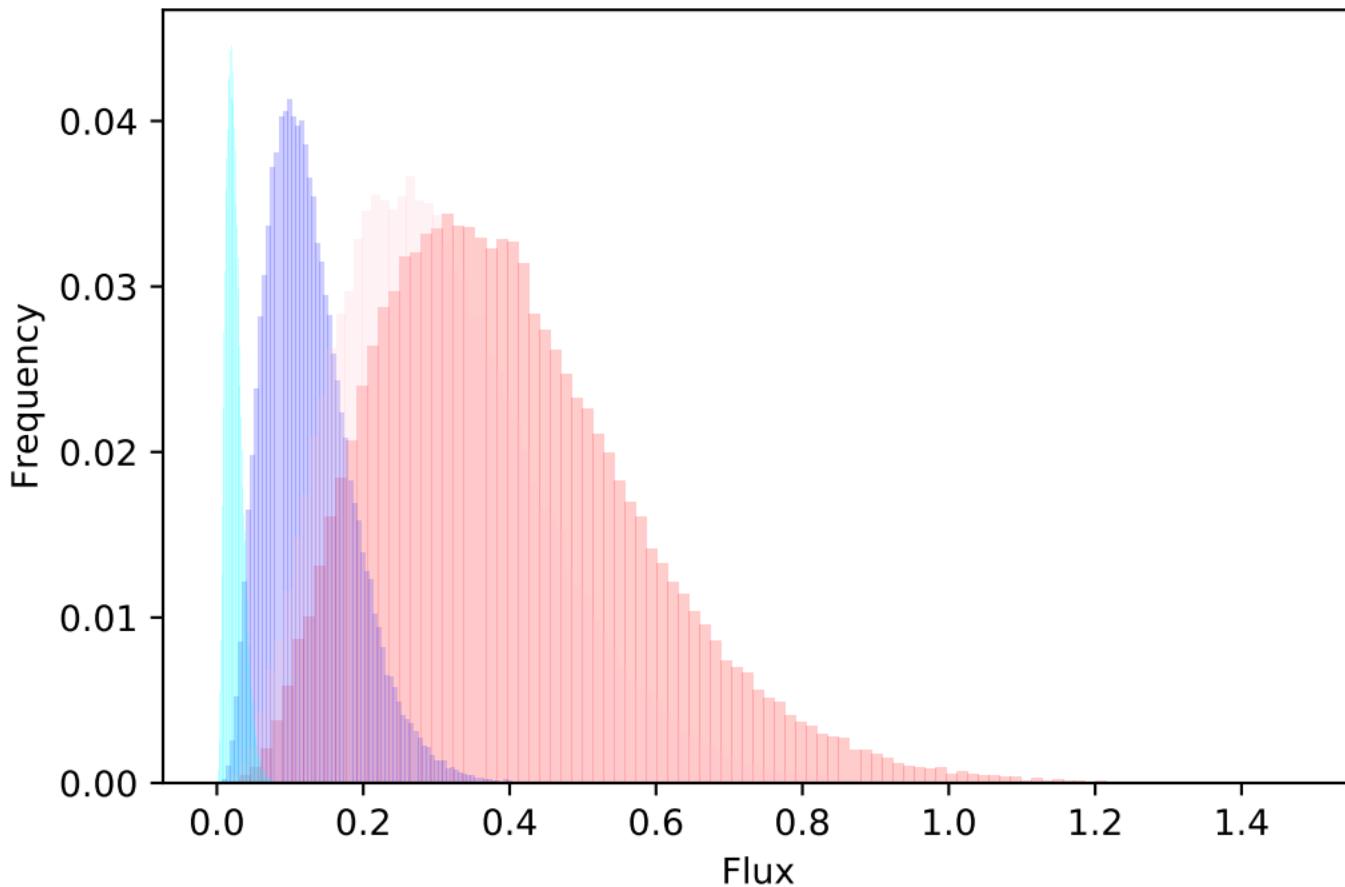
235 : Asp_DASH_SeA_h + H_h + NADH_h --> H_DASH_Ser_h + NAD_h
['AT4G19710', '4*AT1G31230']



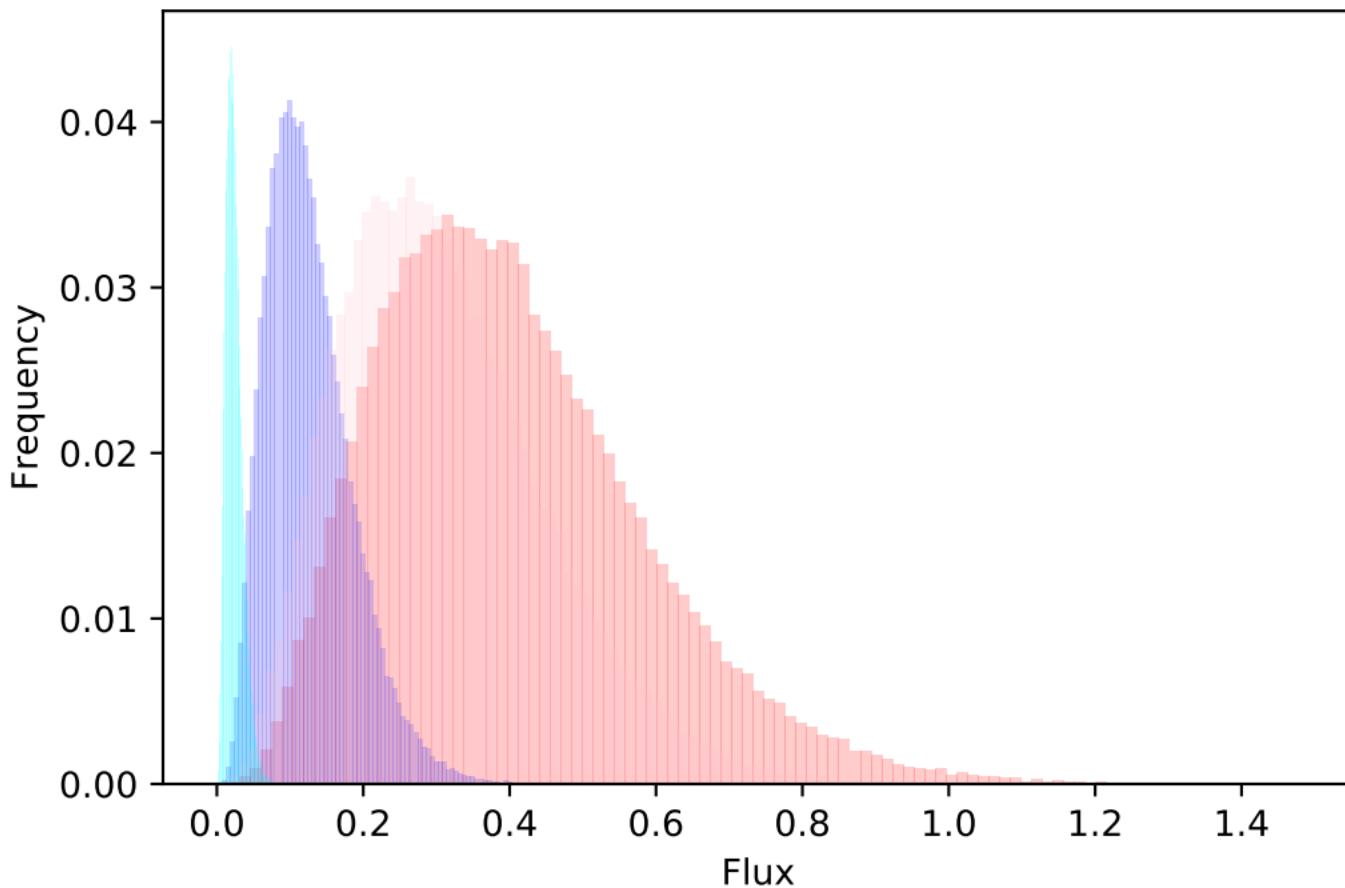
236 : ATP_h + H_DASH_Ser_h --> ADP_h + H_h + PH_DASH_Ser_h
['AT2G17265']



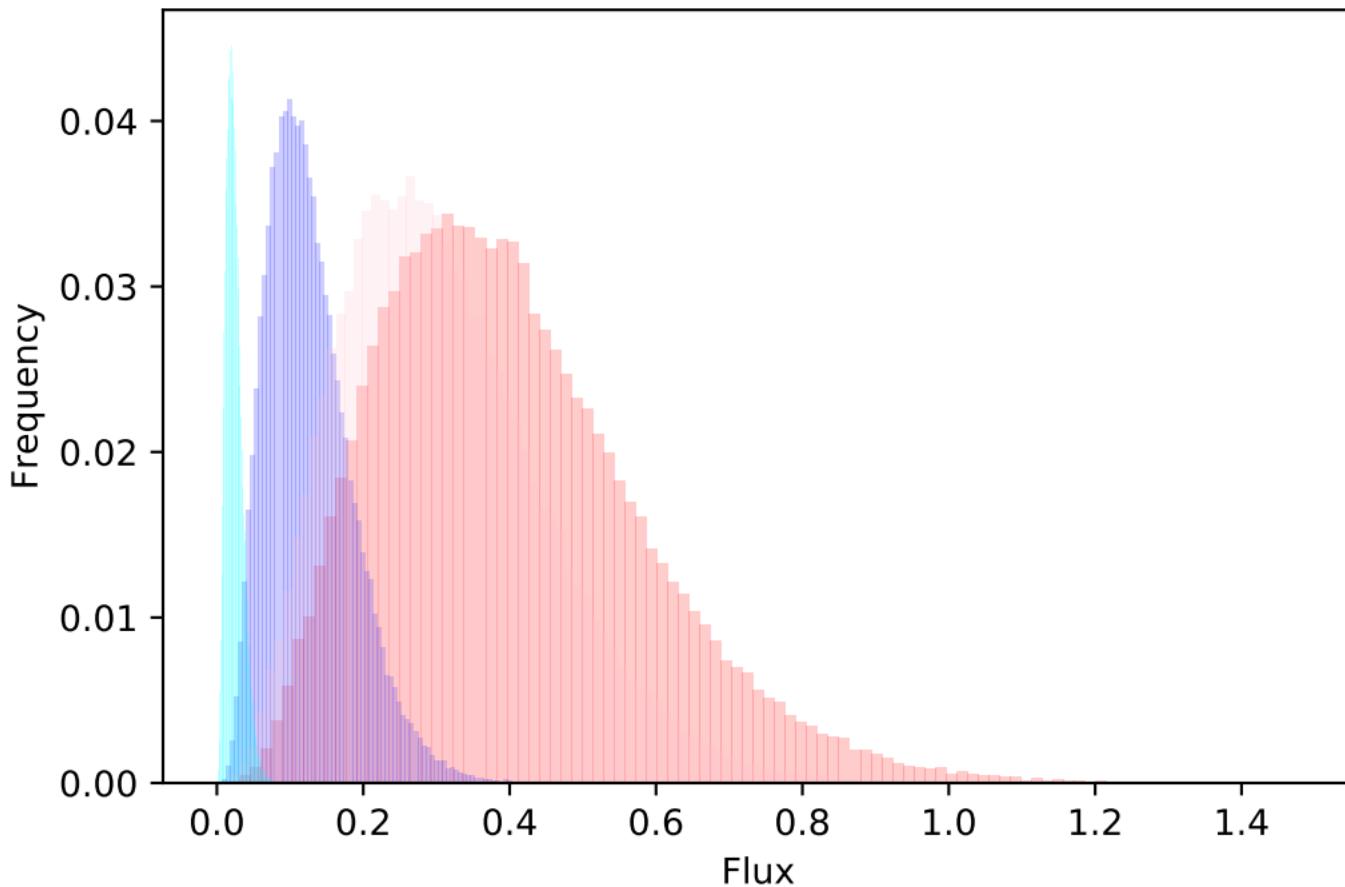
237 : Cys_h + PH_DASH_Ser_h --> CTH_h + Pi_h
['AT3G01120']



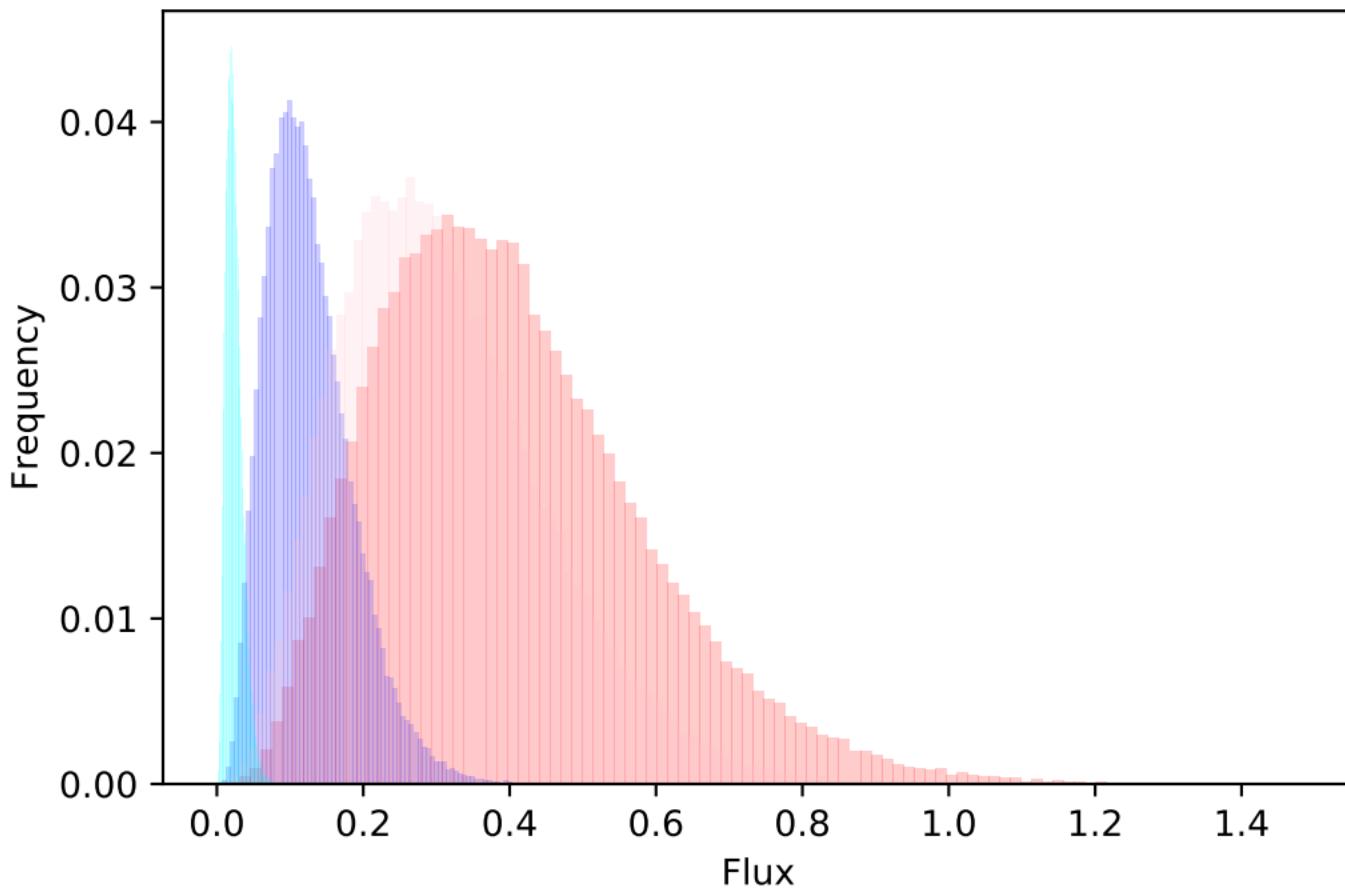
238 : CTH_h + H2O_h --> H_DASH_Cys_h + NH4_h + Pyr_h
['4*AT3G57050']



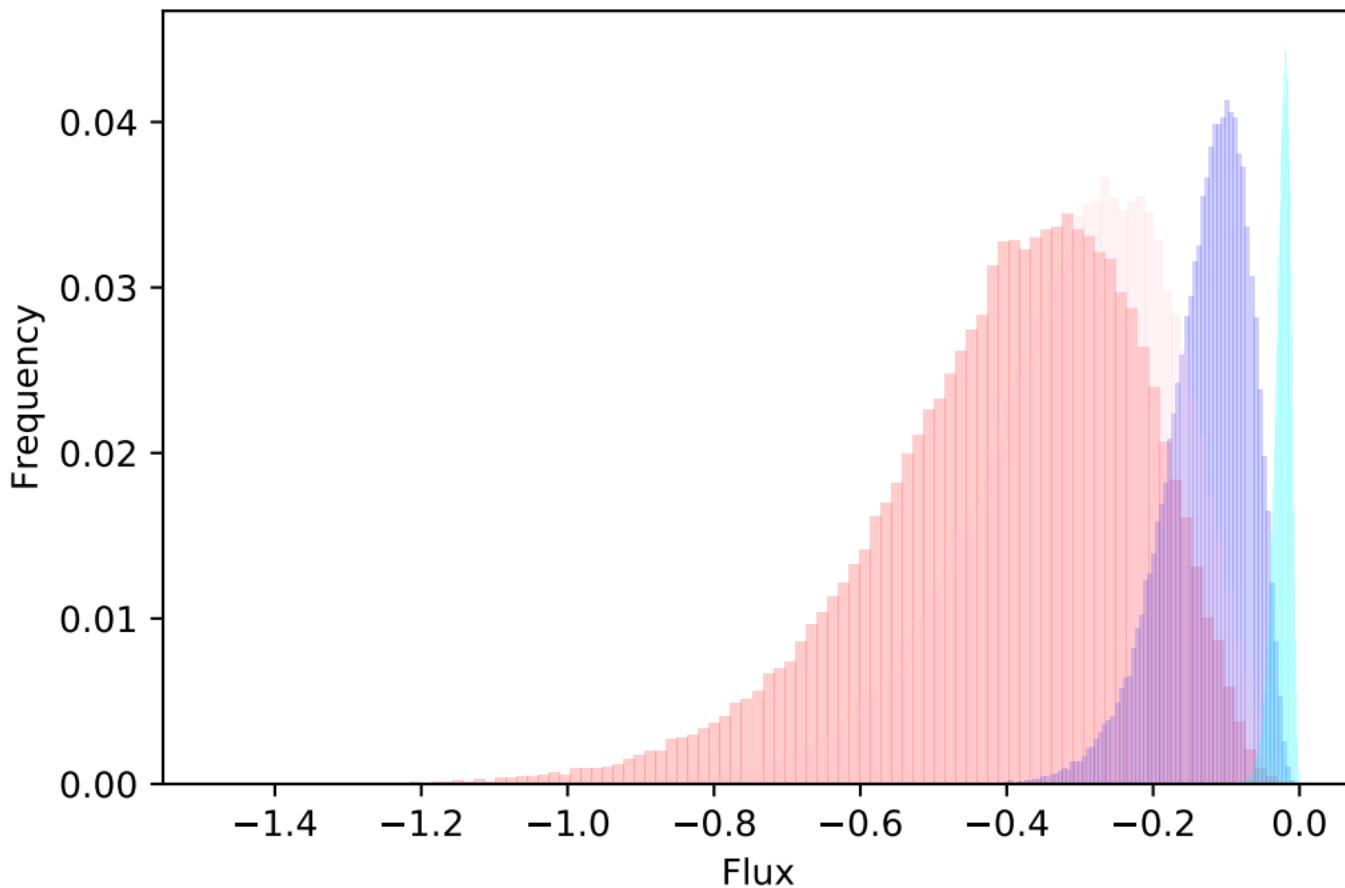
239 : M_DASH_THF_c + NADH_c --> 5M_DASH_THF_c + NAD_c
['AT3G59970', '2*AT2G44160']

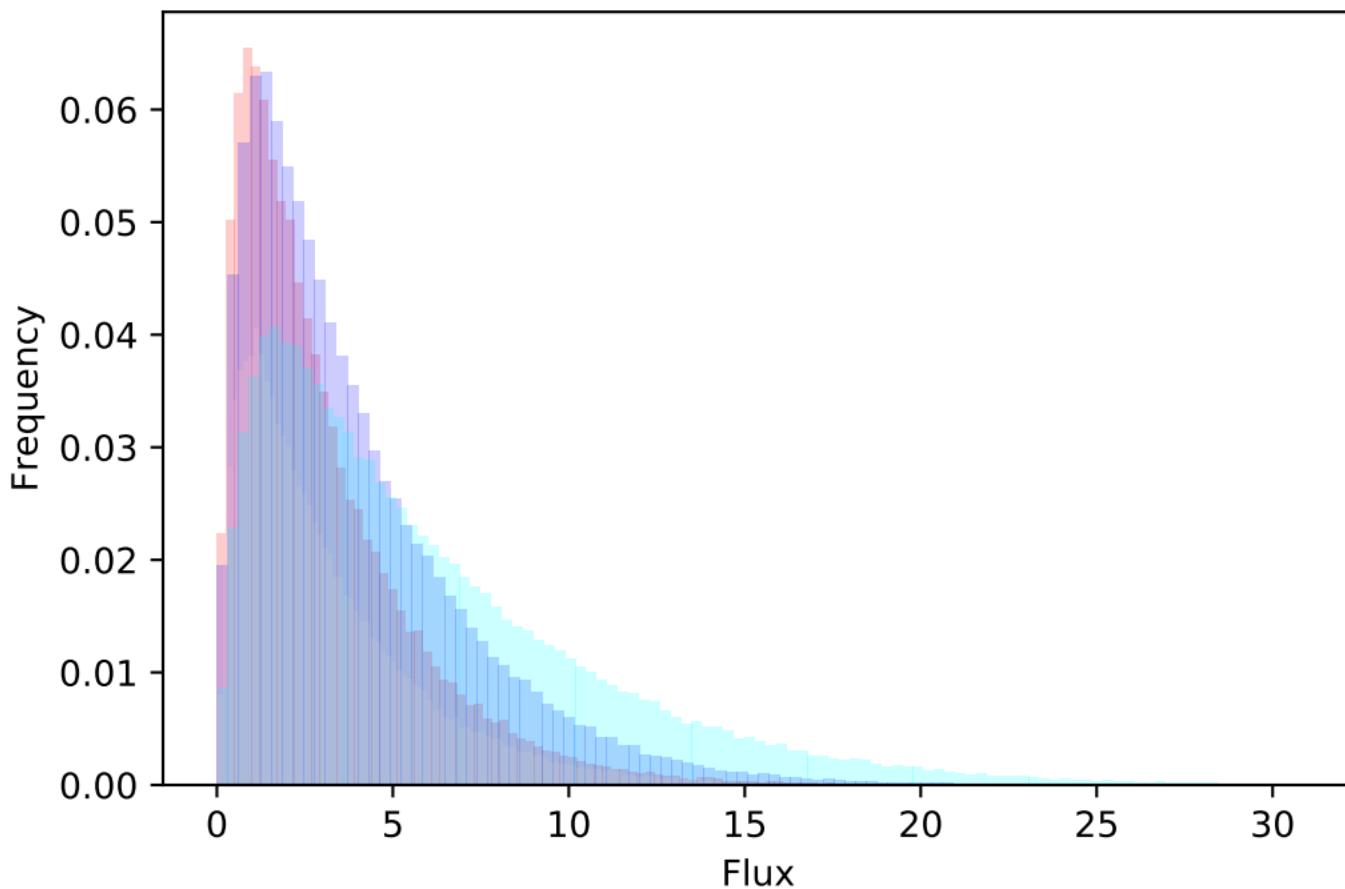
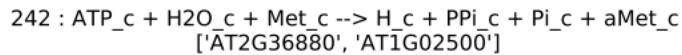


240 : 5M_DASH_THF_c + H_DASH_Cys_c --> Met_c + THF_c
['AT5G20980', 'AT5G17920', 'AT3G03780']

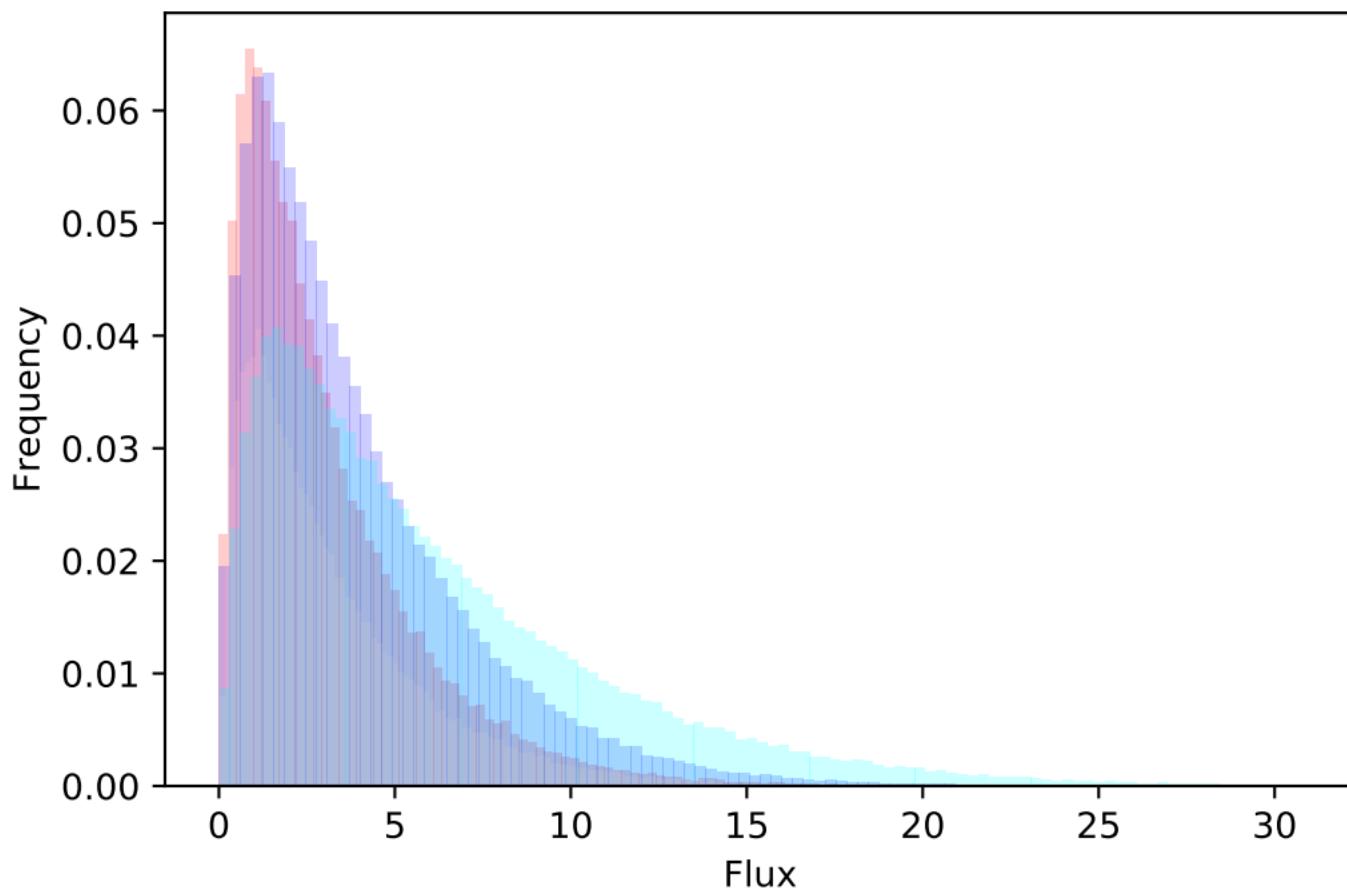


241 : Gly_c + H2O_c + M_DASH_THF_c <=> Ser_c + THF_c
['AT5G26780', '4*AT4G13930', 'AT1G22020', 'AT1G36370', 'AT4G13890', 'AT4G37930']

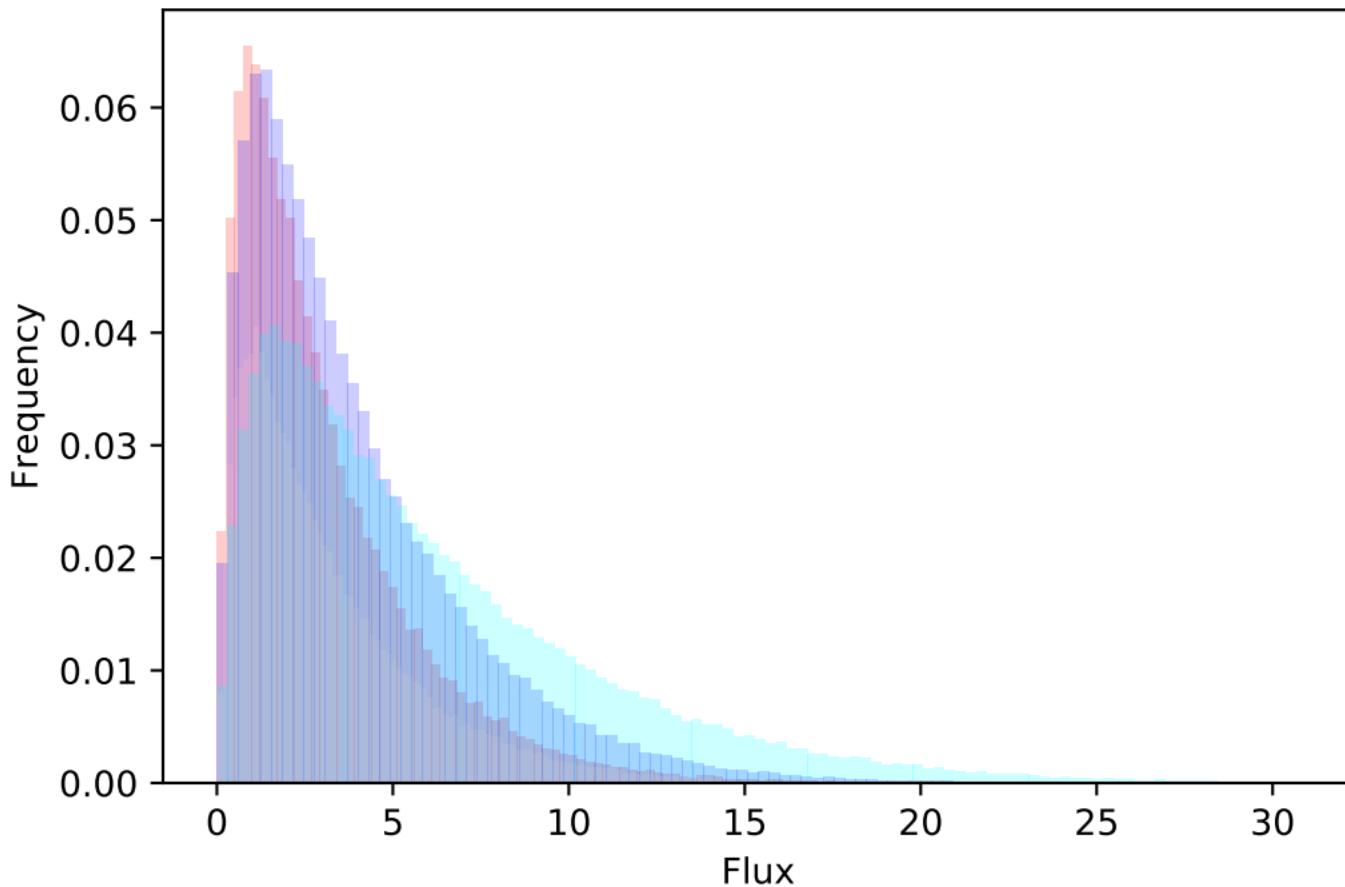




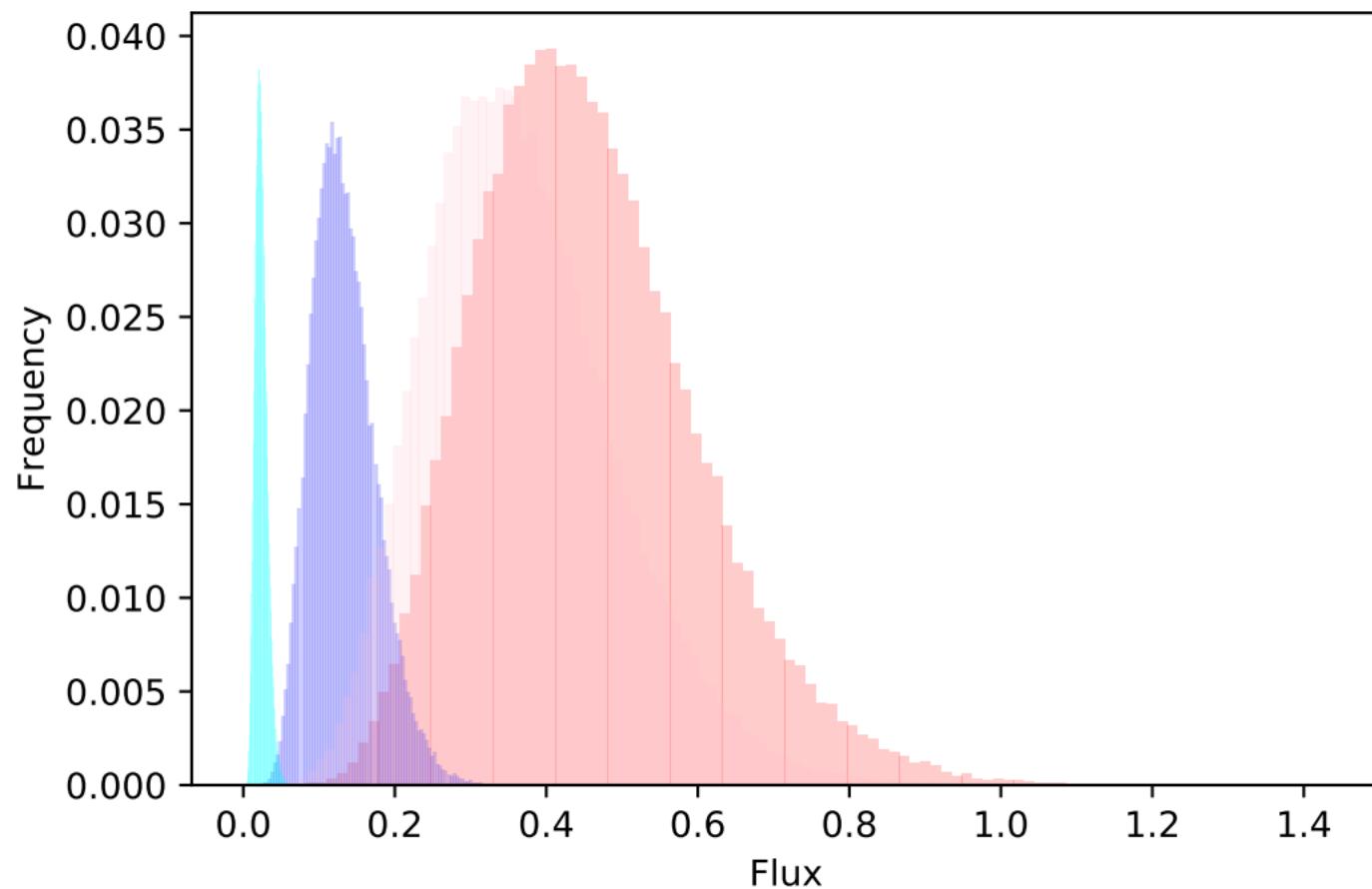
243 : H_DASH_Cys_c + aMet_c --> Met_c + aH_DASH_Cys_c
['AT3G63250', 'AT3G22740', 'AT3G25900']



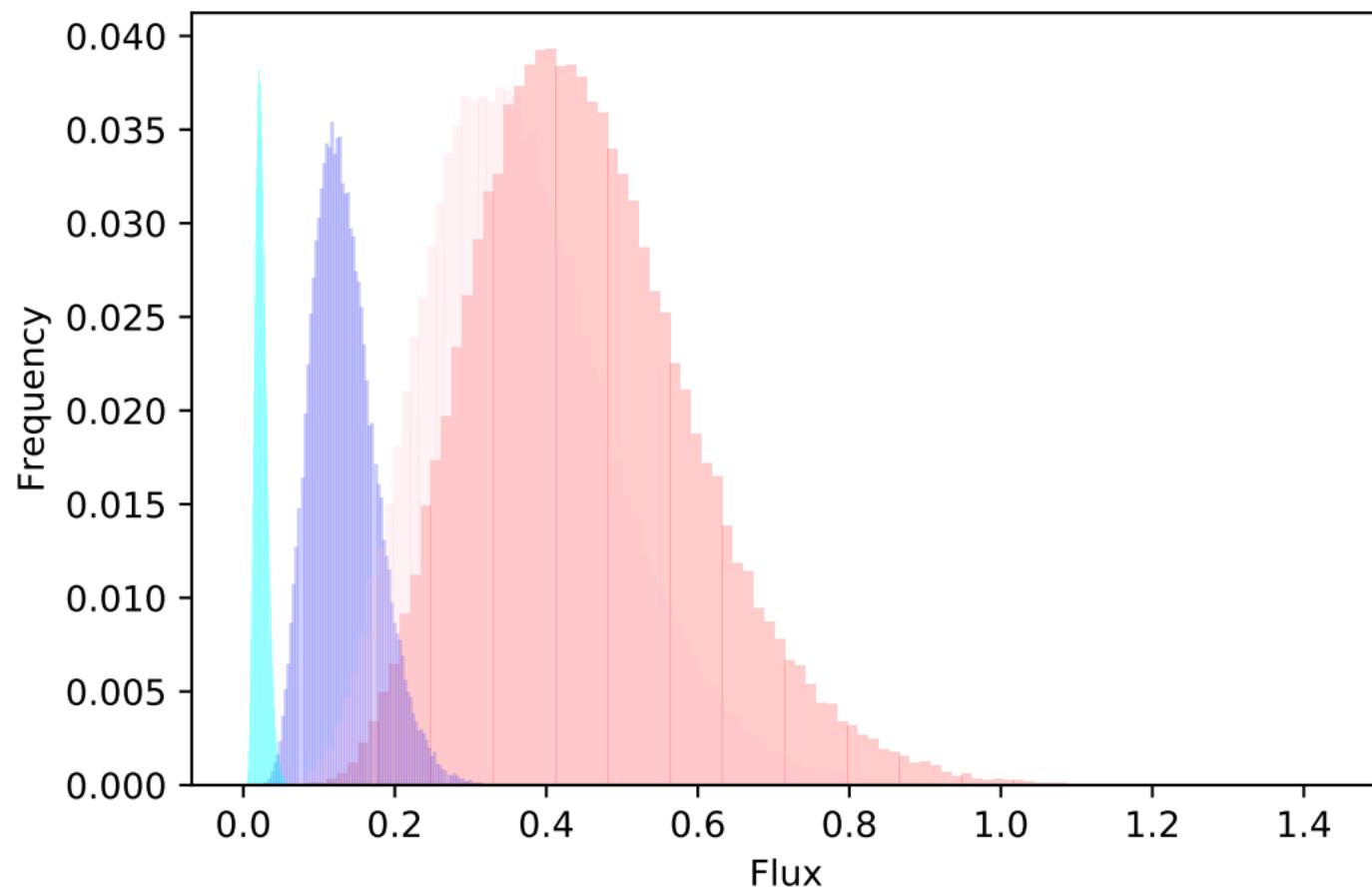
244 : H₂O_c + aH_DASH_Cys_c <=> ADN_c + H_DASH_Cys_c
['AT3G23810', 'AT4G13940']



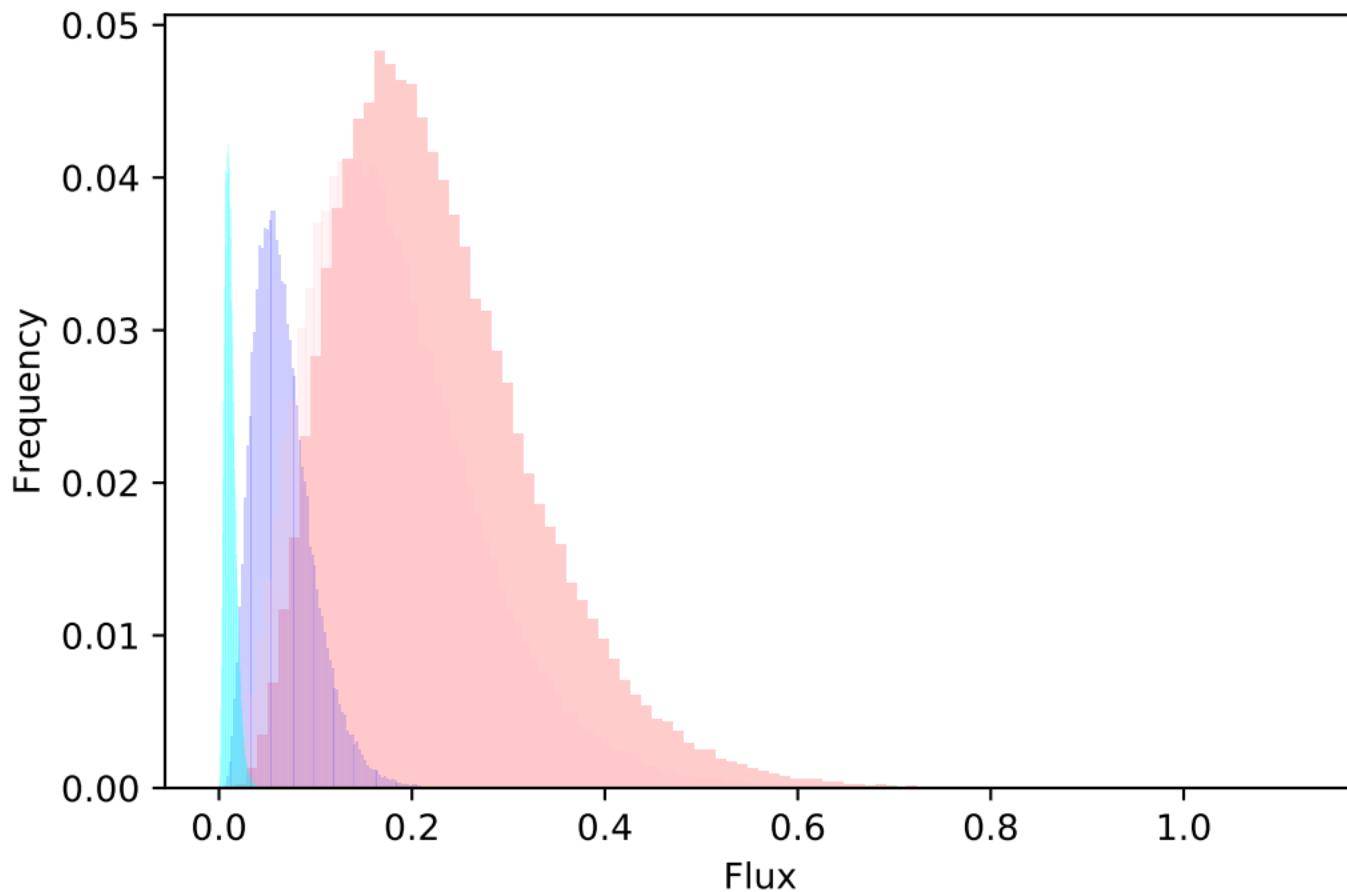
245 : CHR_h --> PRE_h
['AT3G29200', 'AT5G10870', 'AT1G69370']



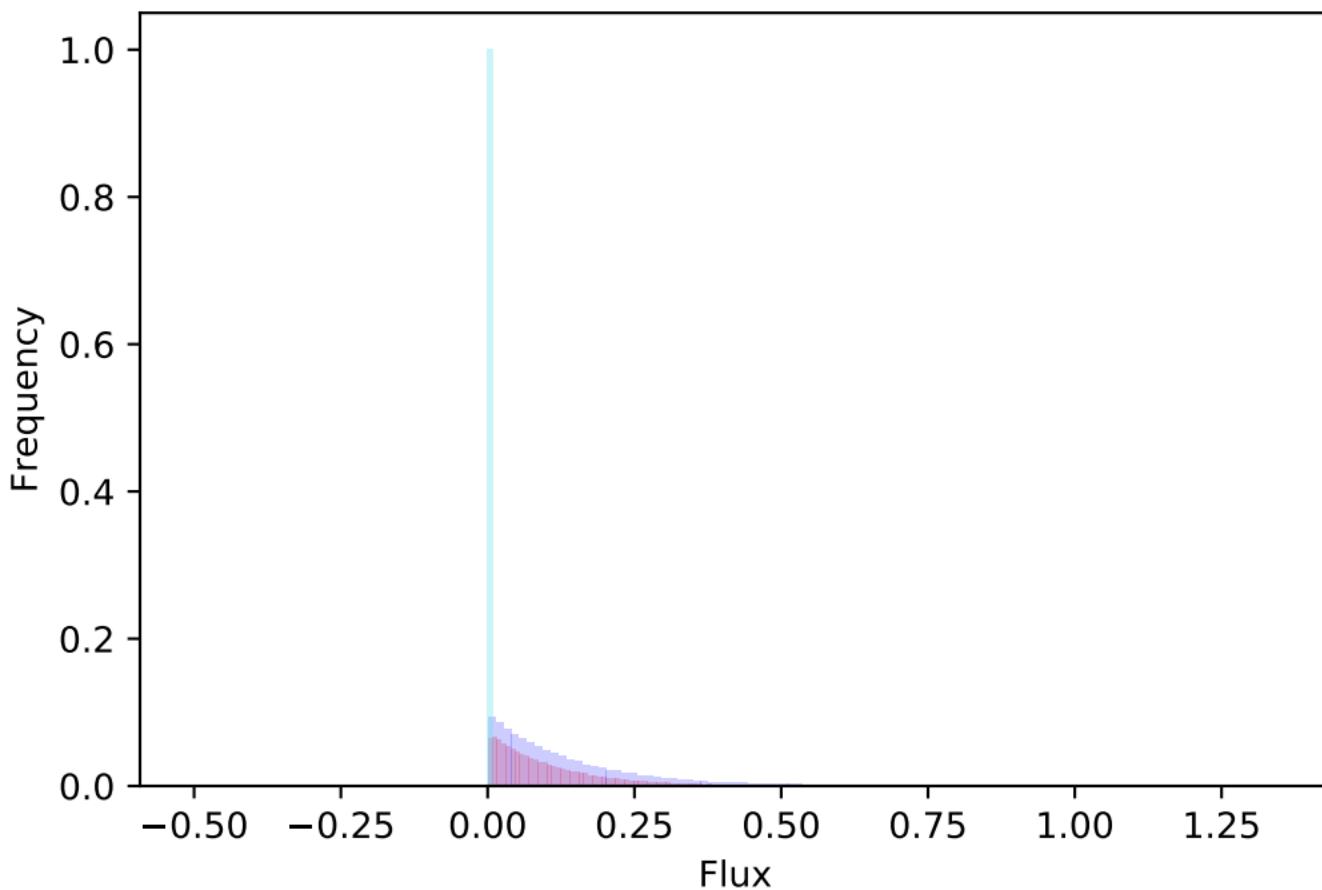
246 : Glu_h + PRE_h <=> AGN_h + KG_h
['AT2G22250']



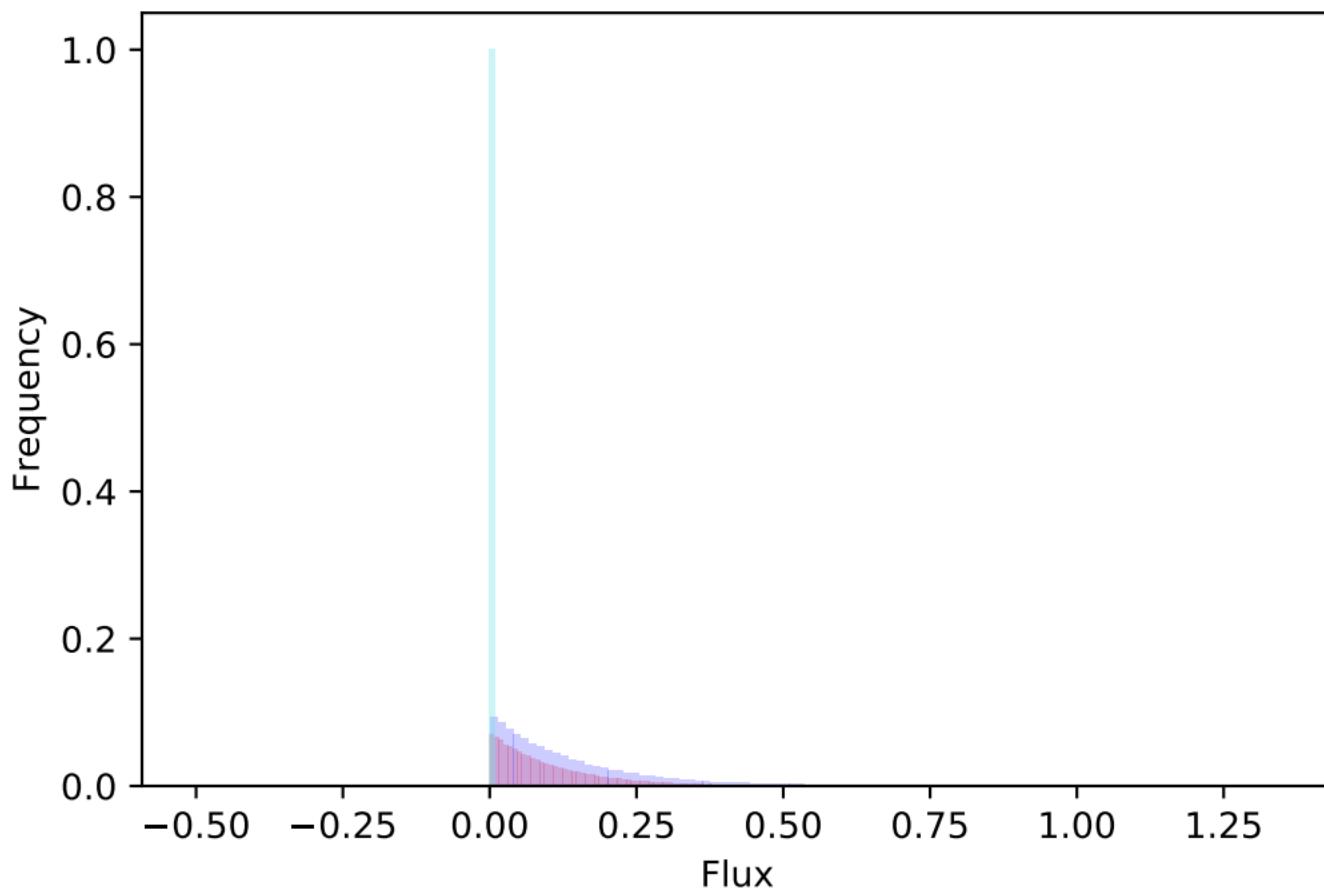
247 : AGN_h + H_h --> CO2_h + H2O_h + Phe_h
['AT1G08250', 'AT2G27820', 'AT1G11790', 'AT3G44720', 'AT3G07630', 'AT5G22630']



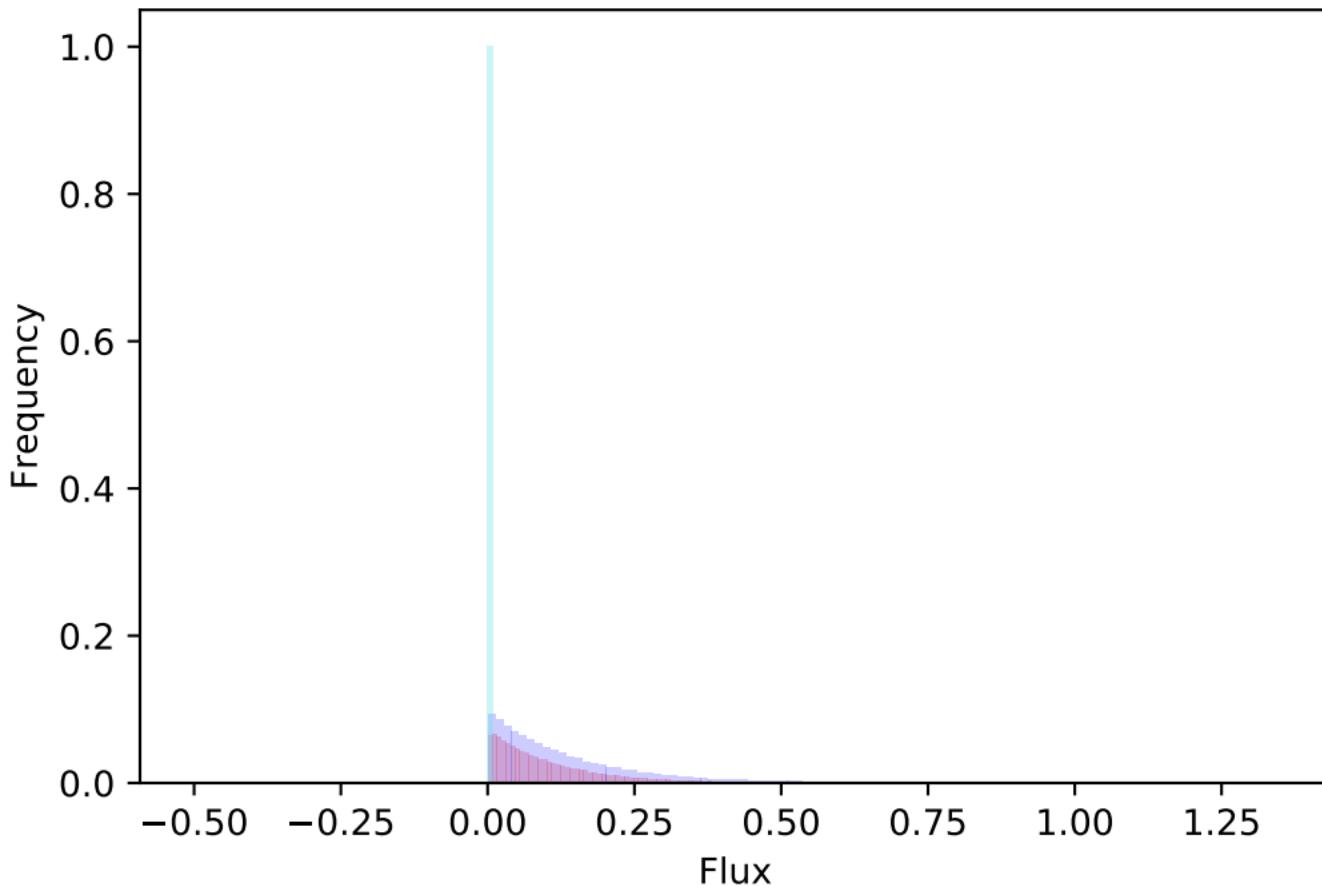
248 : Arg_m + H2O_m + H_m --> Orn_m + urea_m
['AT4G08870', 'AT4G08900']



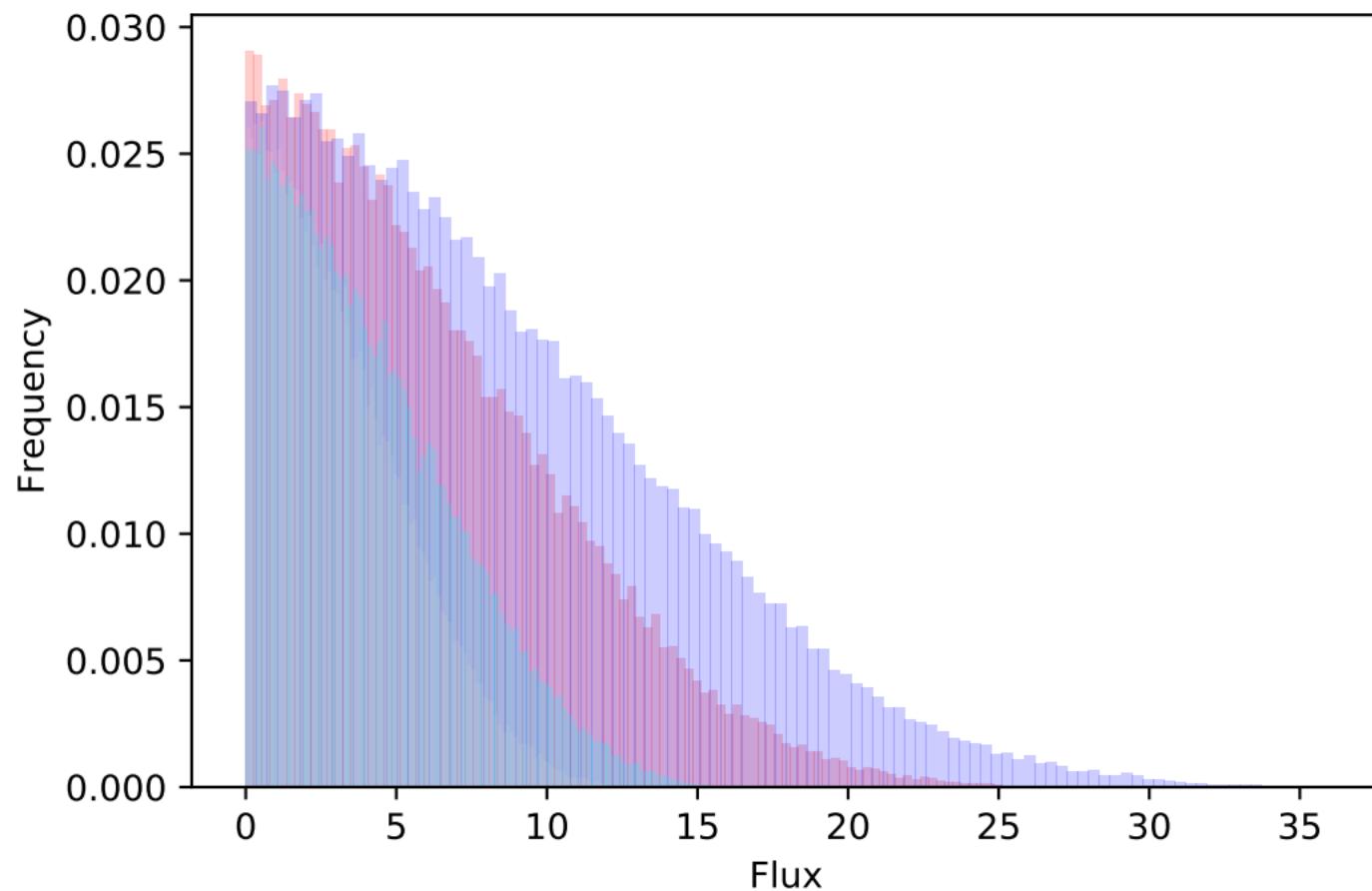
249 : H₂O_m + H_m + urea_m --> CO₂_m + 2.0 NH₄_m
['AT1G67550']



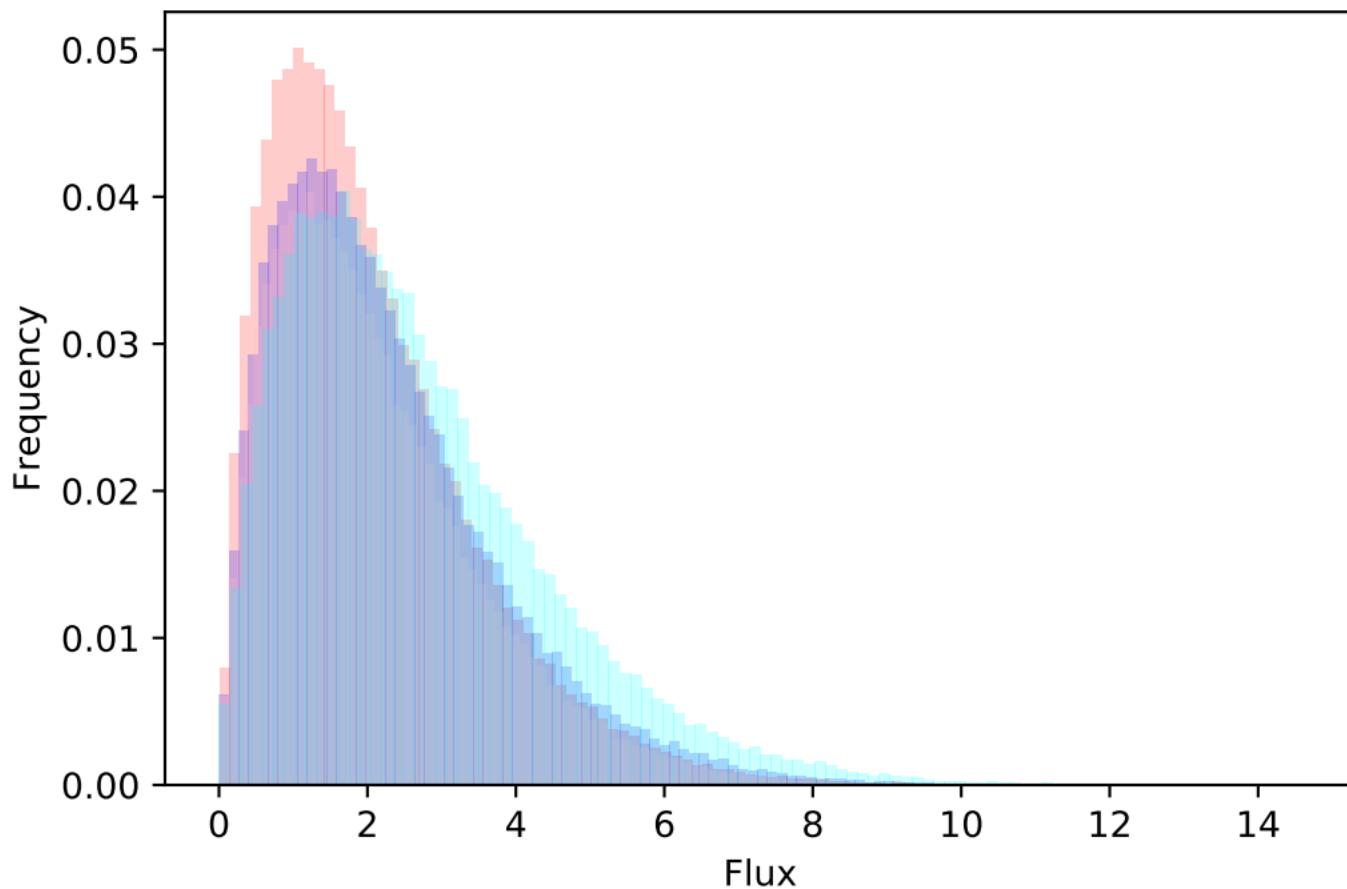
250 : KG_m + Orn_m <=> Glu_DASH_SeA_m + Glu_m
['AT5G46180']



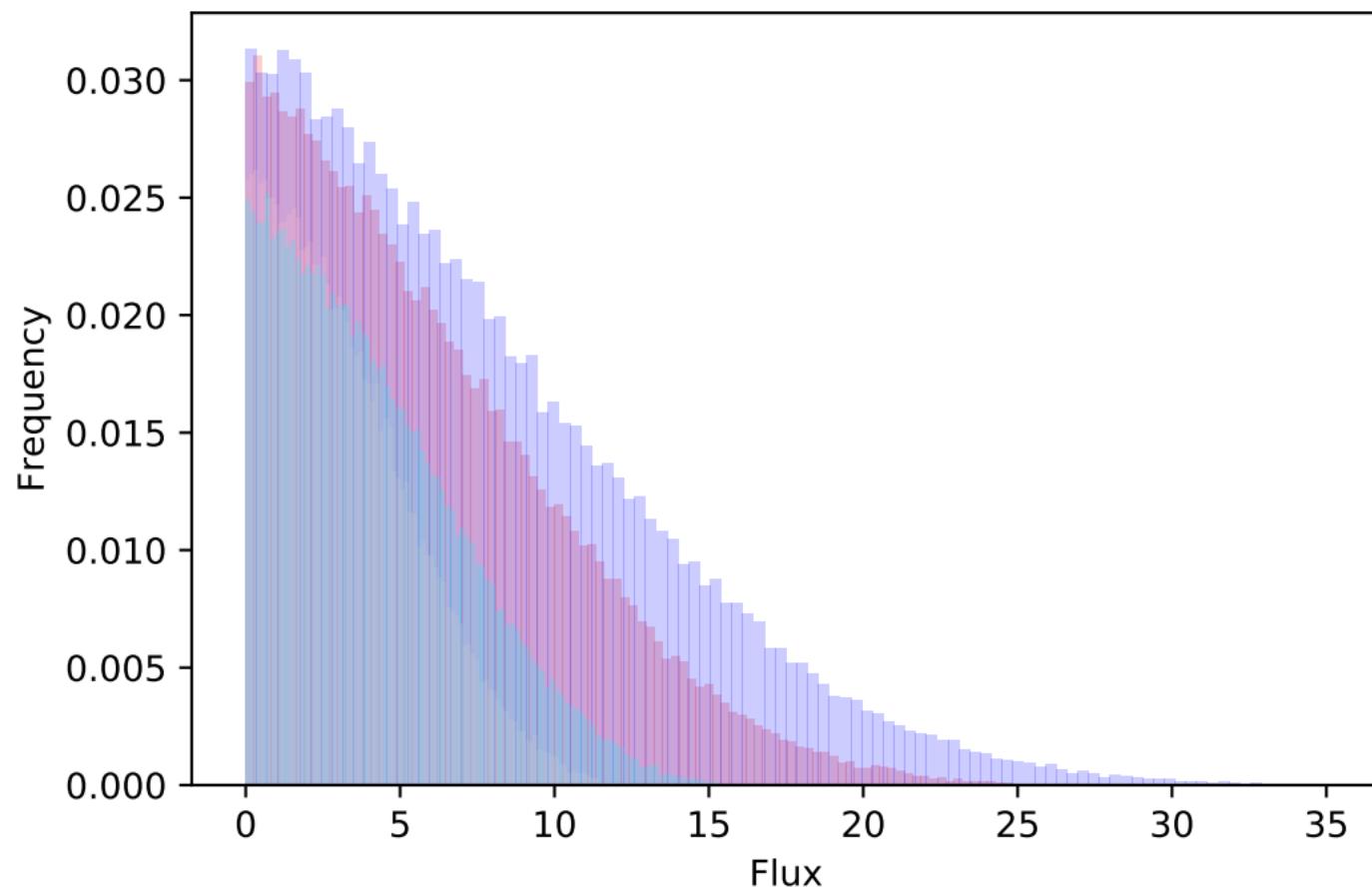
251 : ATP_c + Glu_c --> ADP_c + GluP_c
['AT3G55610', 'AT2G39800']



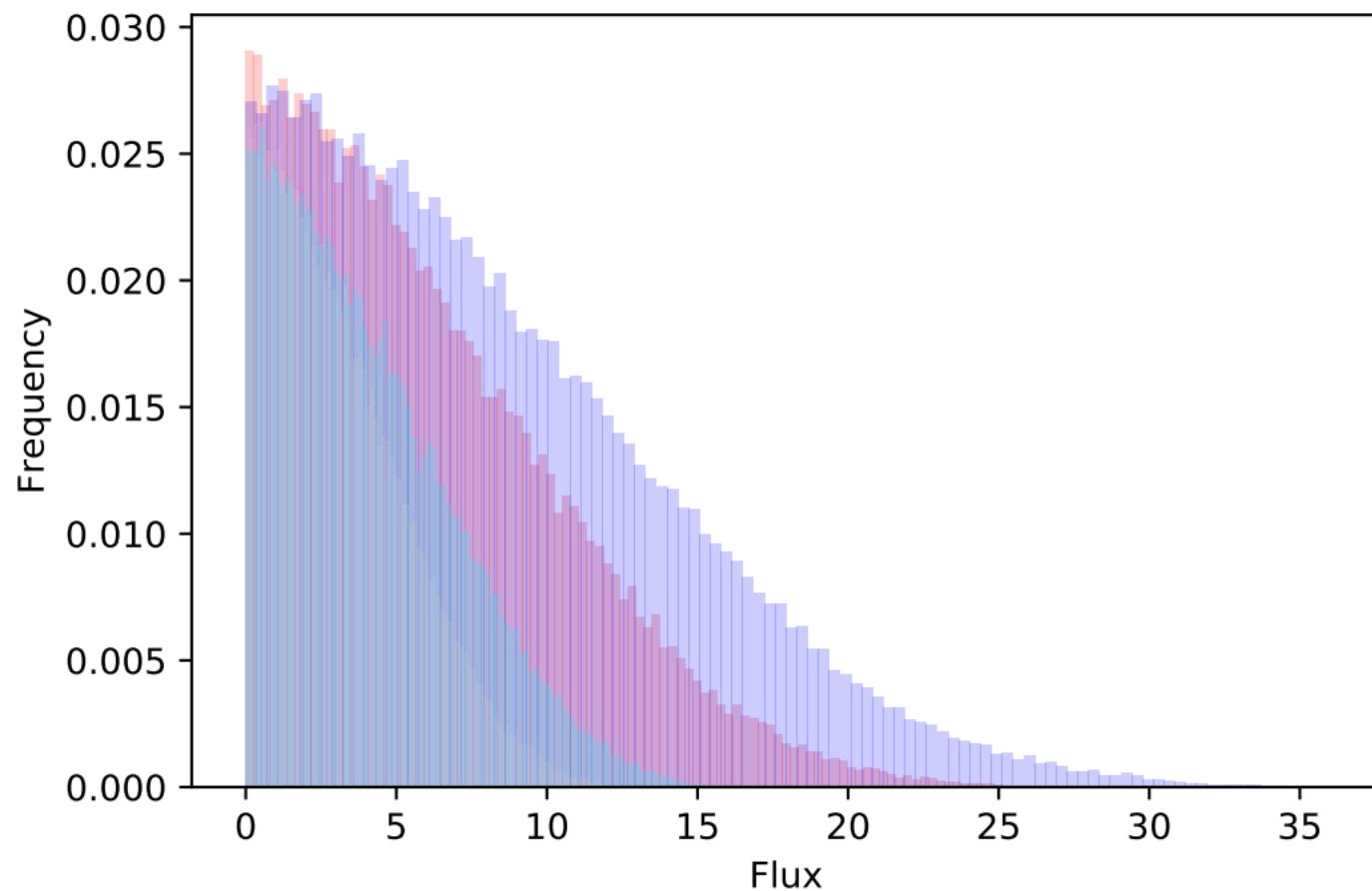
252 : ATP_h + Glu_h --> ADP_h + GluP_h
['AT3G55610', 'AT2G39800']



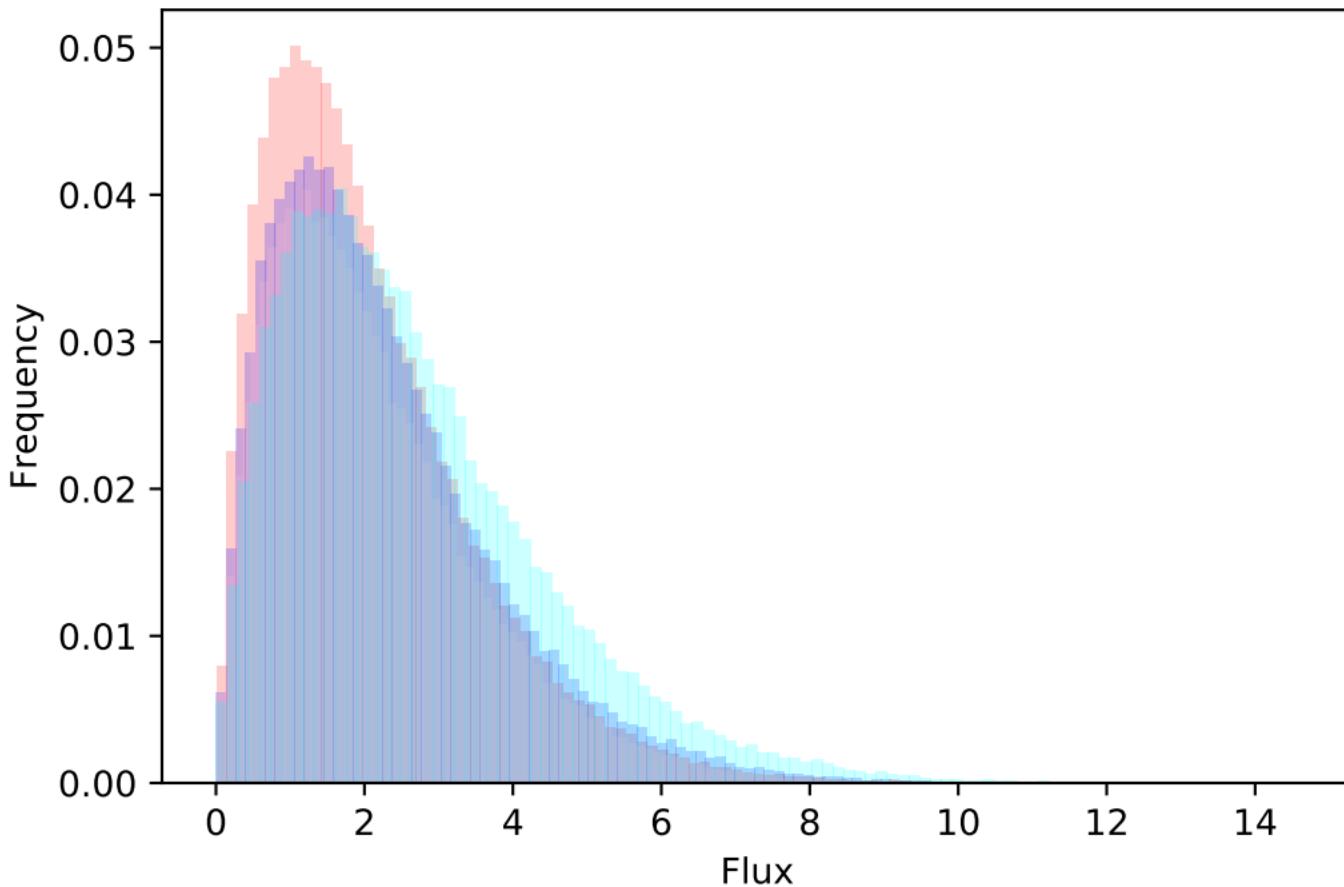
253 : ATP_m + Glu_m --> ADP_m + GluP_m
['AT3G55610', 'AT2G39800']



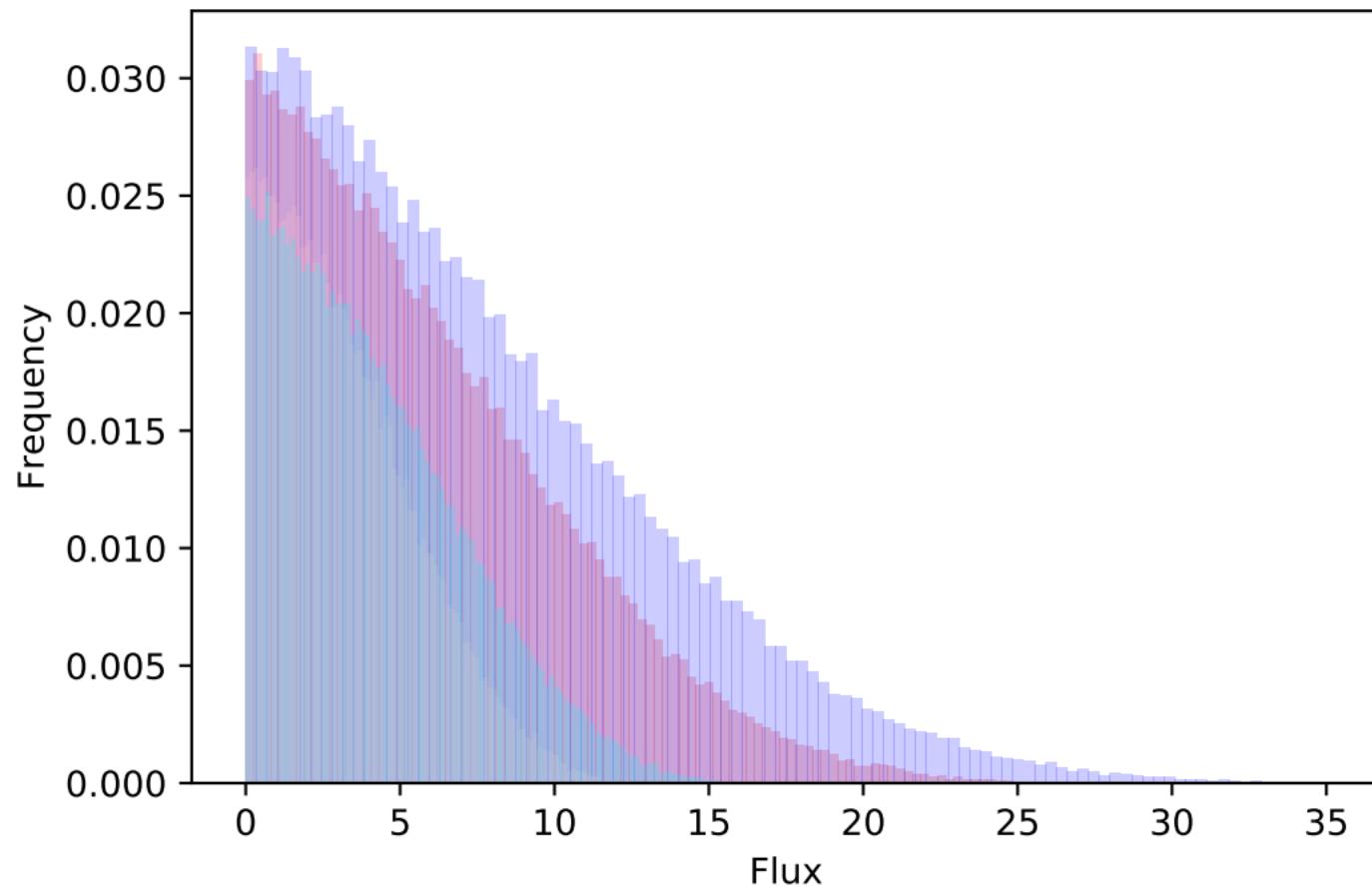
254 : GluP_c + NADPH_c --> Glu_DASH_SeA_c + NADP_c + Pi_c
['AT3G55610', 'AT2G39800']

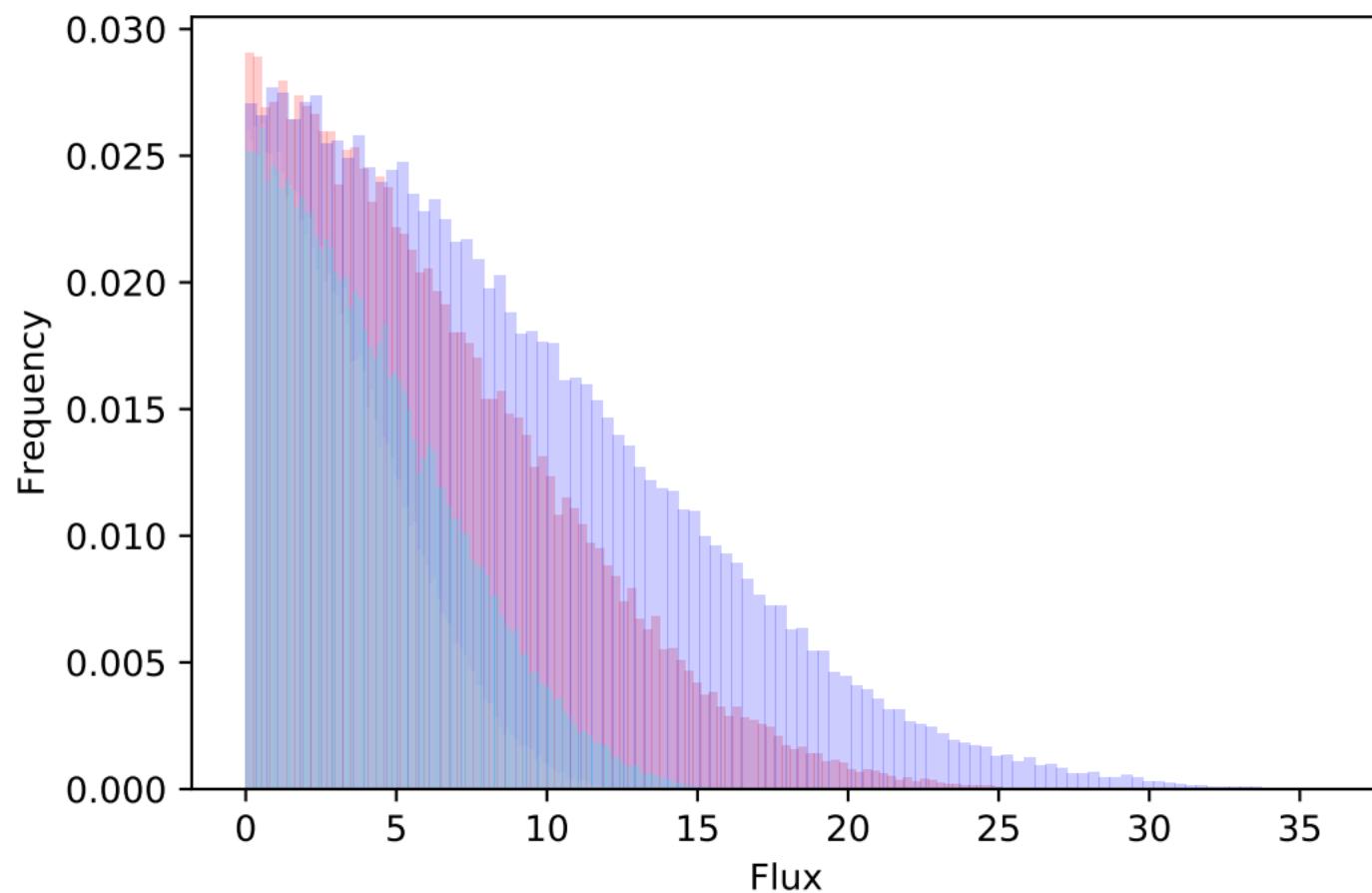
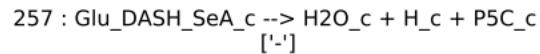


255 : GluP_h + H_h + NADPH_h --> Glu_DASH_SeA_h + NADP_h + Pi_h
['AT3G55610', 'AT2G39800']

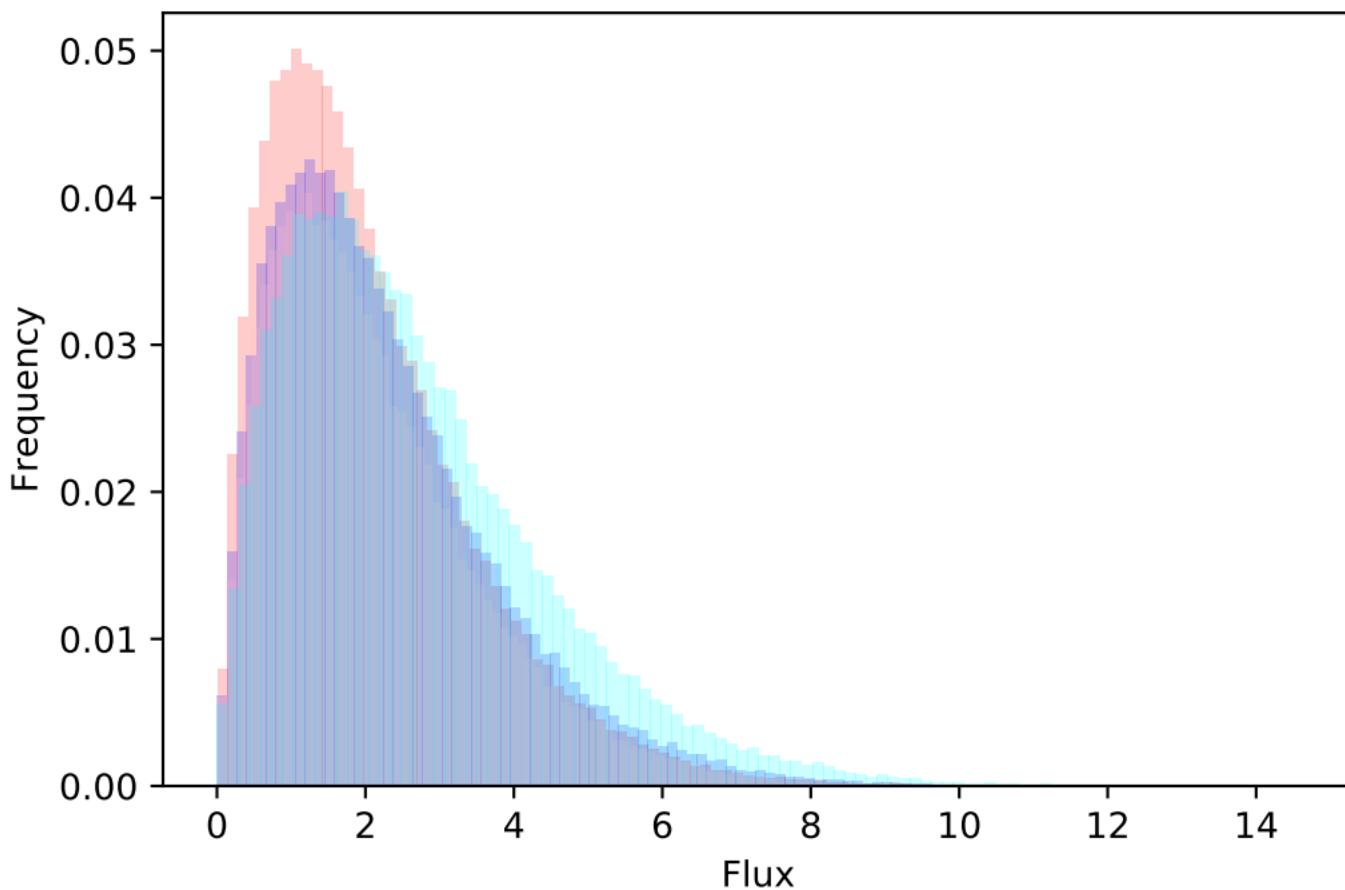


256 : GluP_m + H_m + NADPH_m --> Glu_DASH_SeA_m + NADP_m + Pi_m
['AT3G55610', 'AT2G39800']

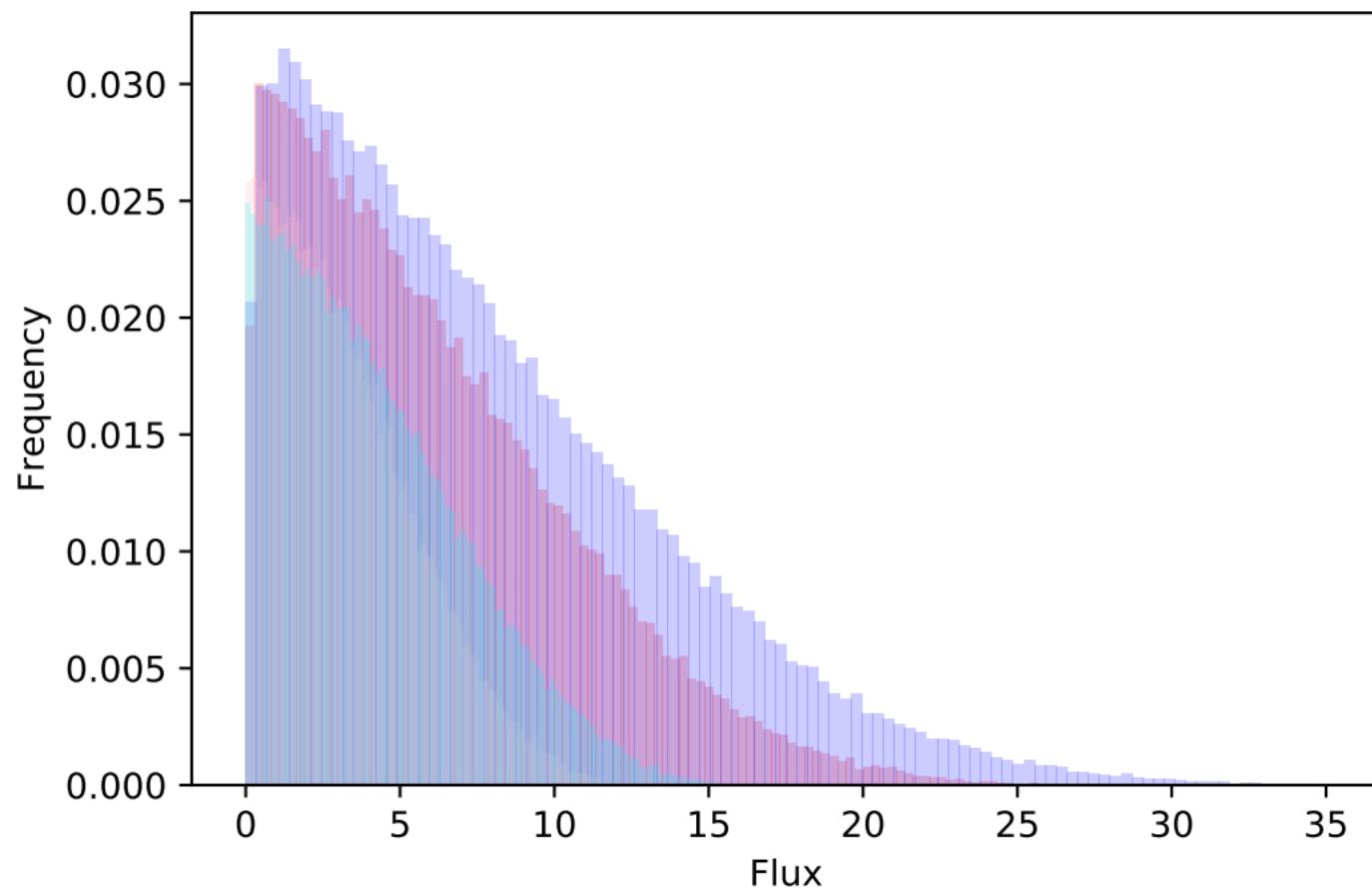




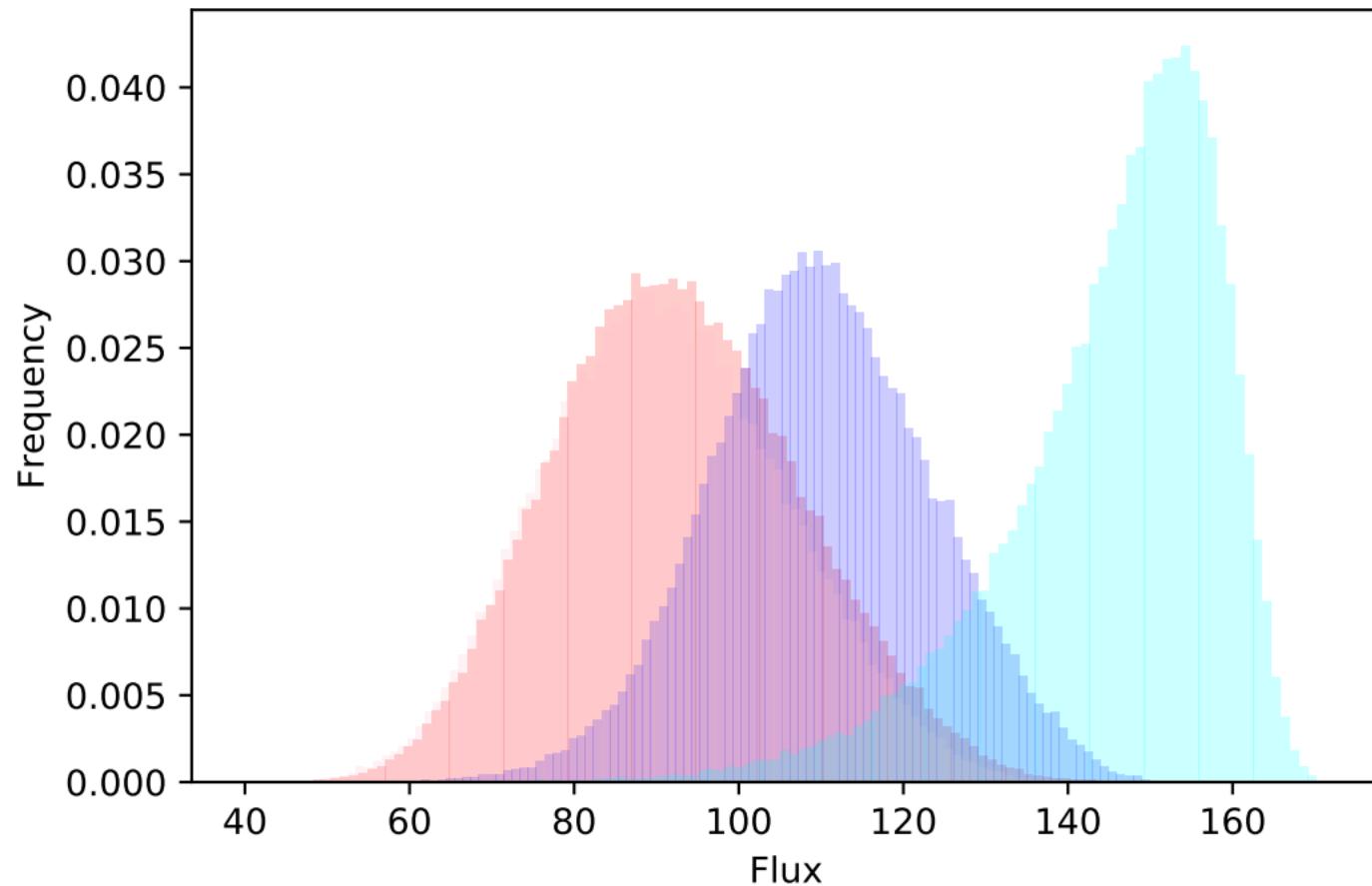
258 : Glu_DASH_SeA_h --> H2O_h + H_h + P5C_h
[l-']



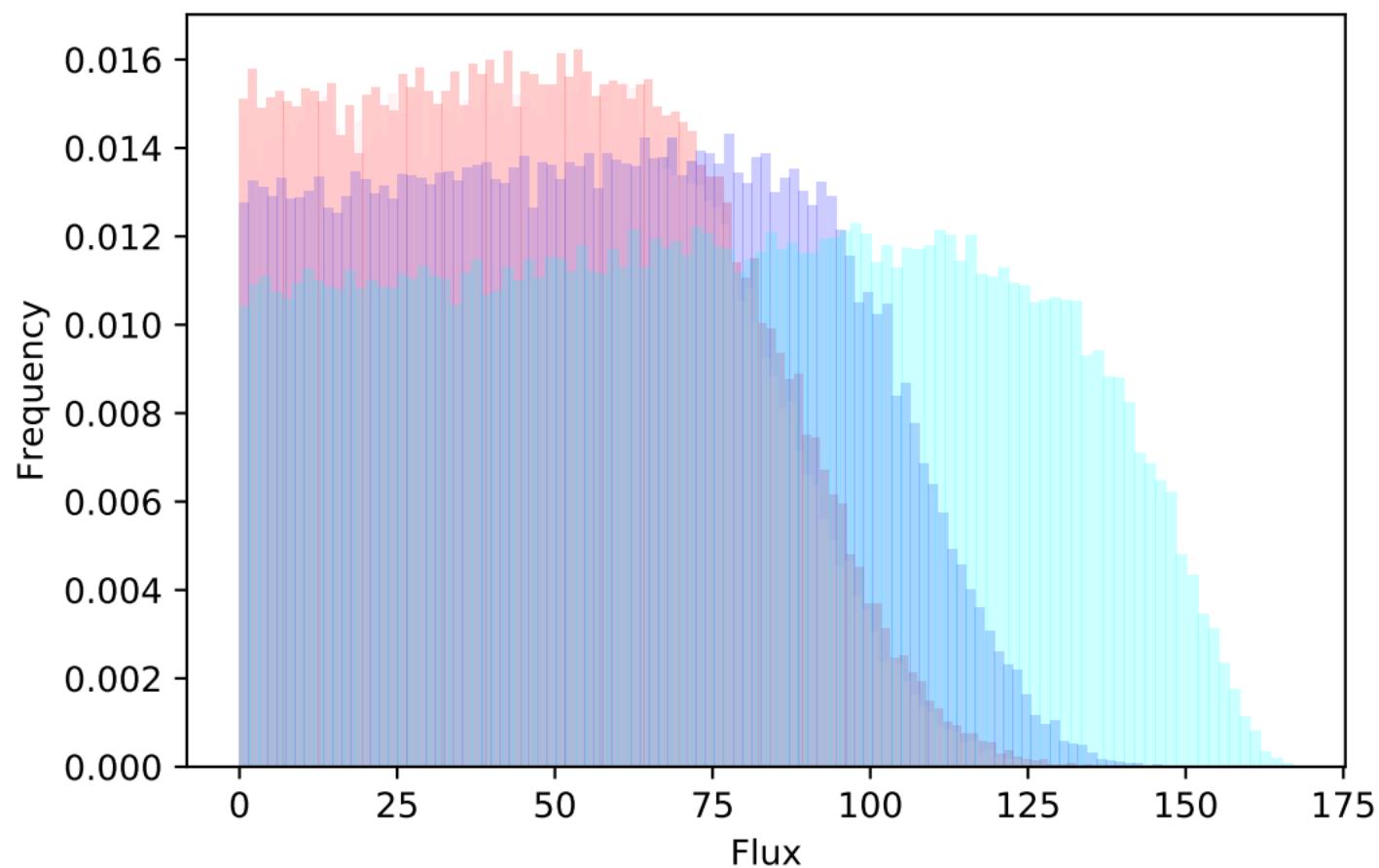
259 : Glu_DASH_SeA_m --> H2O_m + H_m + P5C_m
['-']



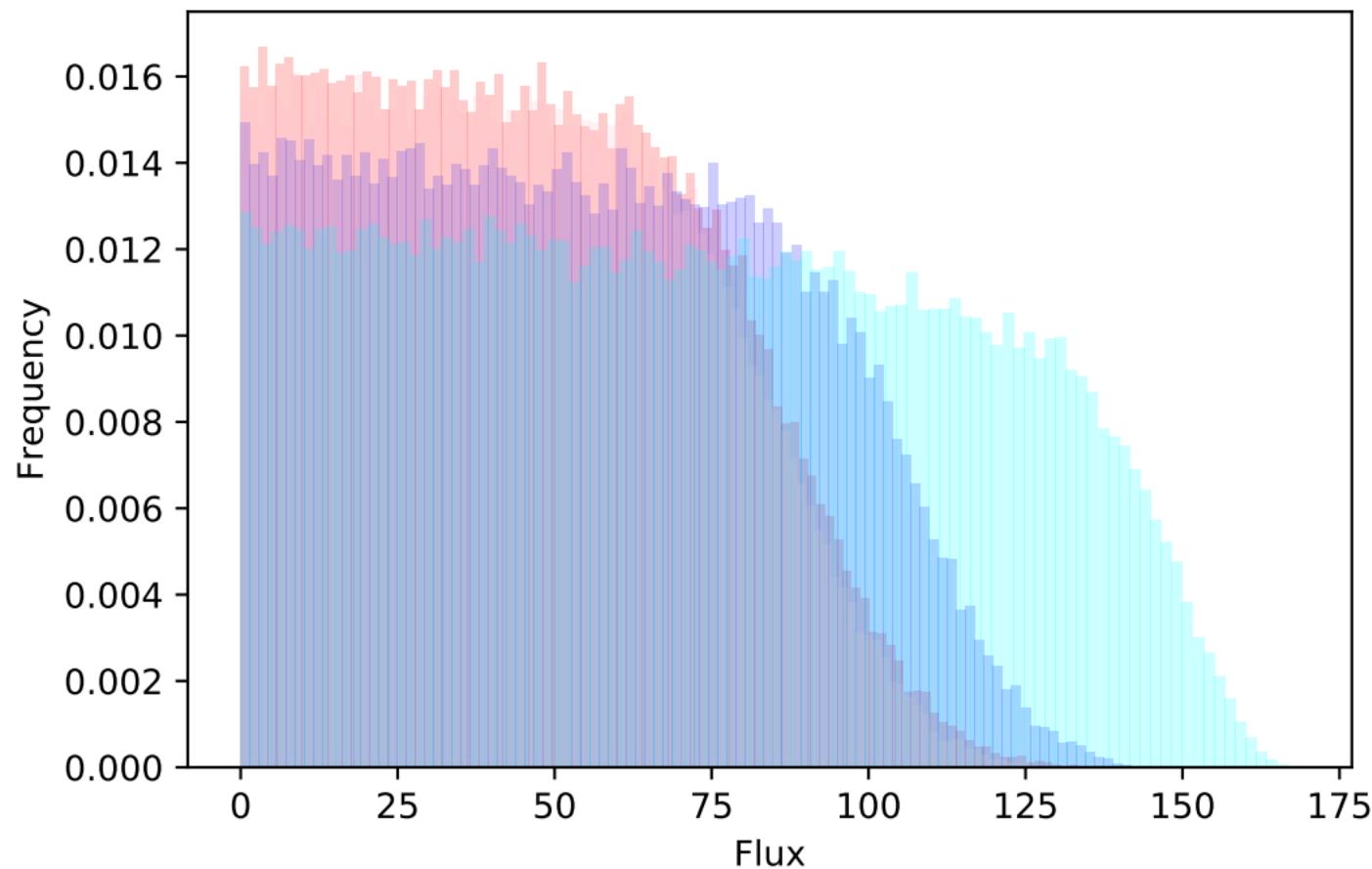
260 : H_c + NADH_c + P5C_c --> NAD_c + Pro_c
['AT5G14800']



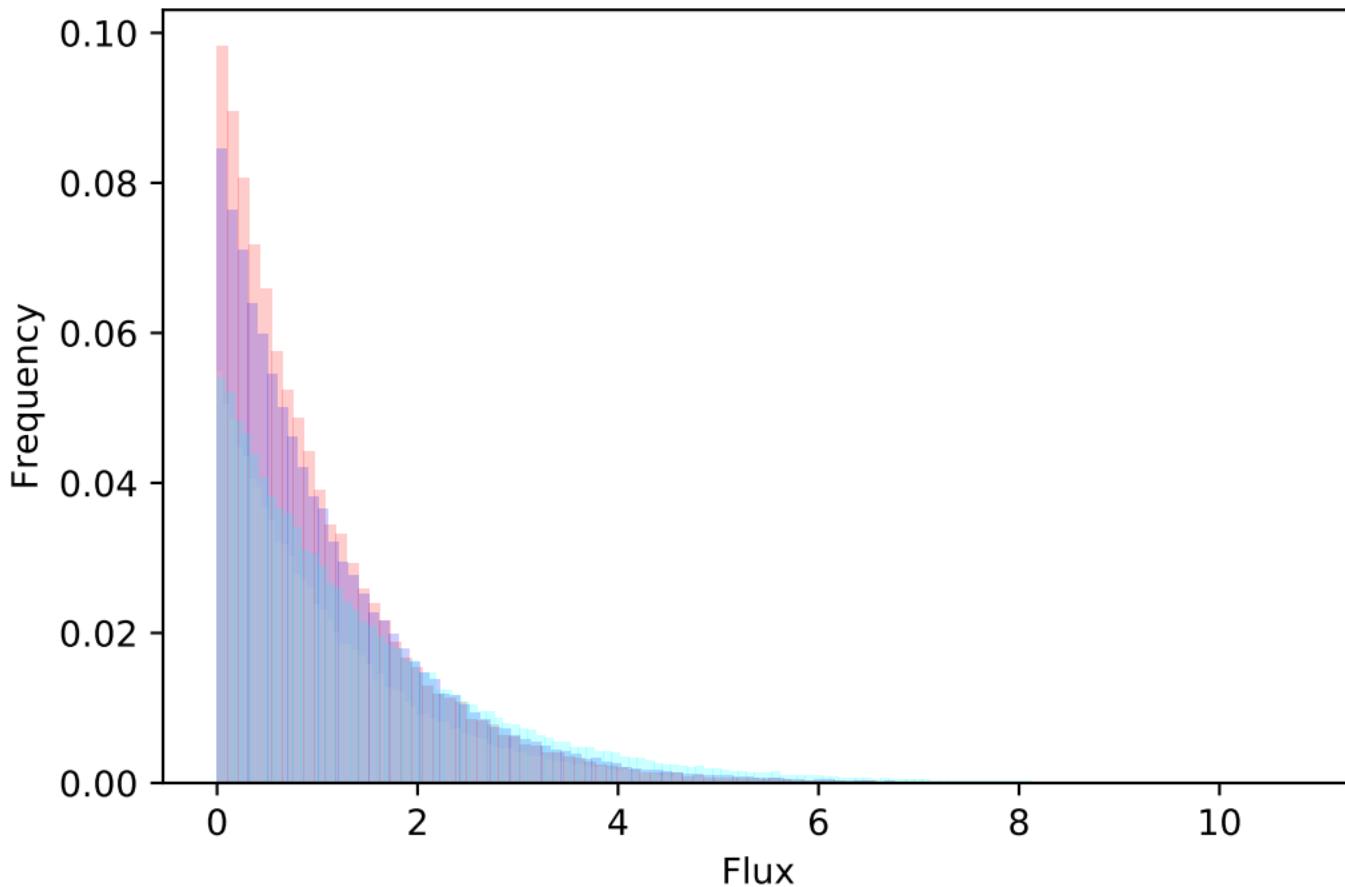
261 : NAD_m + Pro_m --> 2.0 H_m + NADH_m + P5C_m
['AT5G38710', 'AT3G30775']



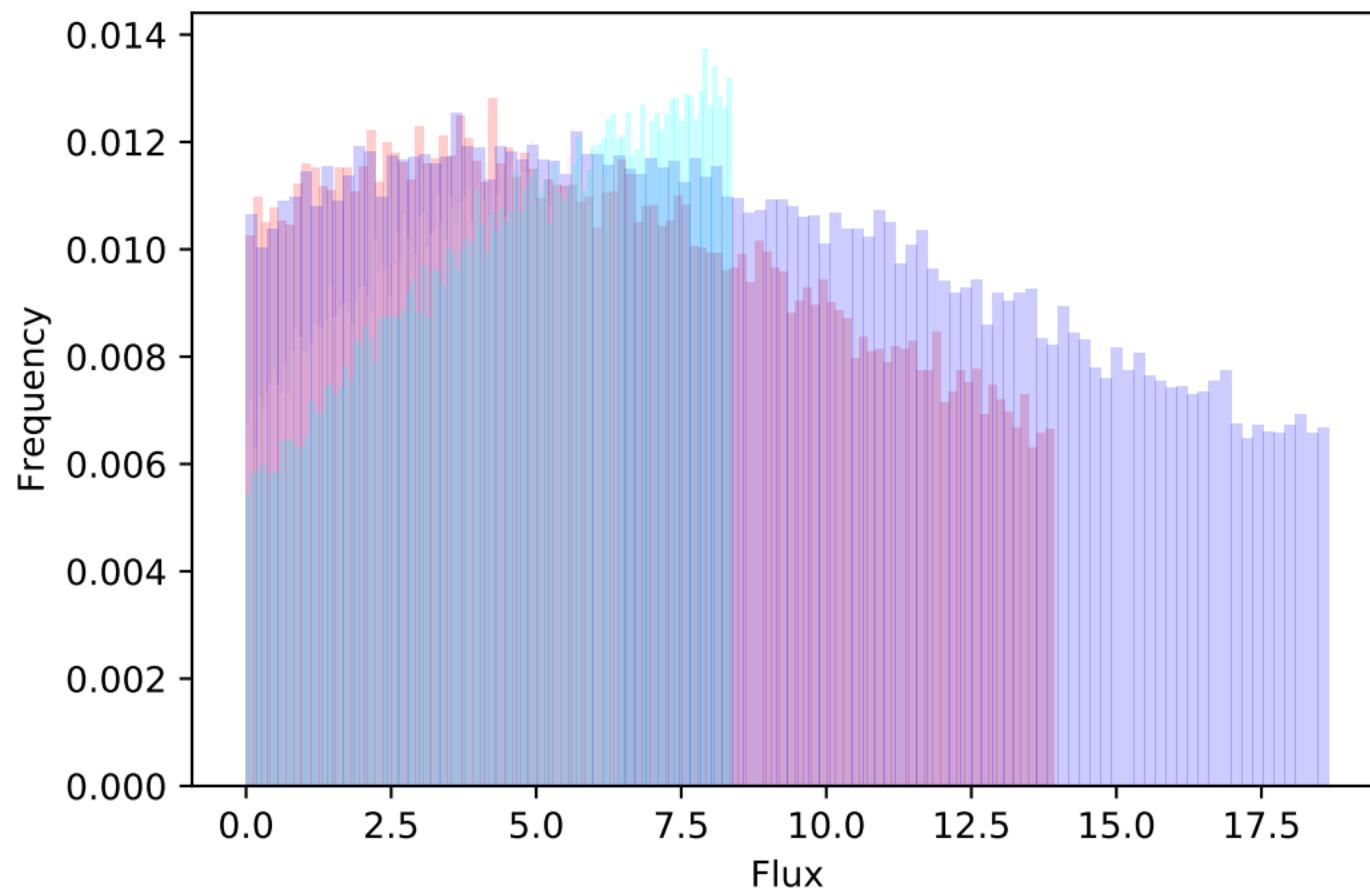
262 : NADP_m + Pro_m --> 2.0 H_m + NADPH_m + P5C_m
['AT5G38710', 'AT3G30775']



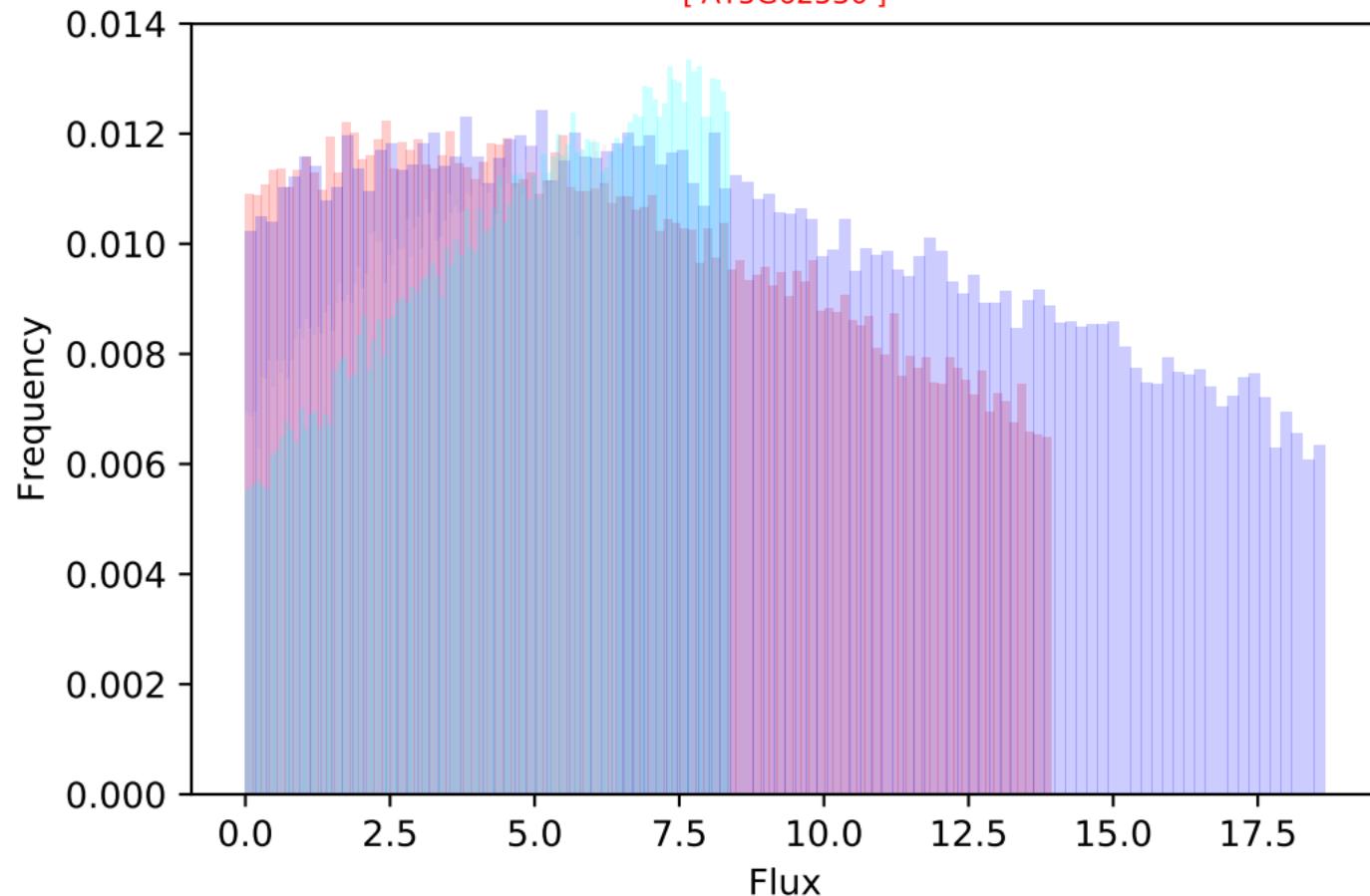
263 : 2.0 H₂O_h + NAD_h + P5C_h --> Glu_h + H_h + NADH_h
['AT5G62530']



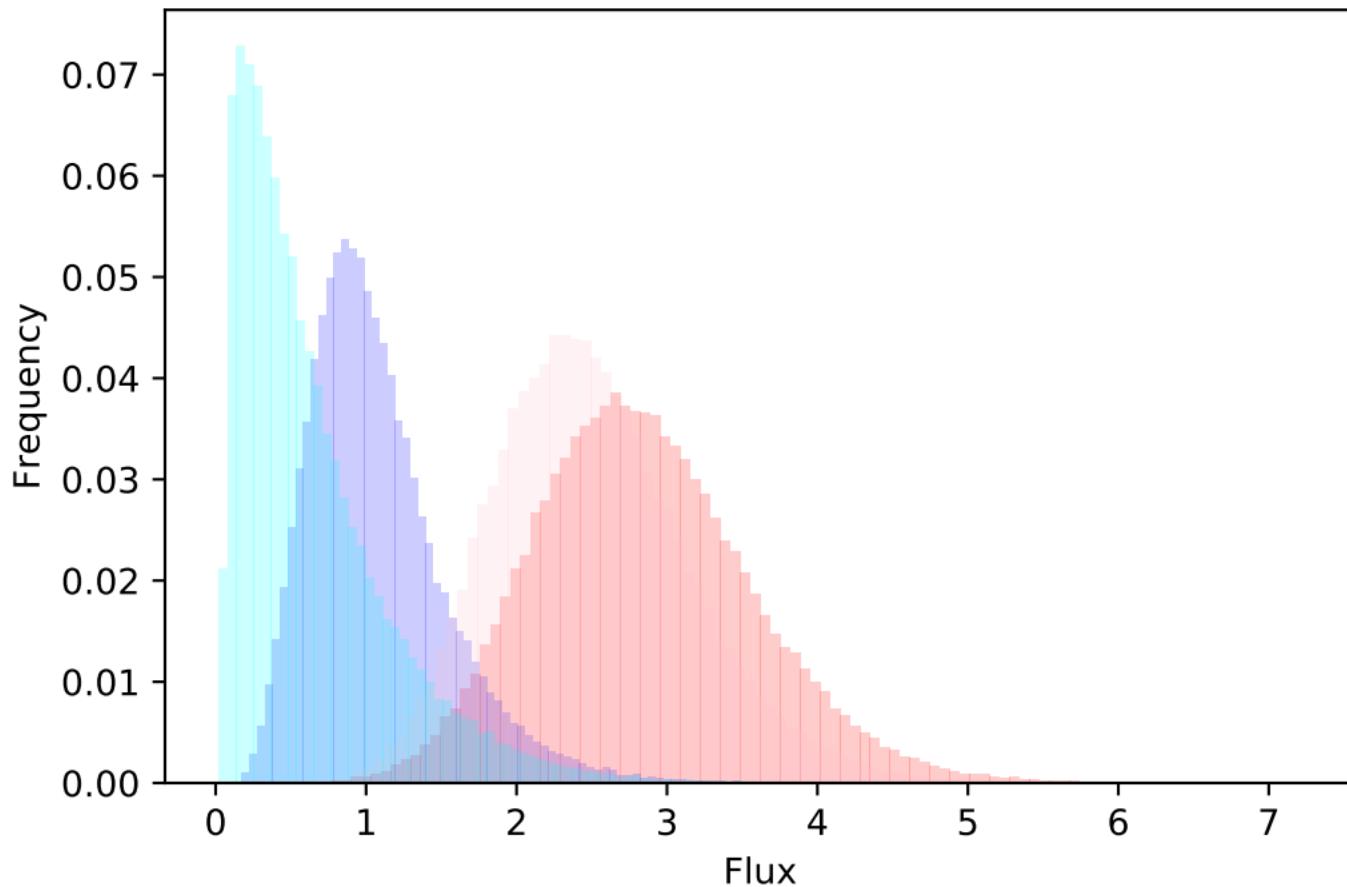
264 : 2.0 H₂O_m + NAD_m + P5C_m --> Glu_m + H_m + NADH_m
['AT5G62530']



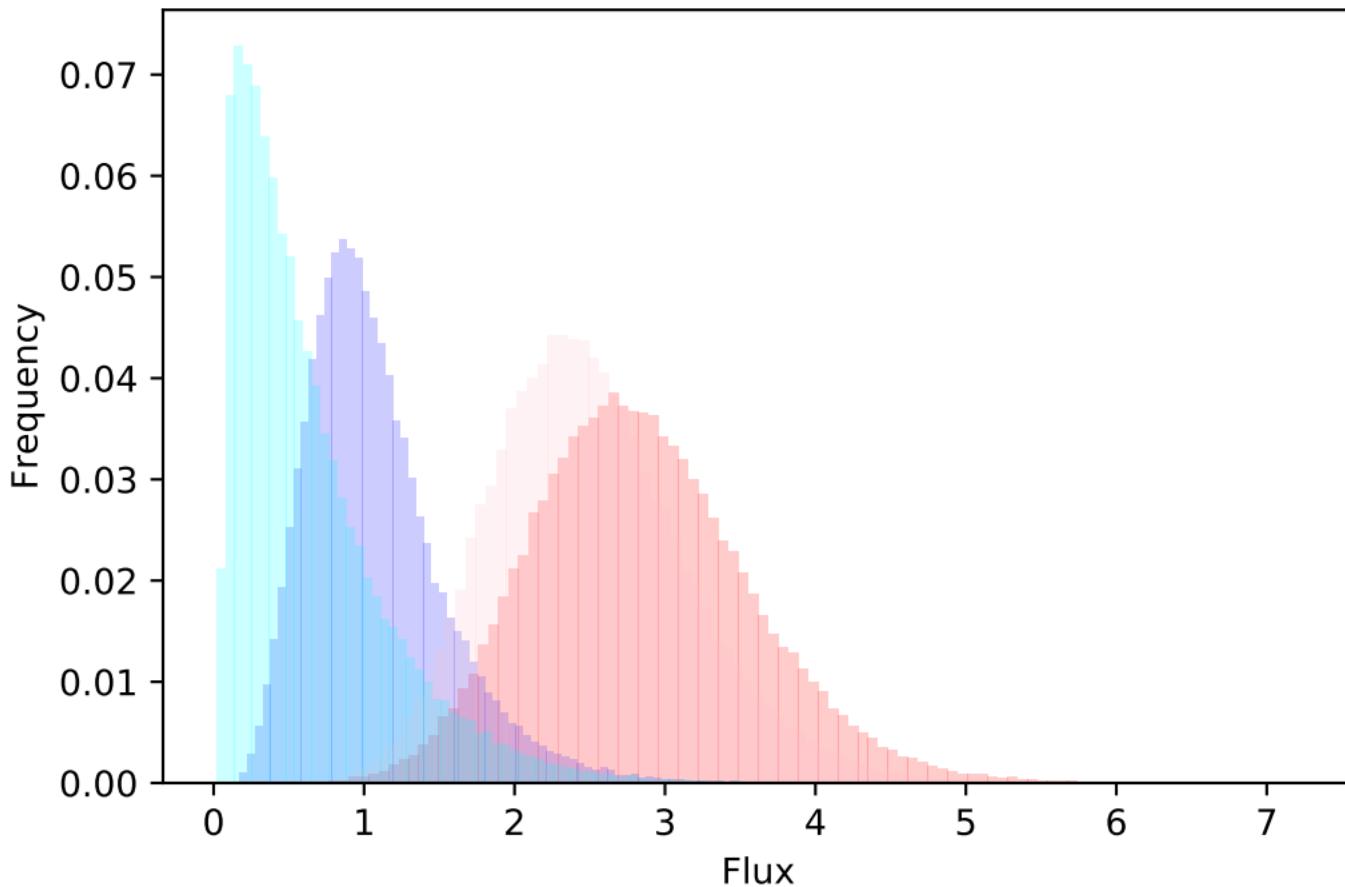
265 : 2.0 H₂O_m + NADP_m + P5C_m --> Glu_m + H_m + NADPH_m
['AT5G62530']



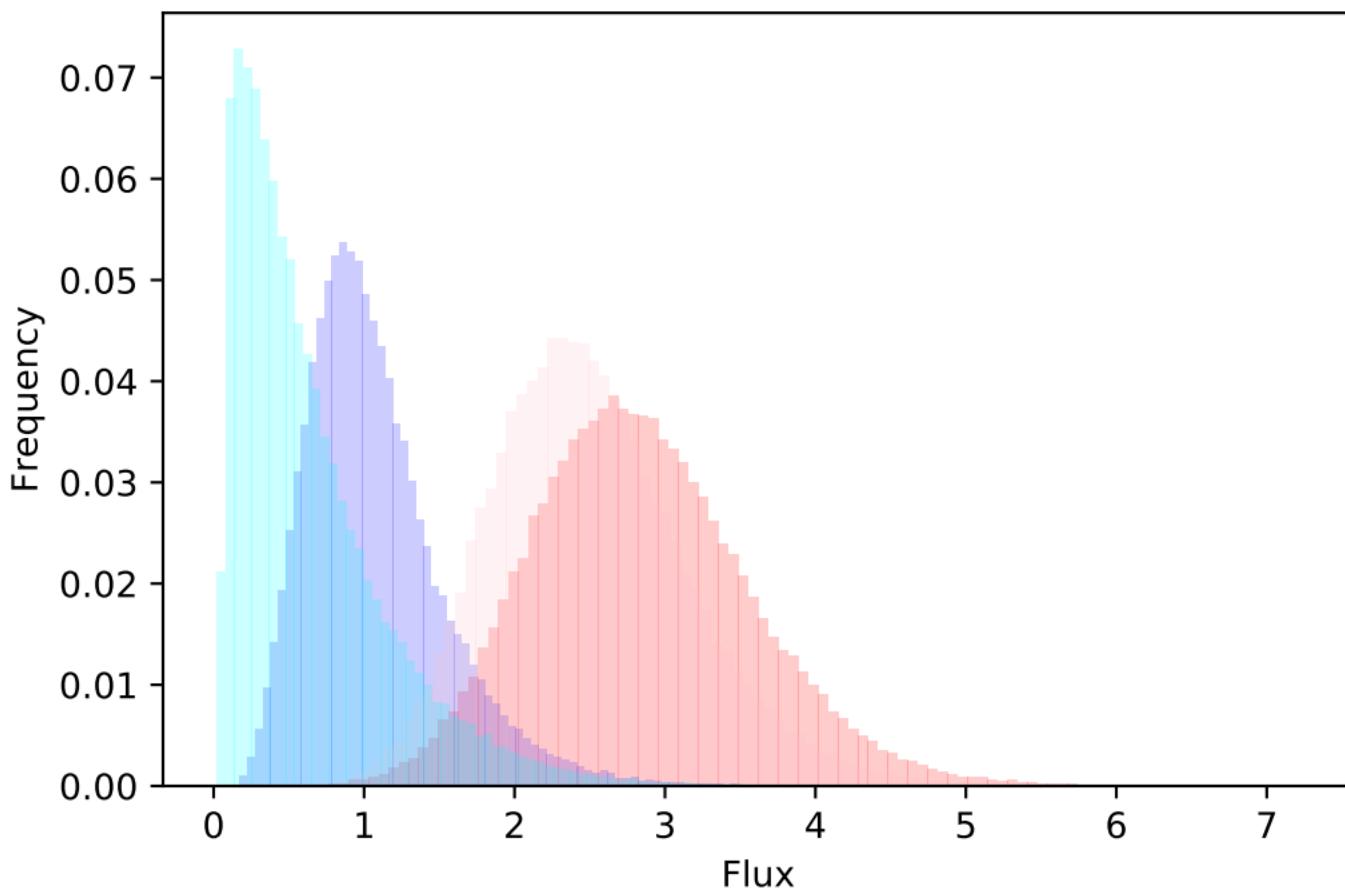
266 : NAD_h + PGA_h <=> H_h + NADH_h + P_DASH_HPR_h
['AT1G17745', 'AT4G34200', 'AT3G19480']



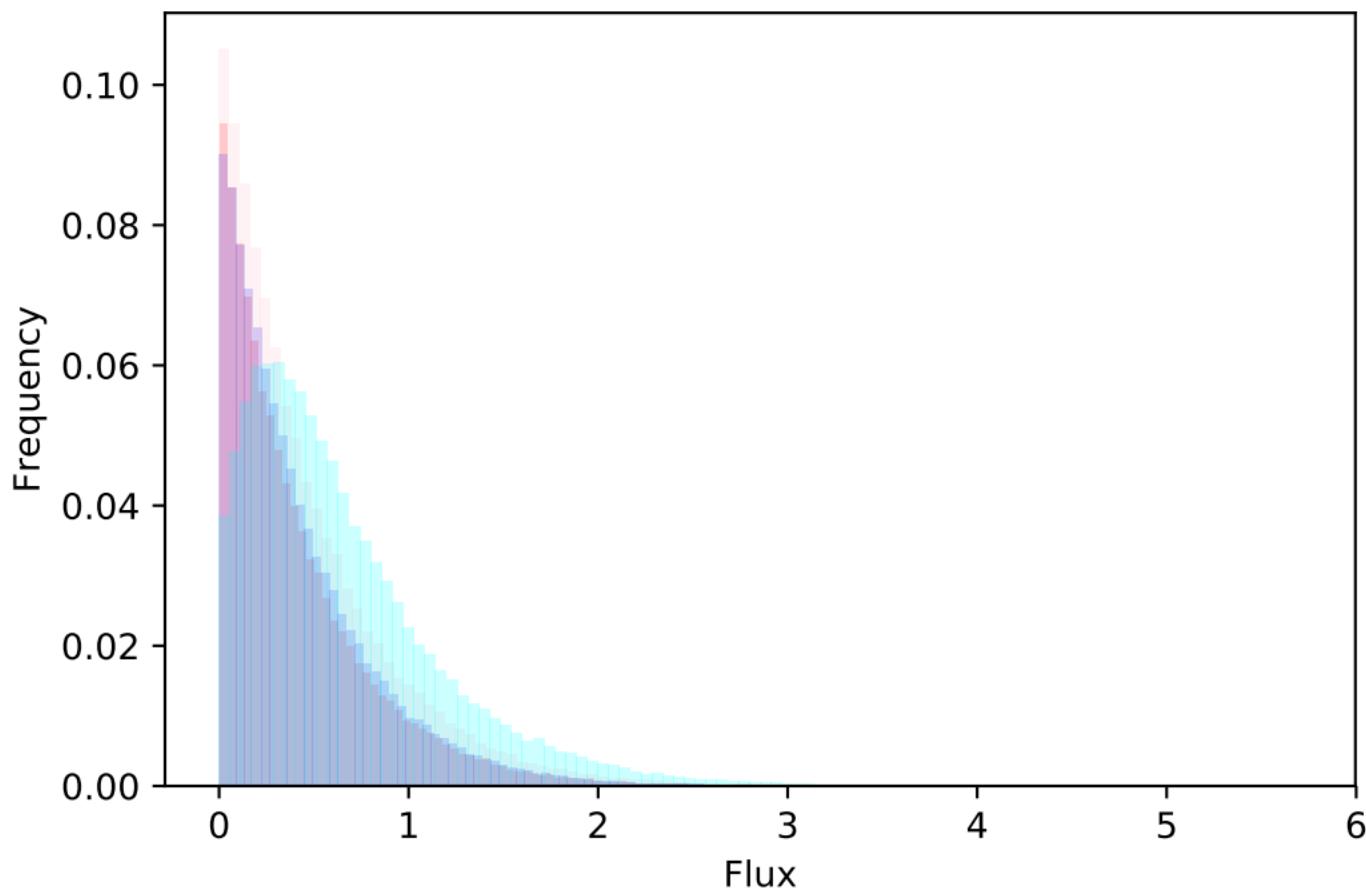
267 : Glu_h + P_DASH_HPR_h --> KG_h + PSer_h
['AT2G17630', 'AT4G35630']



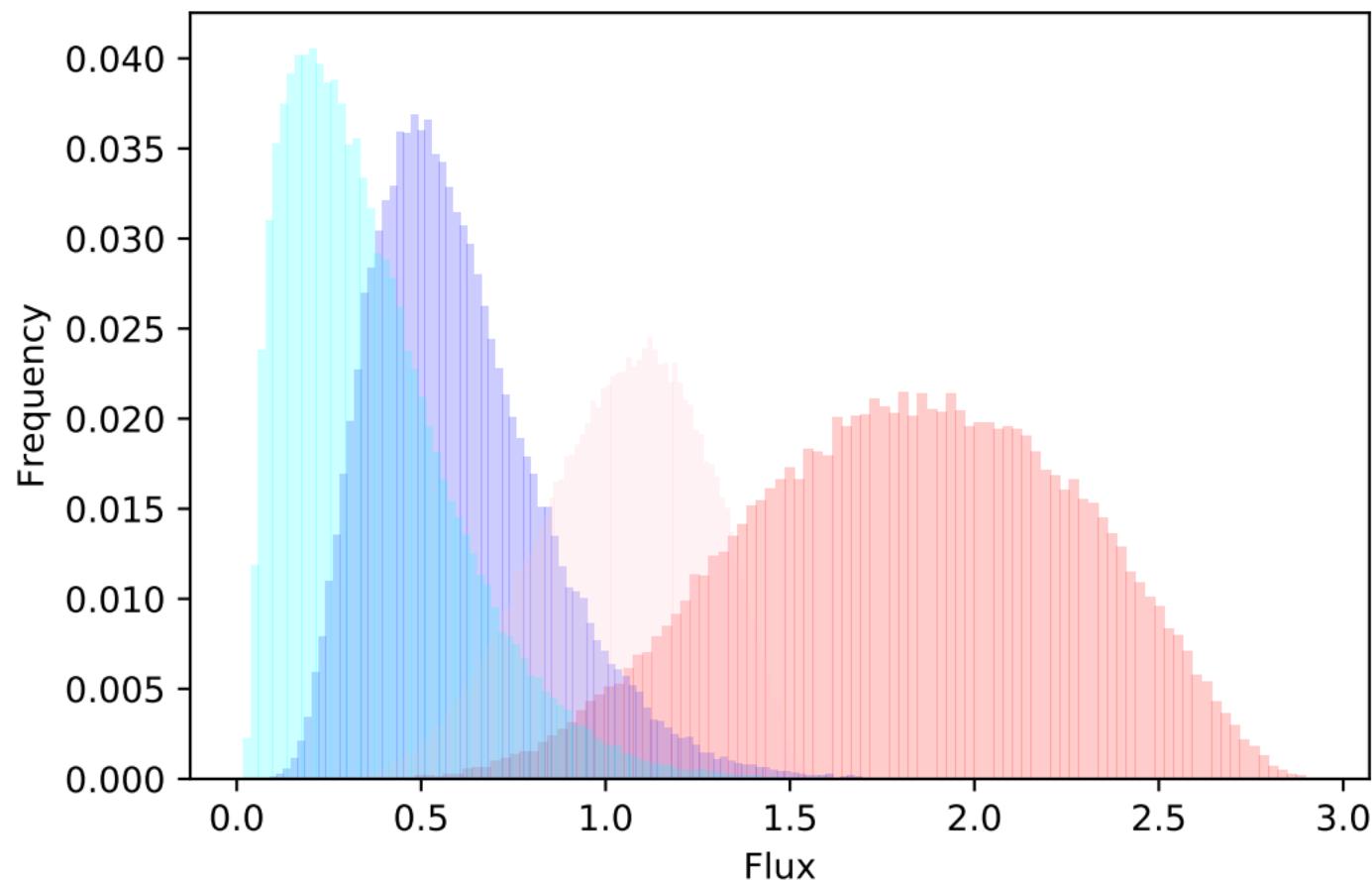
268 : H₂O_h + PSer_h --> Pi_h + Ser_h
['AT1G18640']



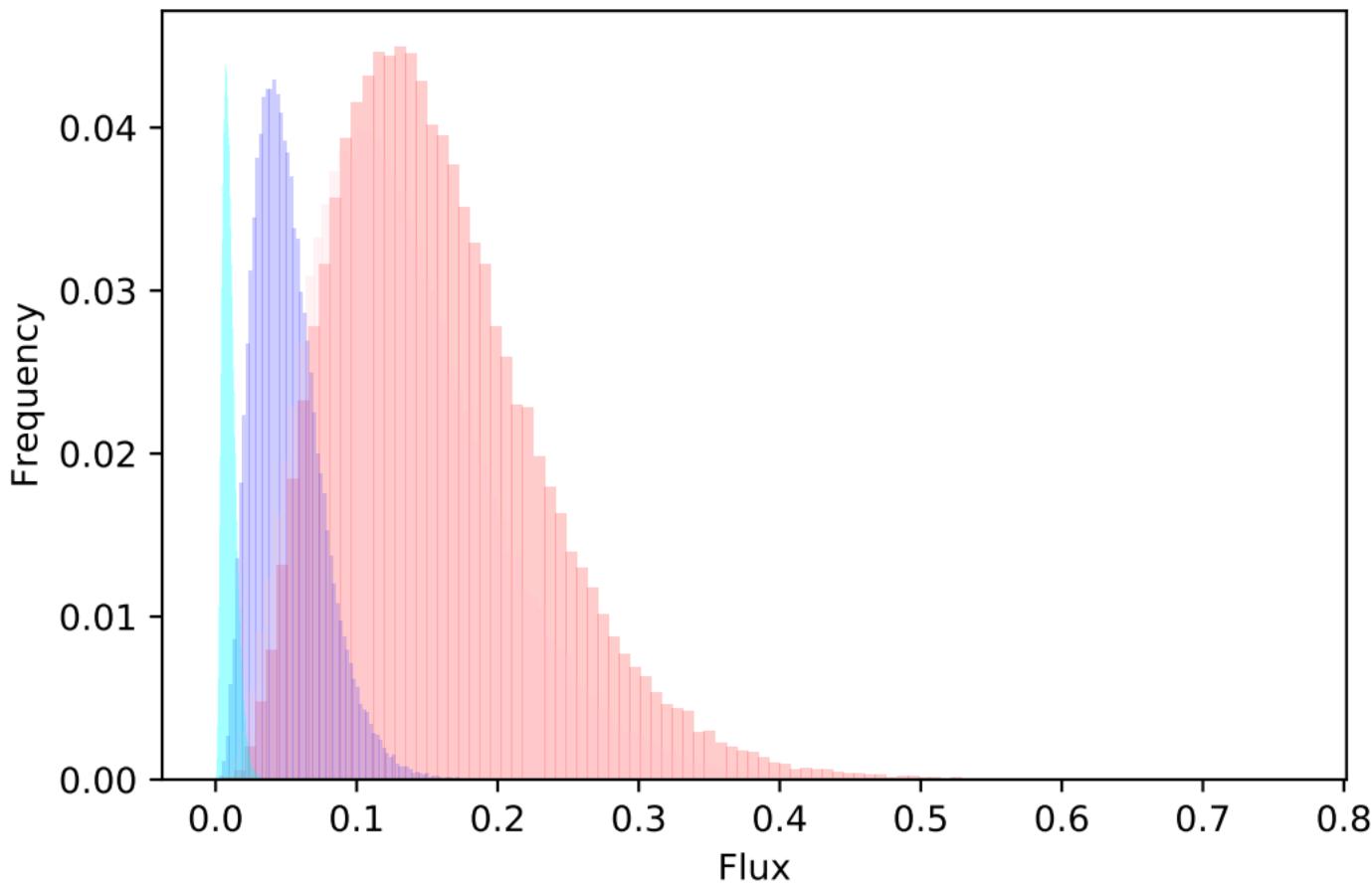
269 : Ser_c --> NH4_c + Pyr_c
['AT4G11640']



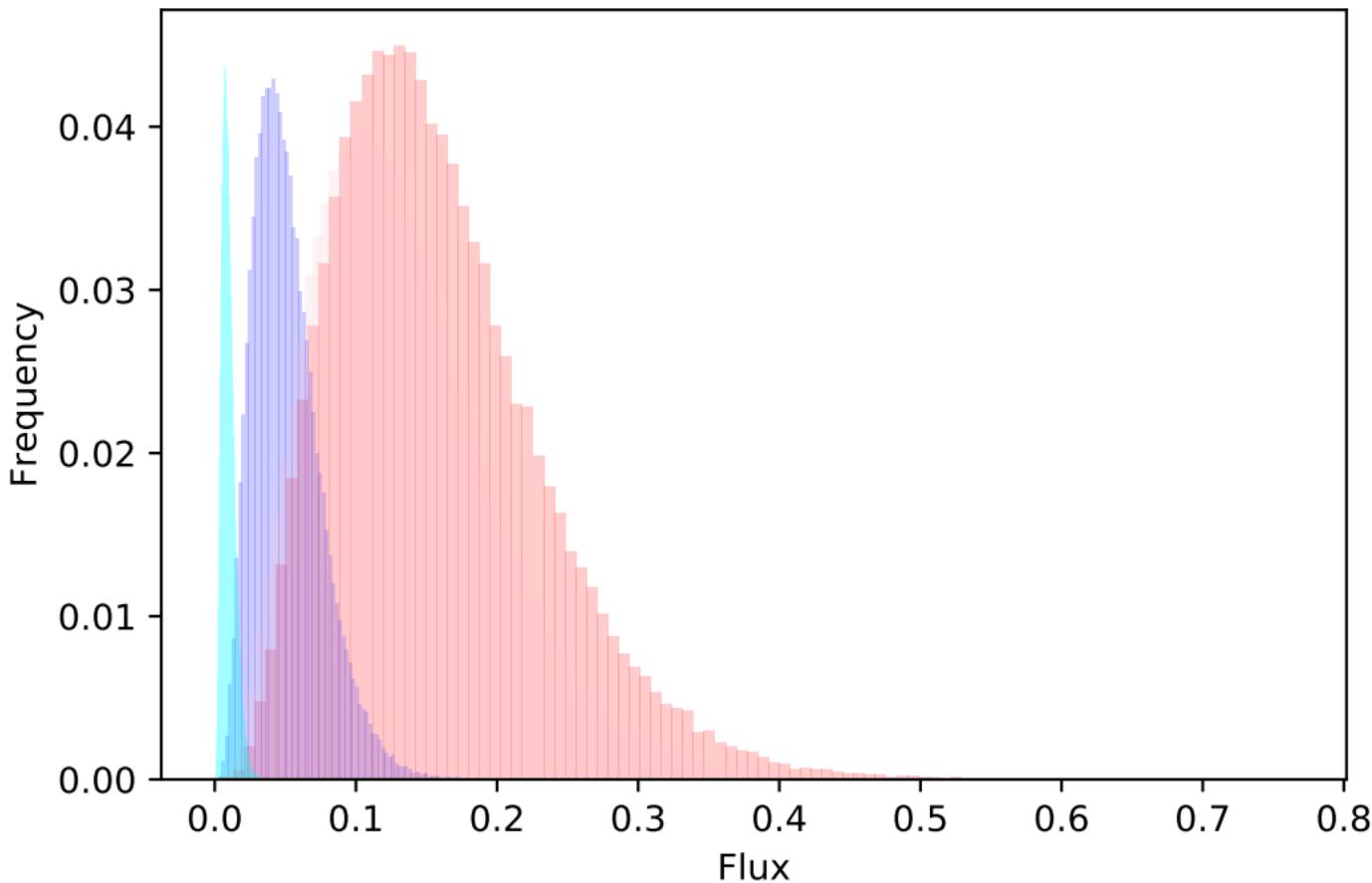
270 : H₂O_h + PH_DASH_Ser_h --> Pi_h + Thr_h
['2*AT4G29840', 'AT1G72810']



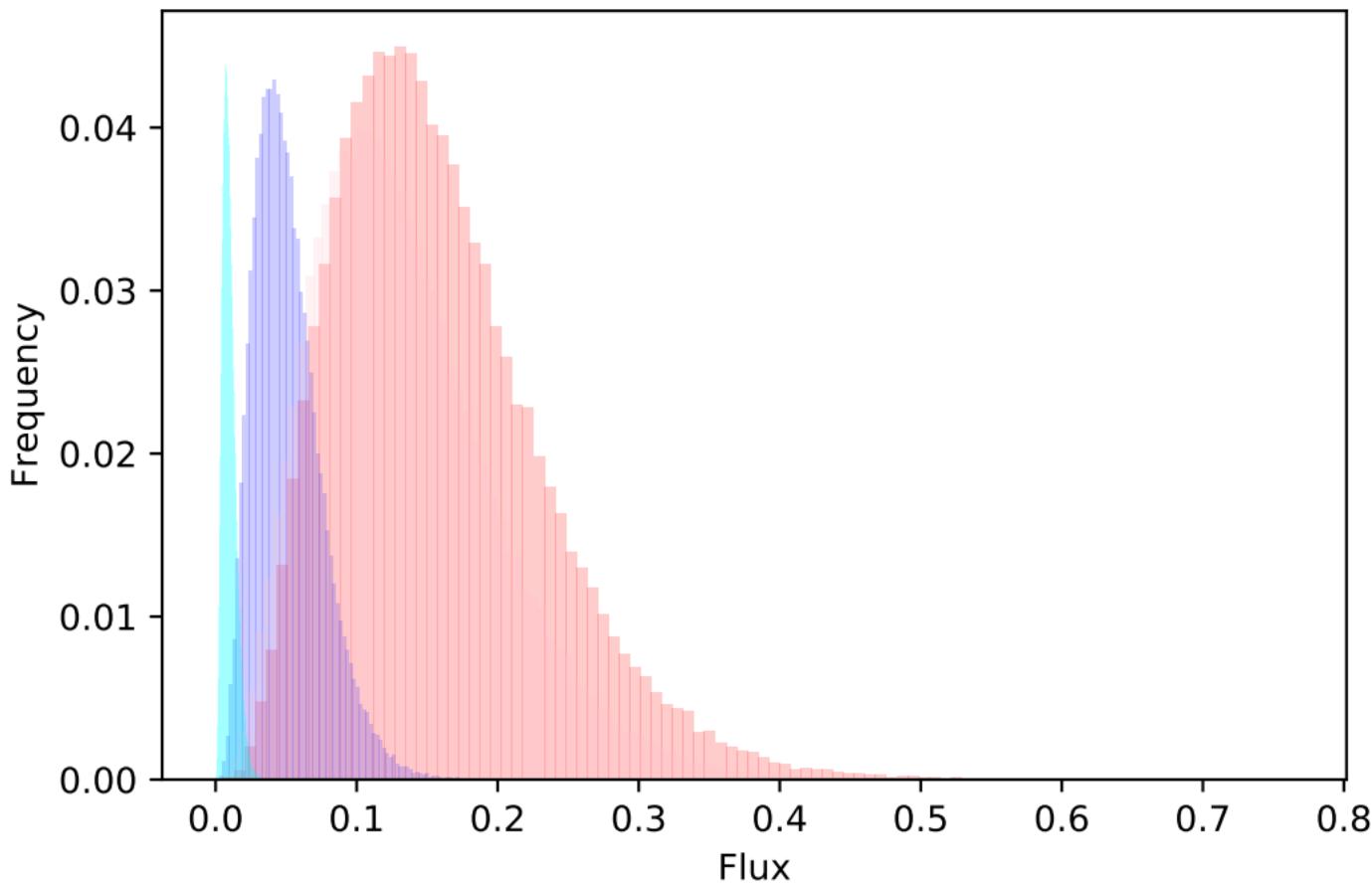
271 : CHR_h + Gln_h --> ANT_h + Glu_h + H_h + Pyr_h
['AT5G05730', 'AT2G29690', '2*AT3G55870', '2*AT1G24807']



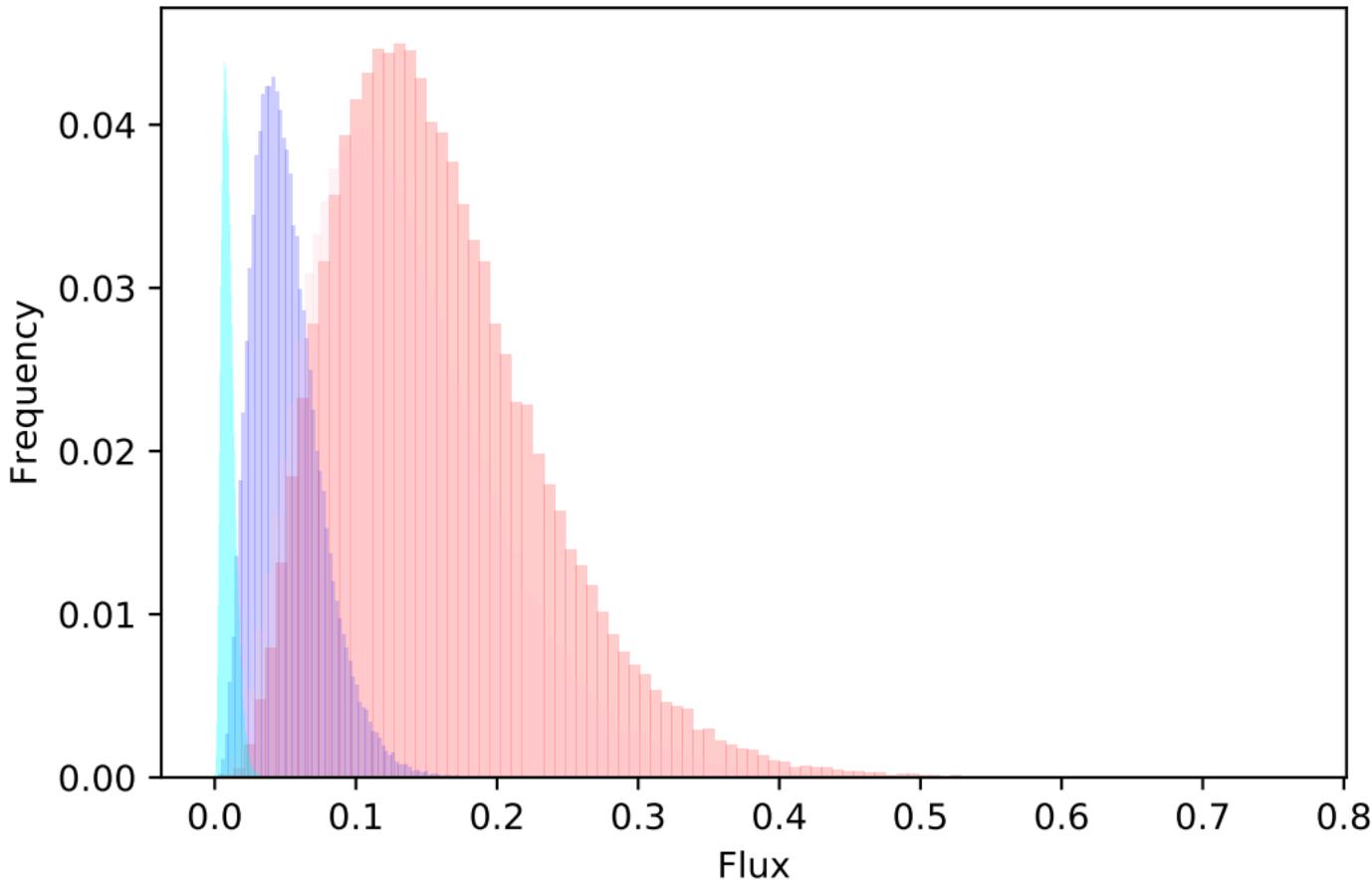
272 : ANT_h + PRPP_h --> H_h + PPi_h + PR_DASH_ANT_h
['AT5G17990']



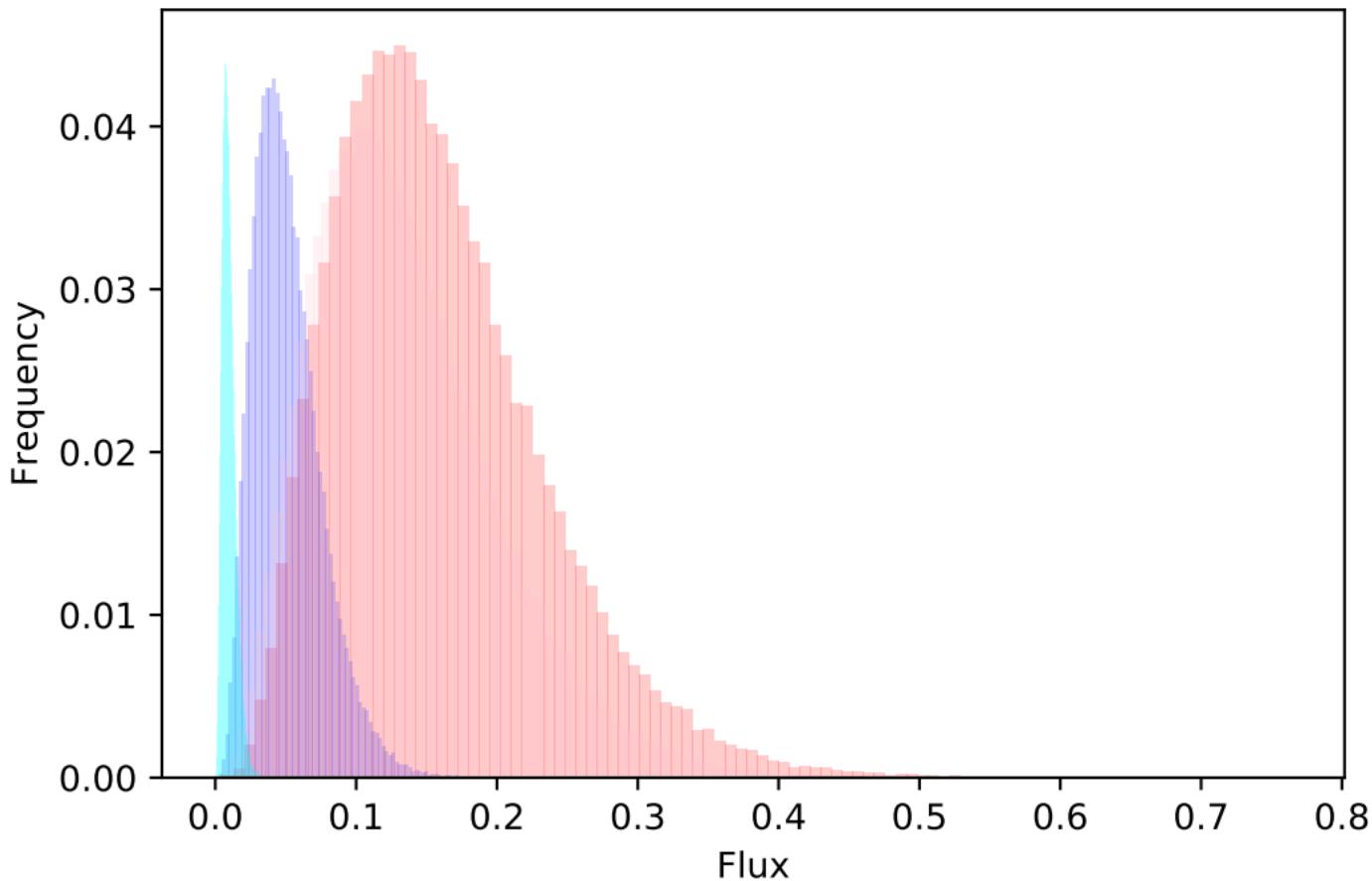
273 : PR_DASH_ANT_h --> CPD_DASH_Ru5P_h
['AT1G07780', 'AT5G05590', 'AT1G29410']



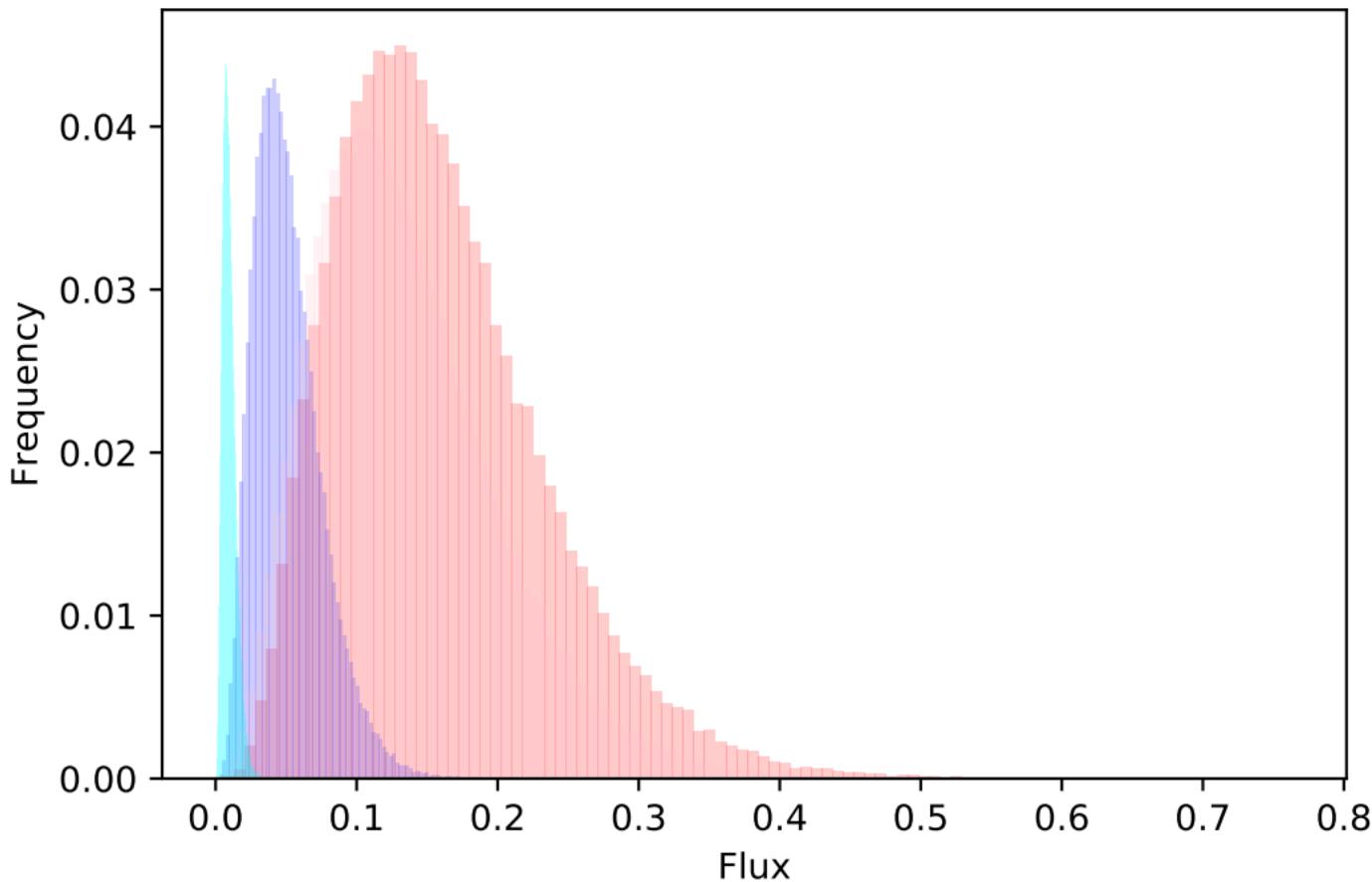
274 : CPD_DASH_Ru5P_h + H_h --> CO2_h + H2O_h + Ind_DASH_GP_h
['AT5G48220', 'AT2G04400']



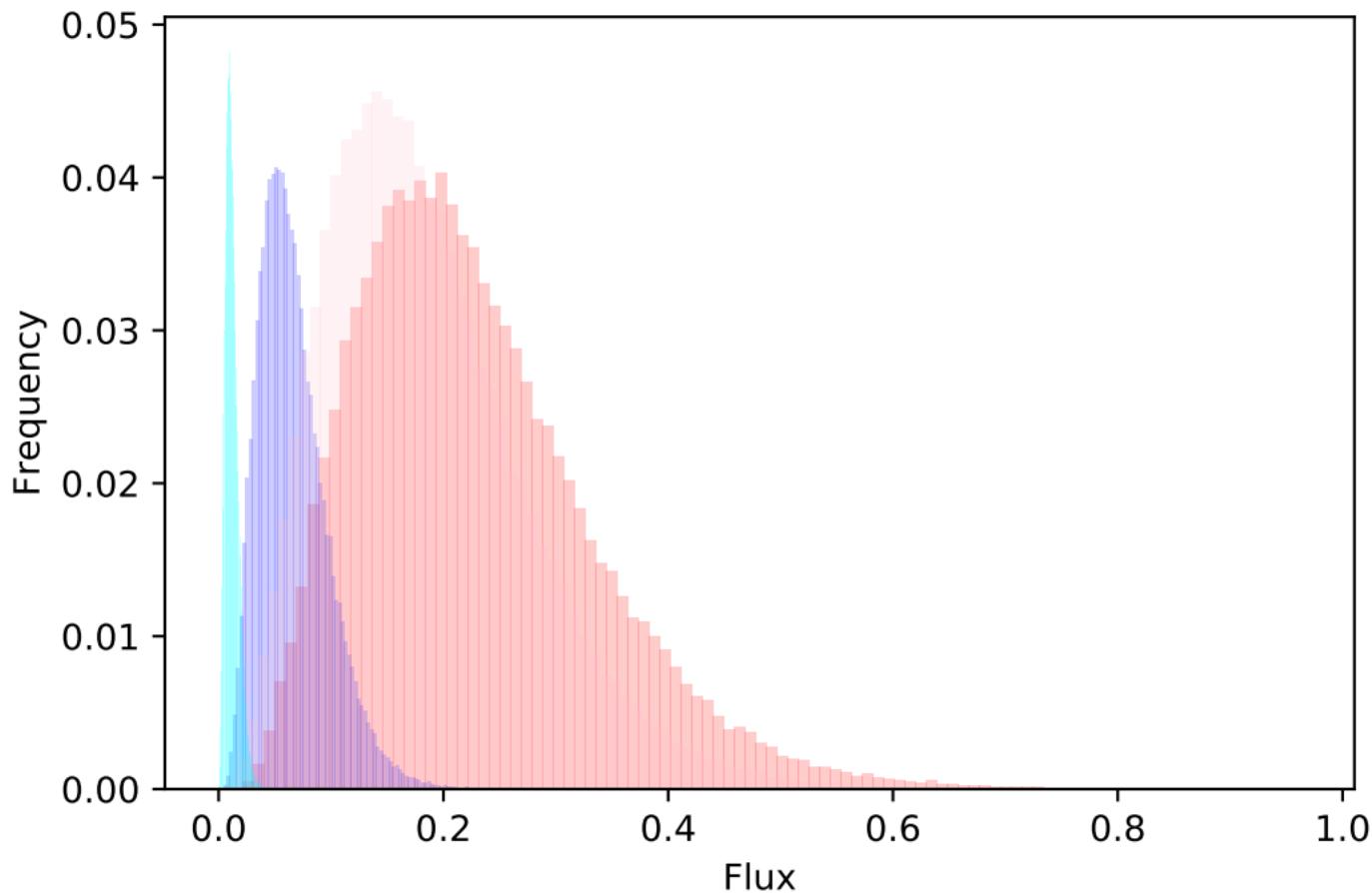
275 : Ind_DASH_GP_h --> GAP_h + Ind_h
['AT4G02610', 'AT3G54640']



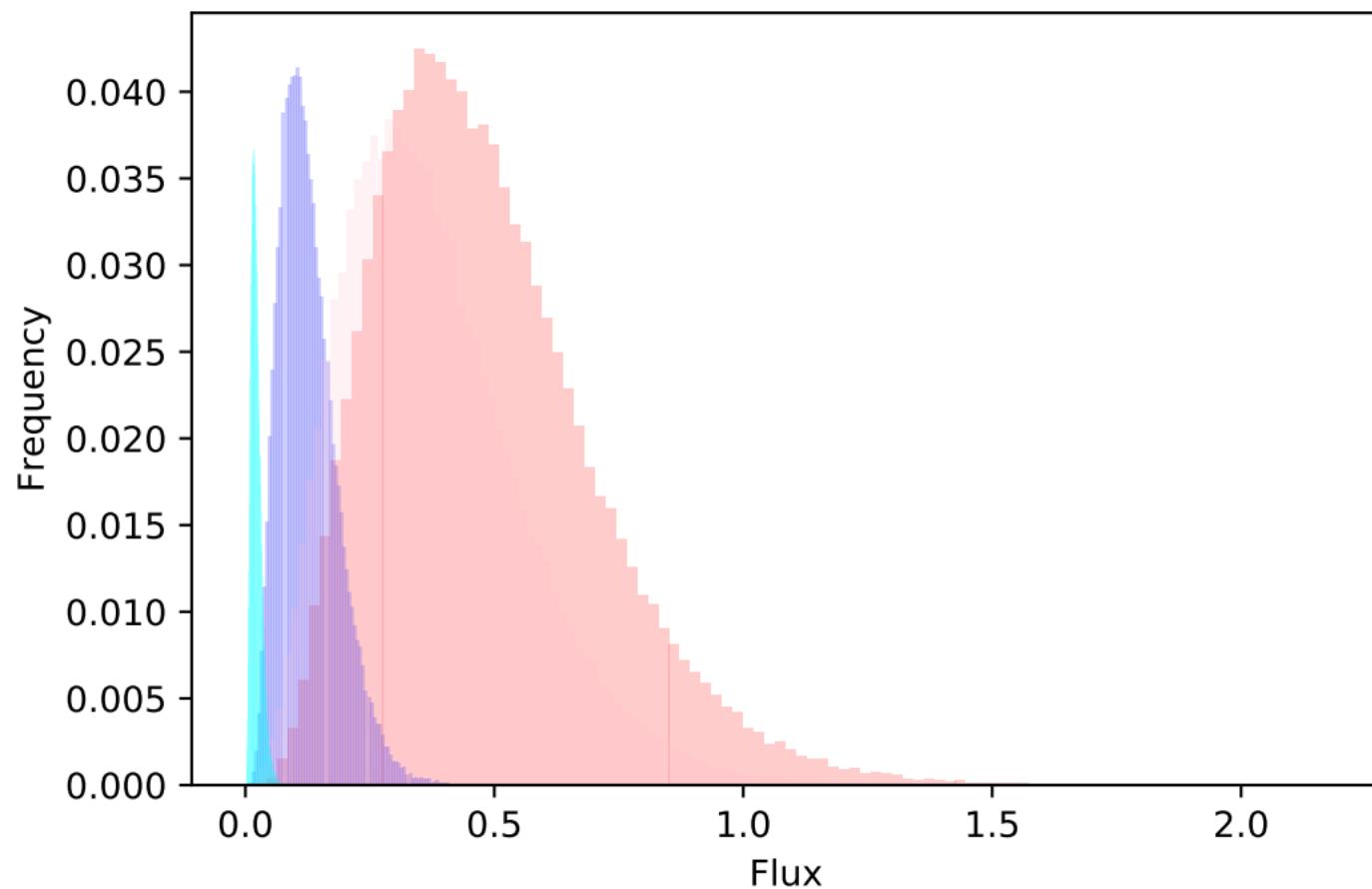
276 : Ind_h + Ser_h --> H₂O_h + Trp_h
['AT5G54810', 'AT3G54640', 'AT4G27070']



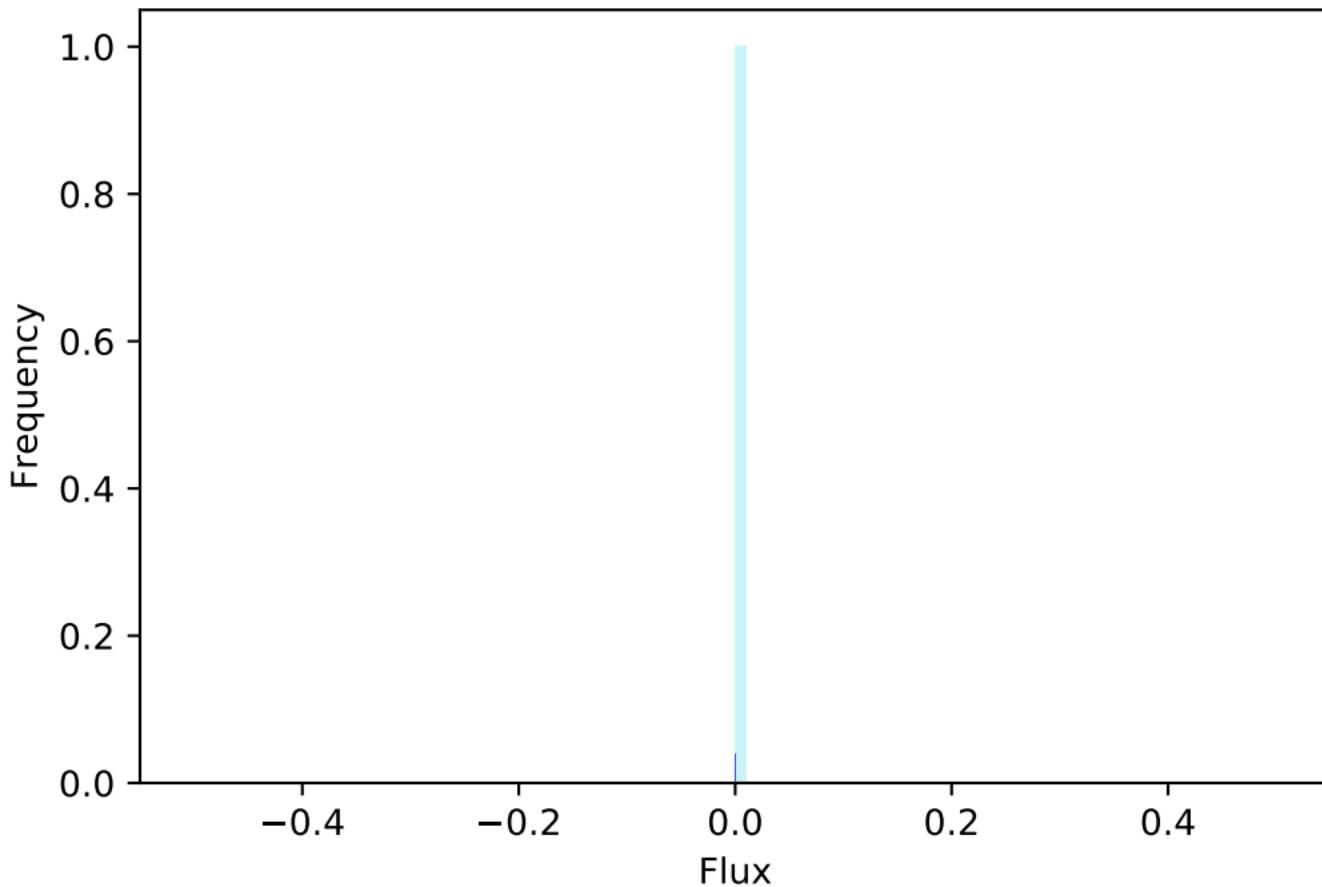
277 : AGN_h + NADP_h --> CO2_h + NADPH_h + Tyr_h
[AT1G15710]



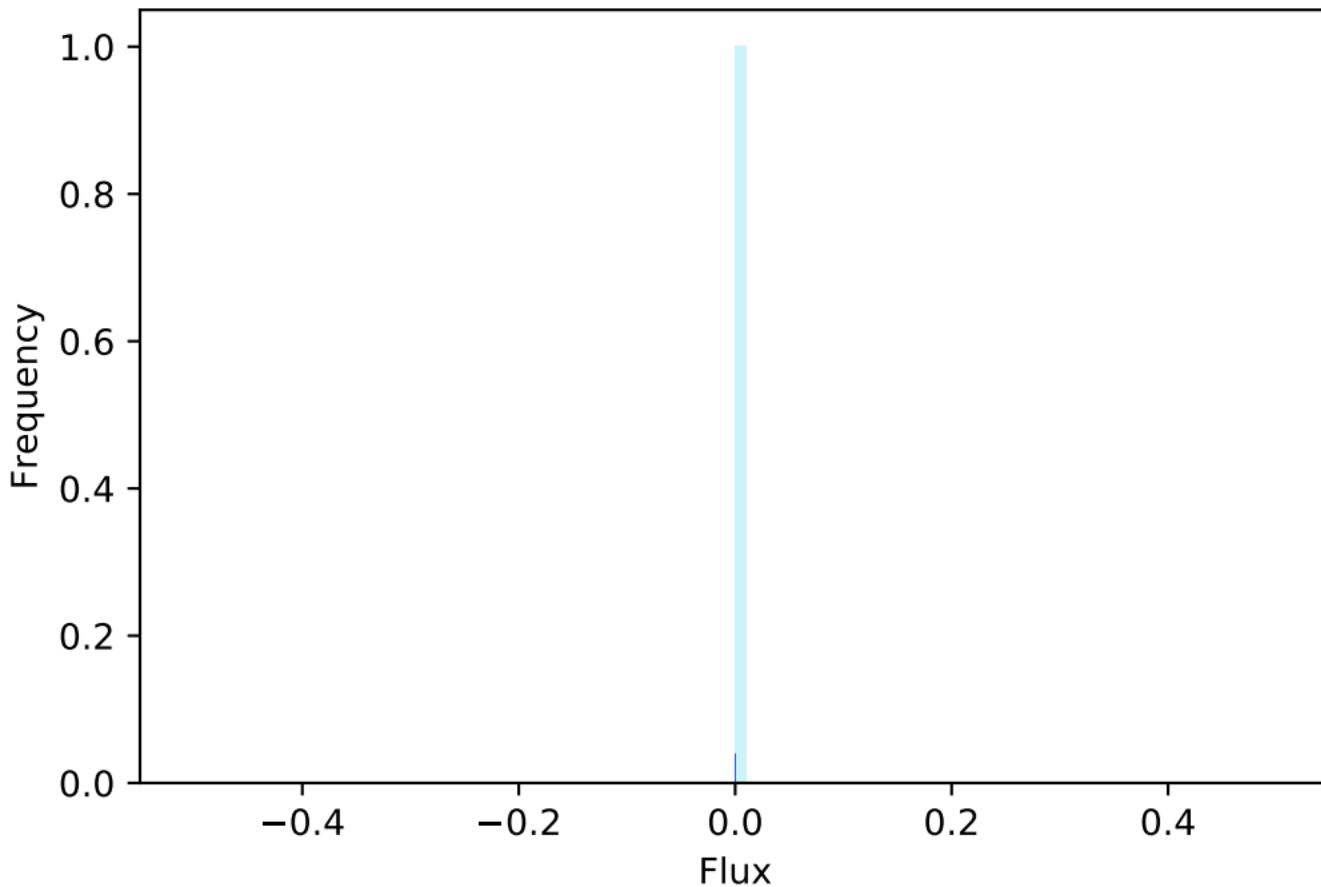
278 : Glu_h + MOB_h <=> KG_h + Val_h
['AT5G65780', 'AT1G10070', 'AT3G49680']



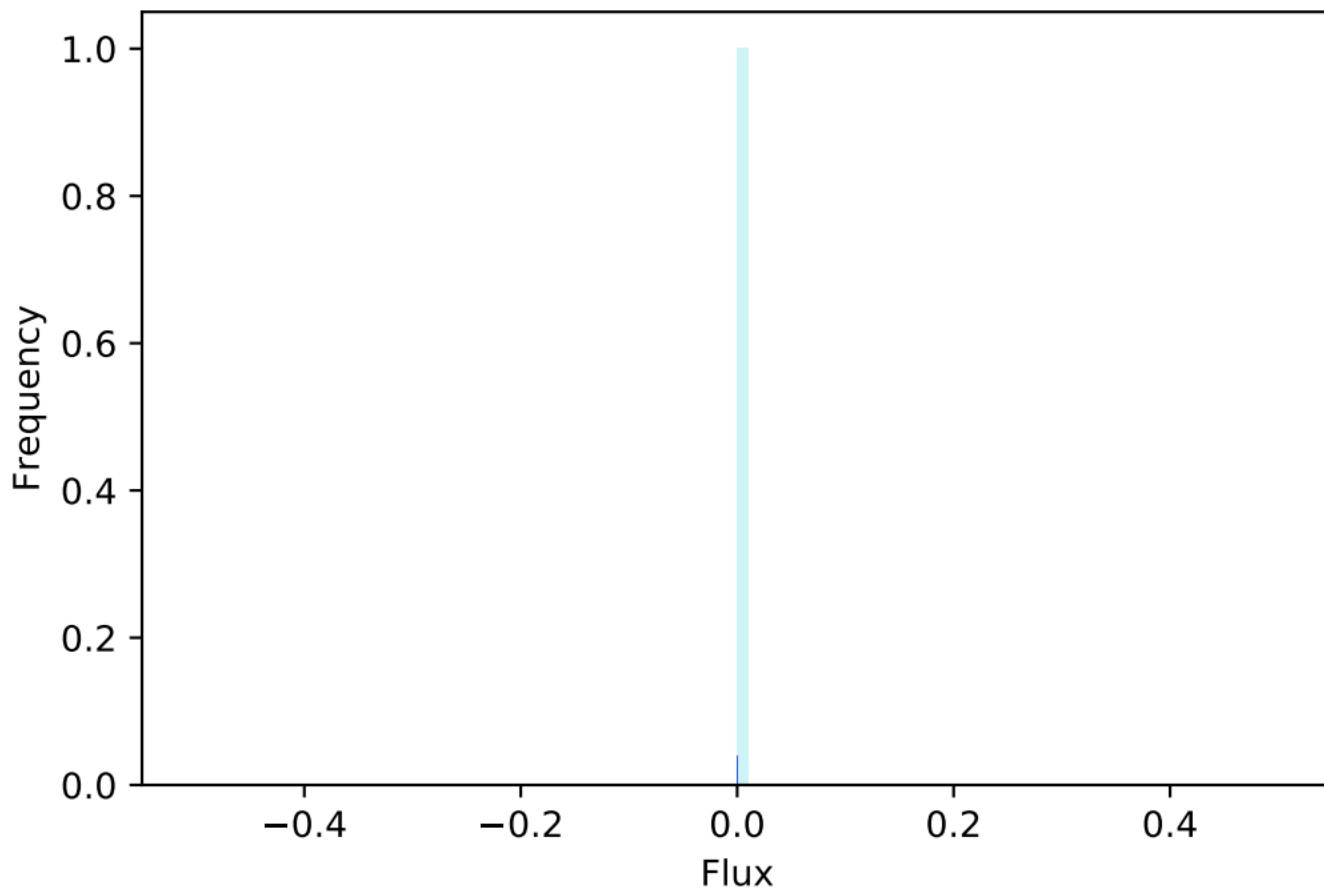
279 : Gln_h + H2O_h + PRPP_h --> Glu_h + H_h + PPi_h + PRA_h
['AT4G34740', 'AT2G16570', 'AT4G38880']

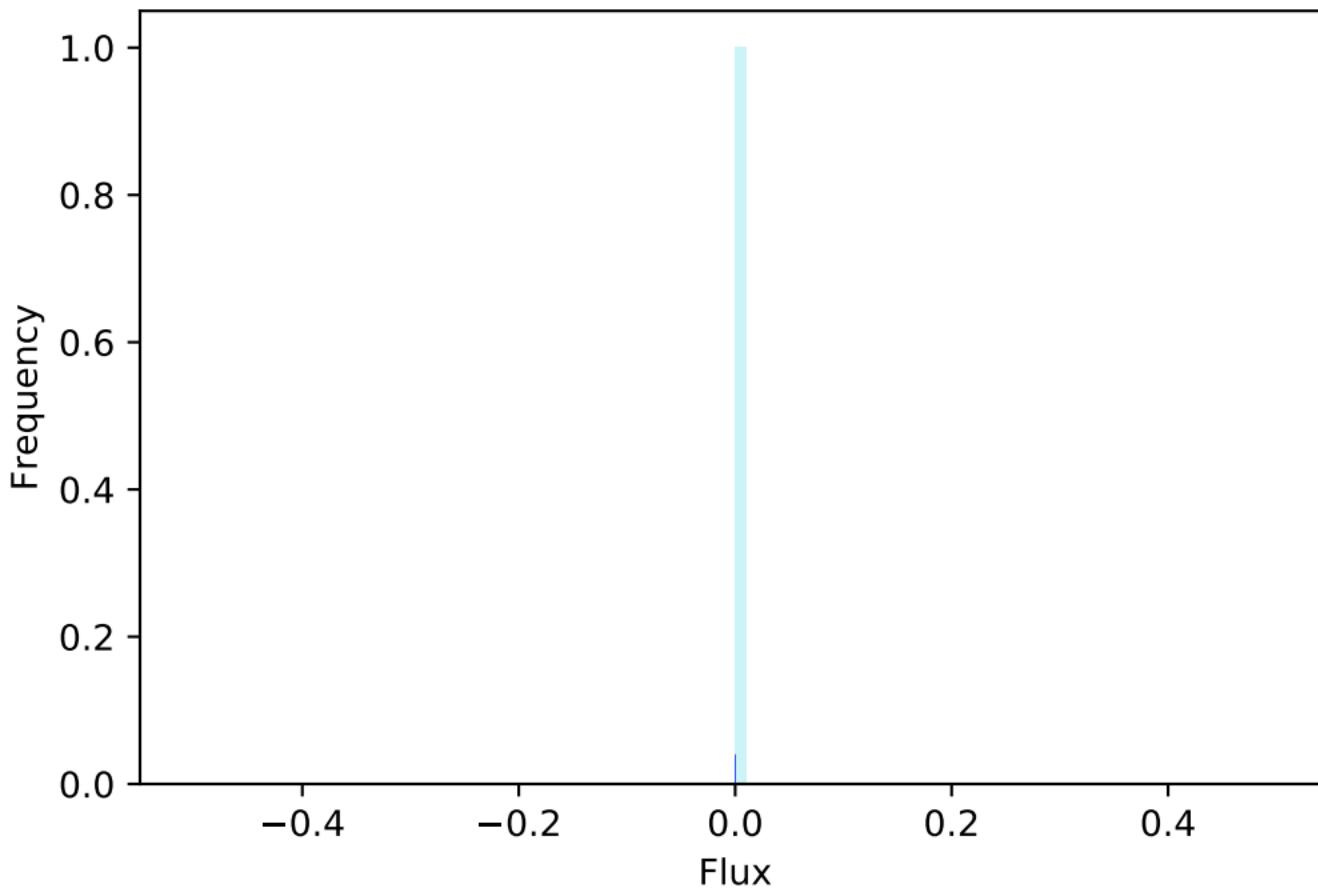


280 : ATP_h + Gly_h + PRA_h --> ADP_h + GAR_h + H_h + Pi_h
['AT1G09830']

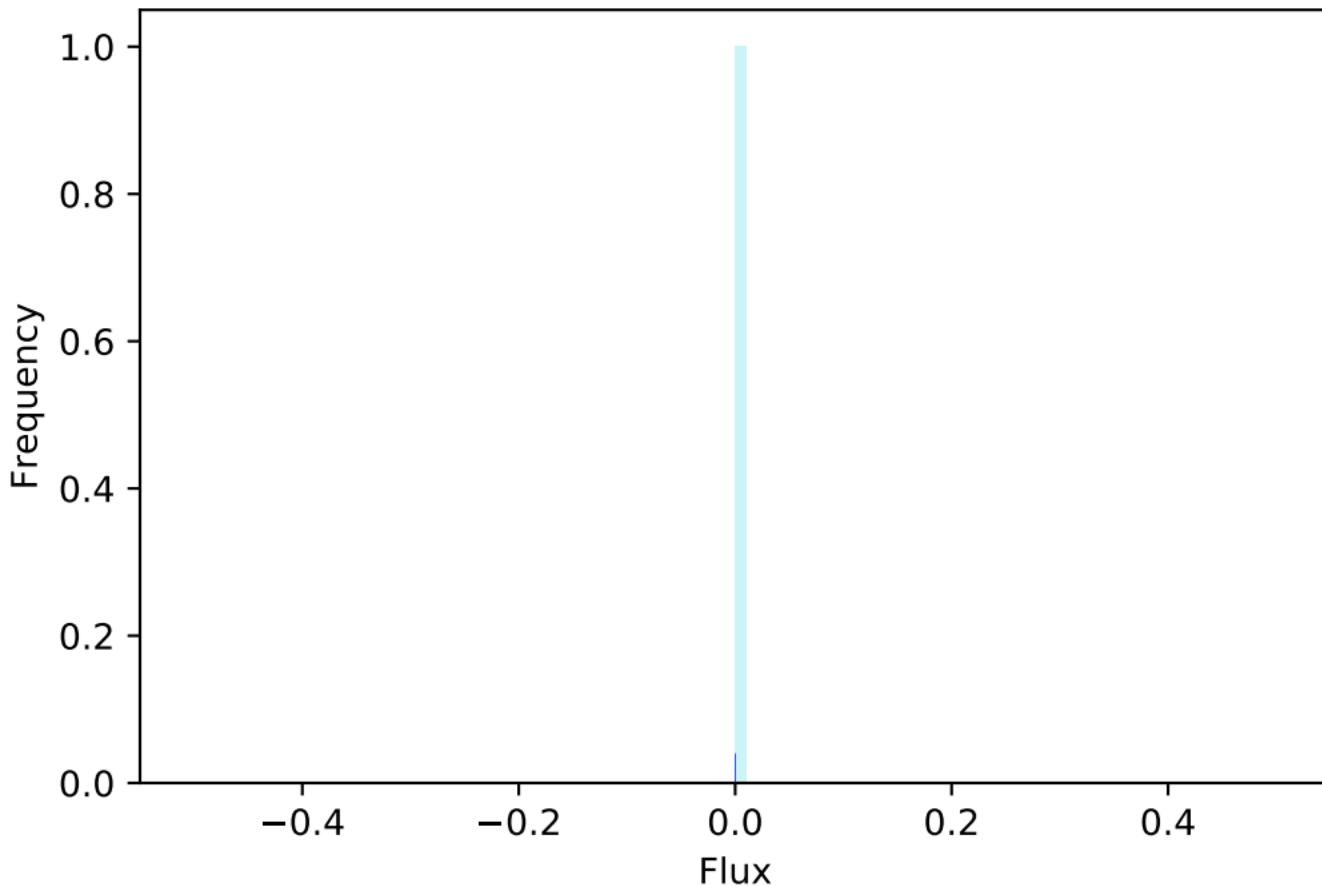


281 : F_DASH_THF_h + GAR_h --> FGAR_h + 2.0 H_h + THF_h
['AT1G31220']

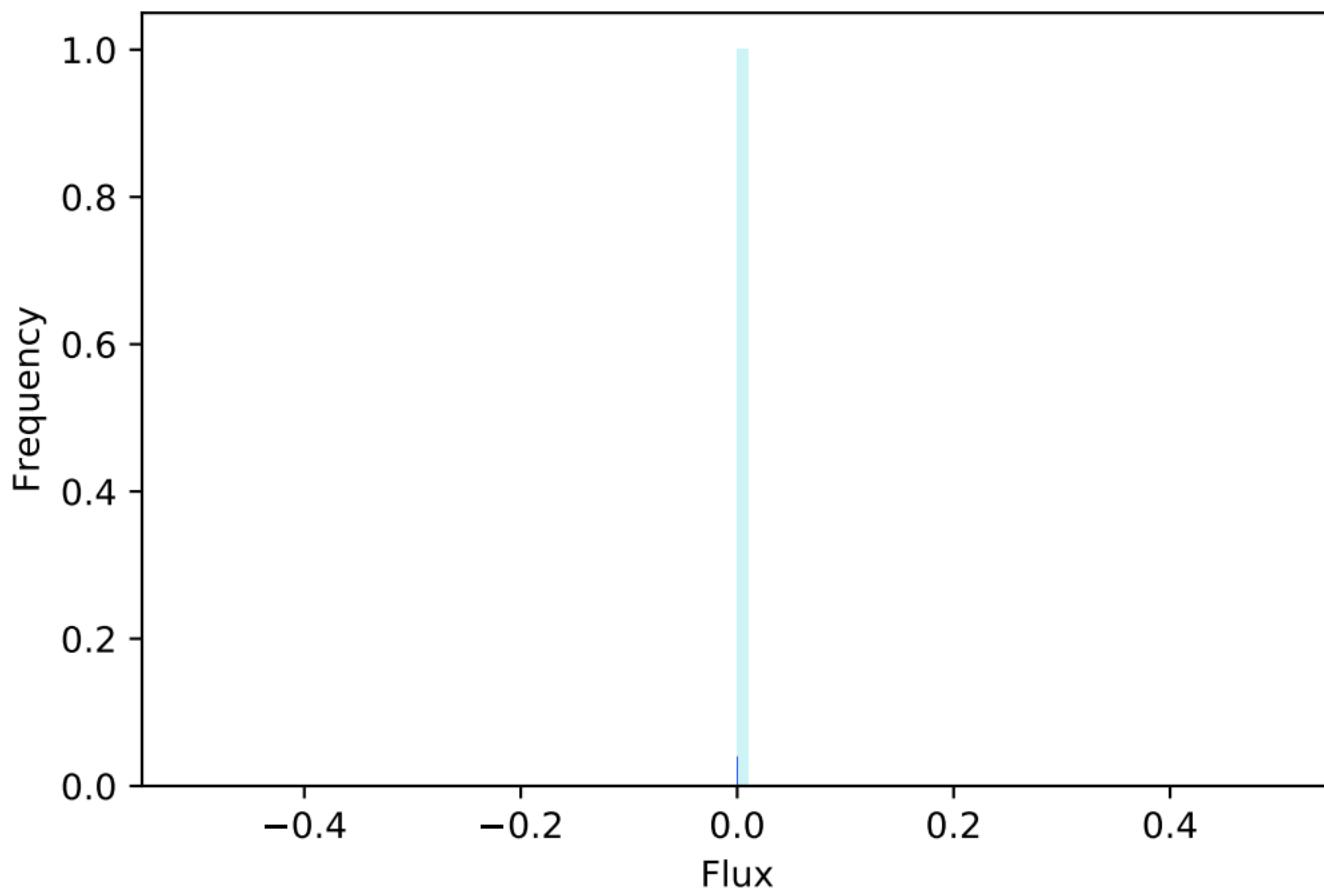


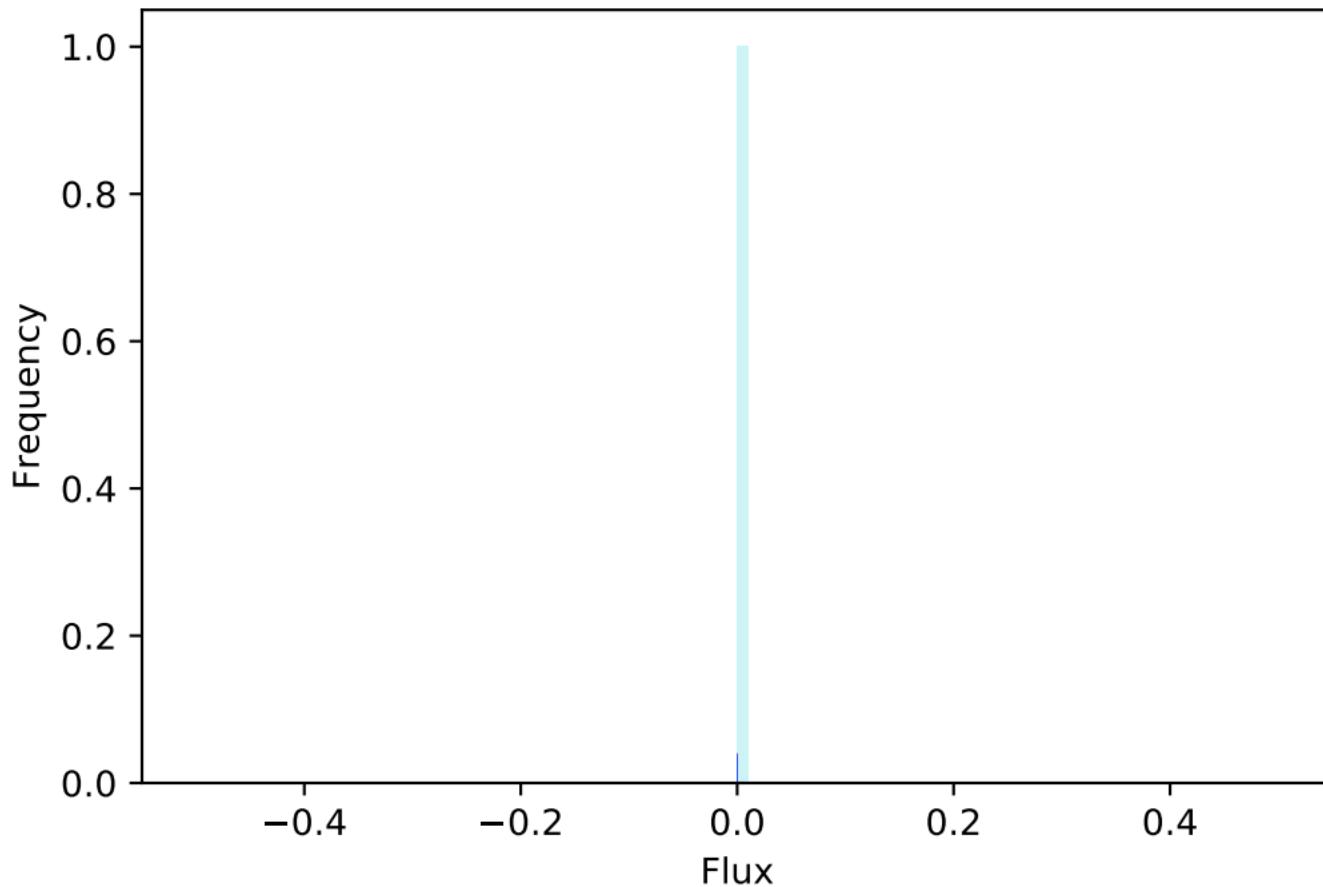
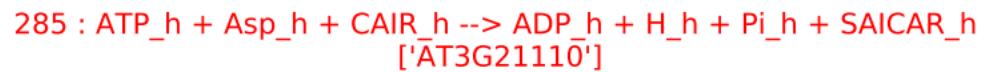


283 : ATP_h + FGAM_h --> ADP_h + AIR_h + H_h + Pi_h
['AT3G55010']

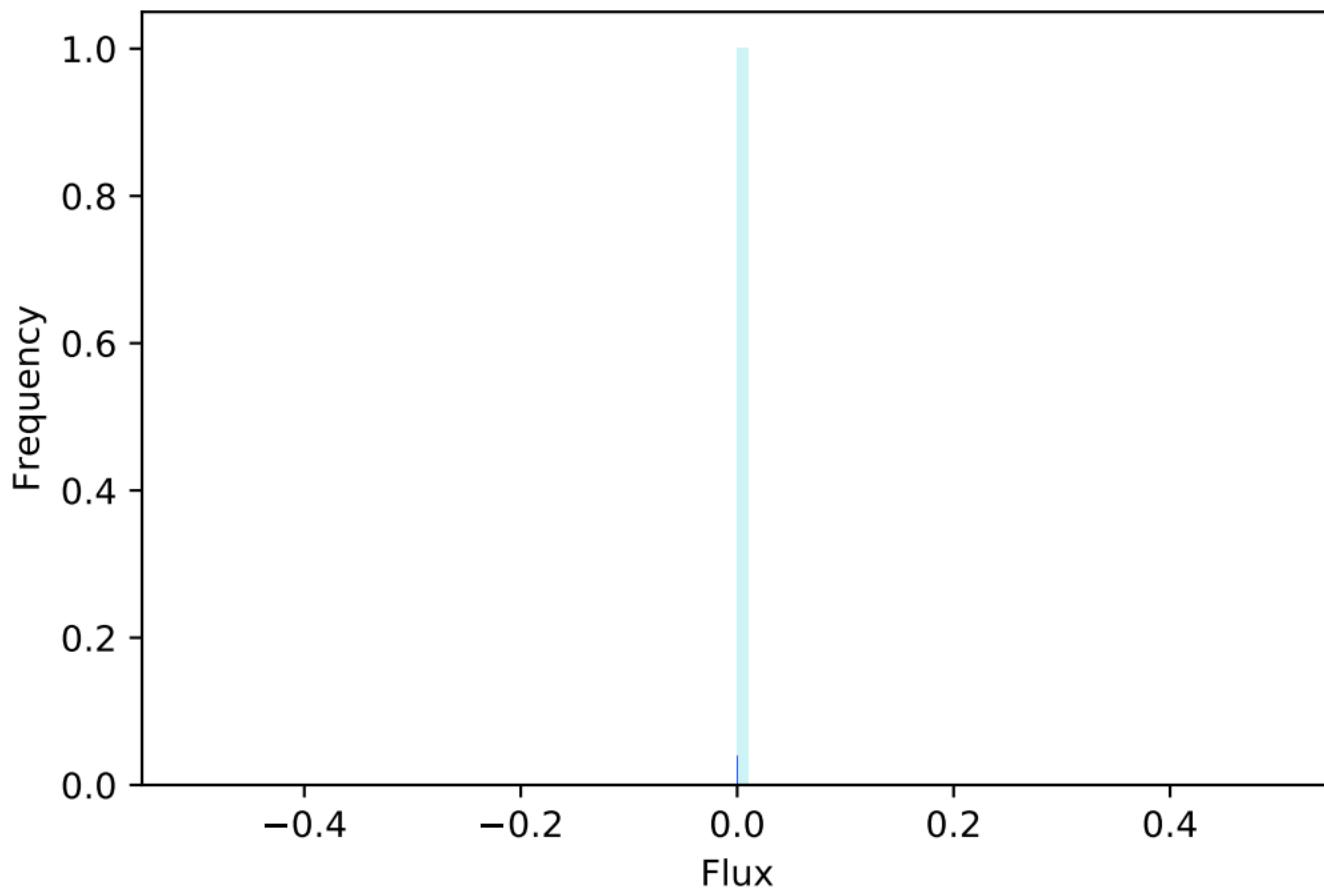


284 : AIR_h + CO2_h --> CAIR_h + H_h
['AT2G37690']

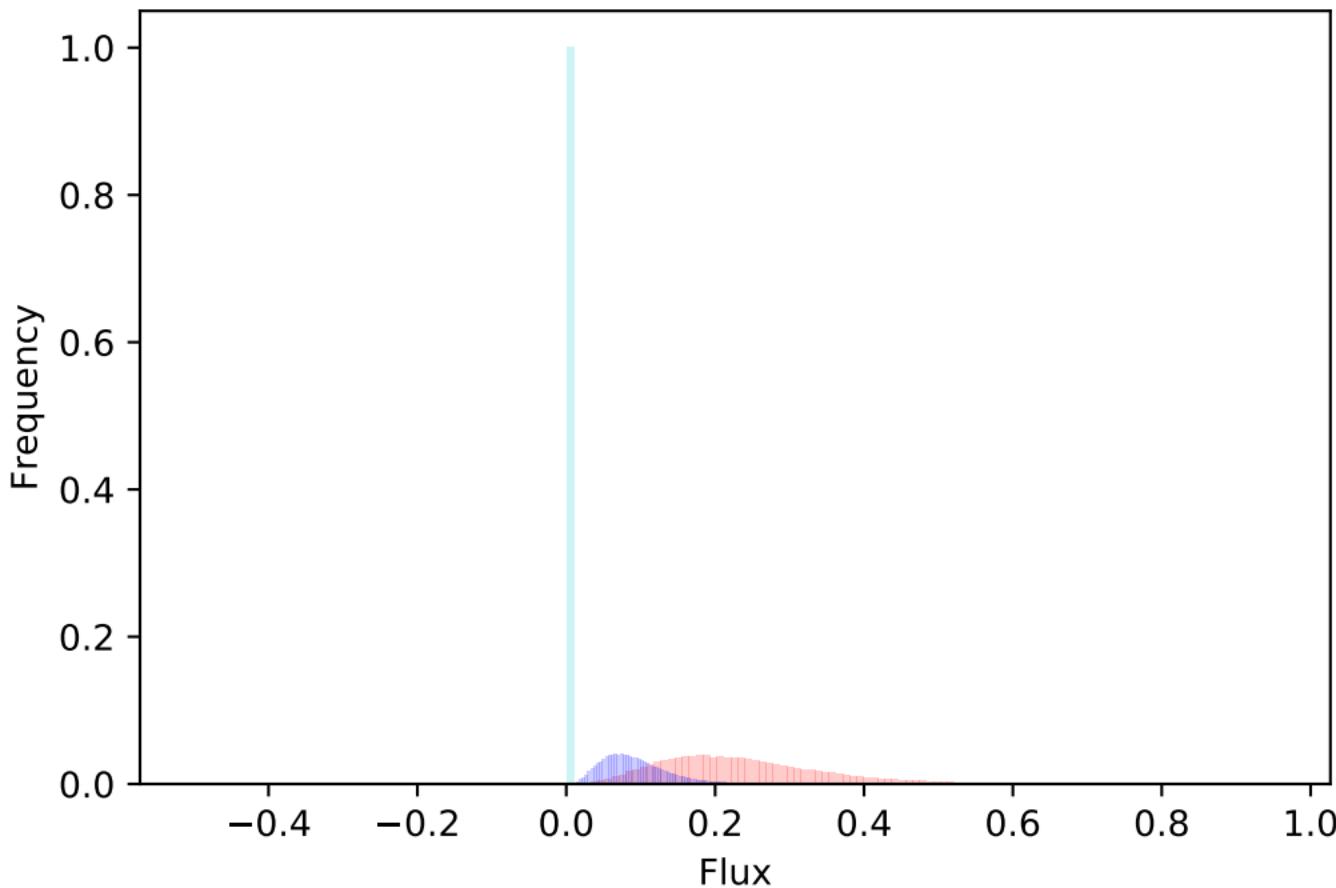




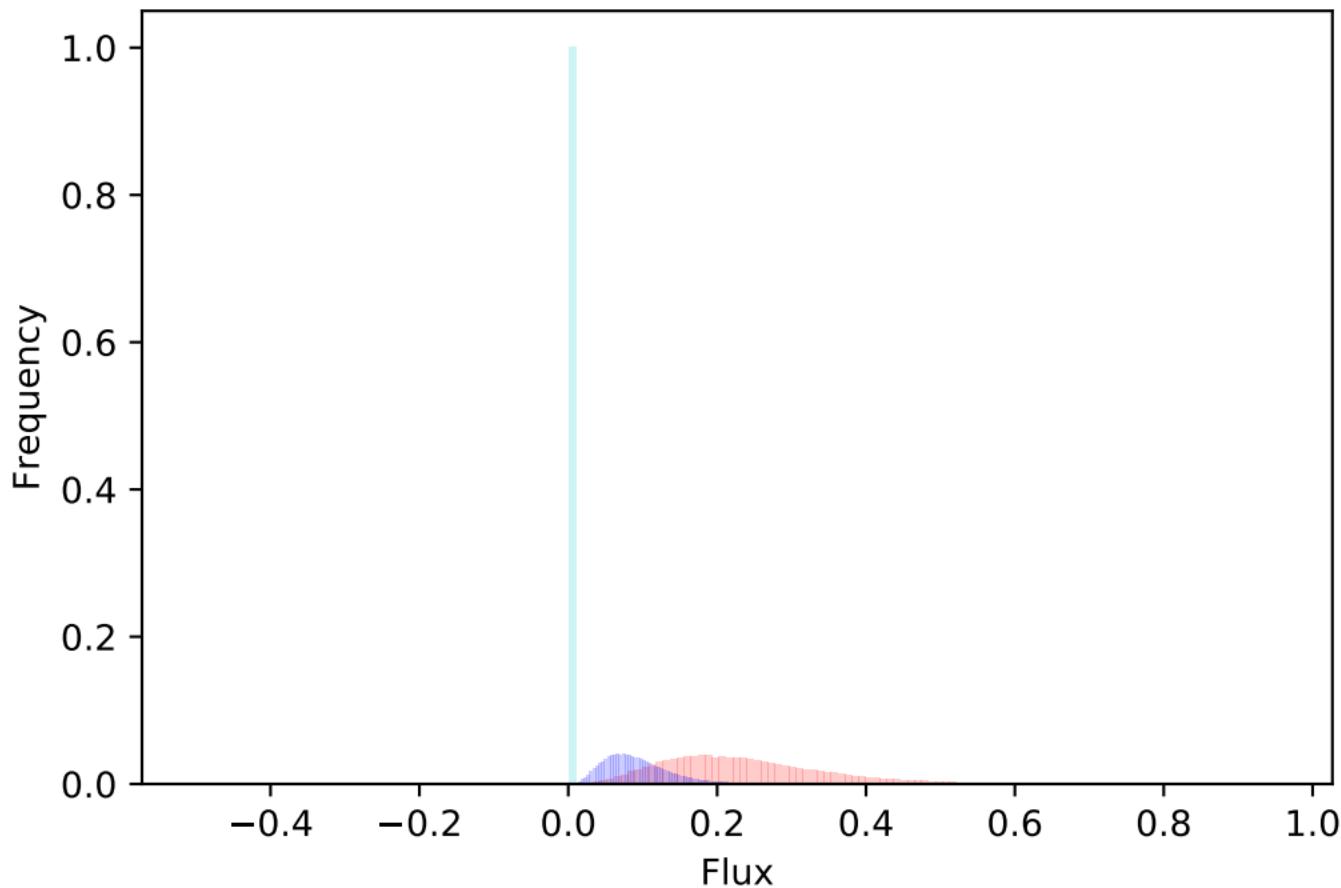
286 : H_h + SAICAR_h --> AICAR_h + Fum_h
['AT1G36280', 'AT4G18440']

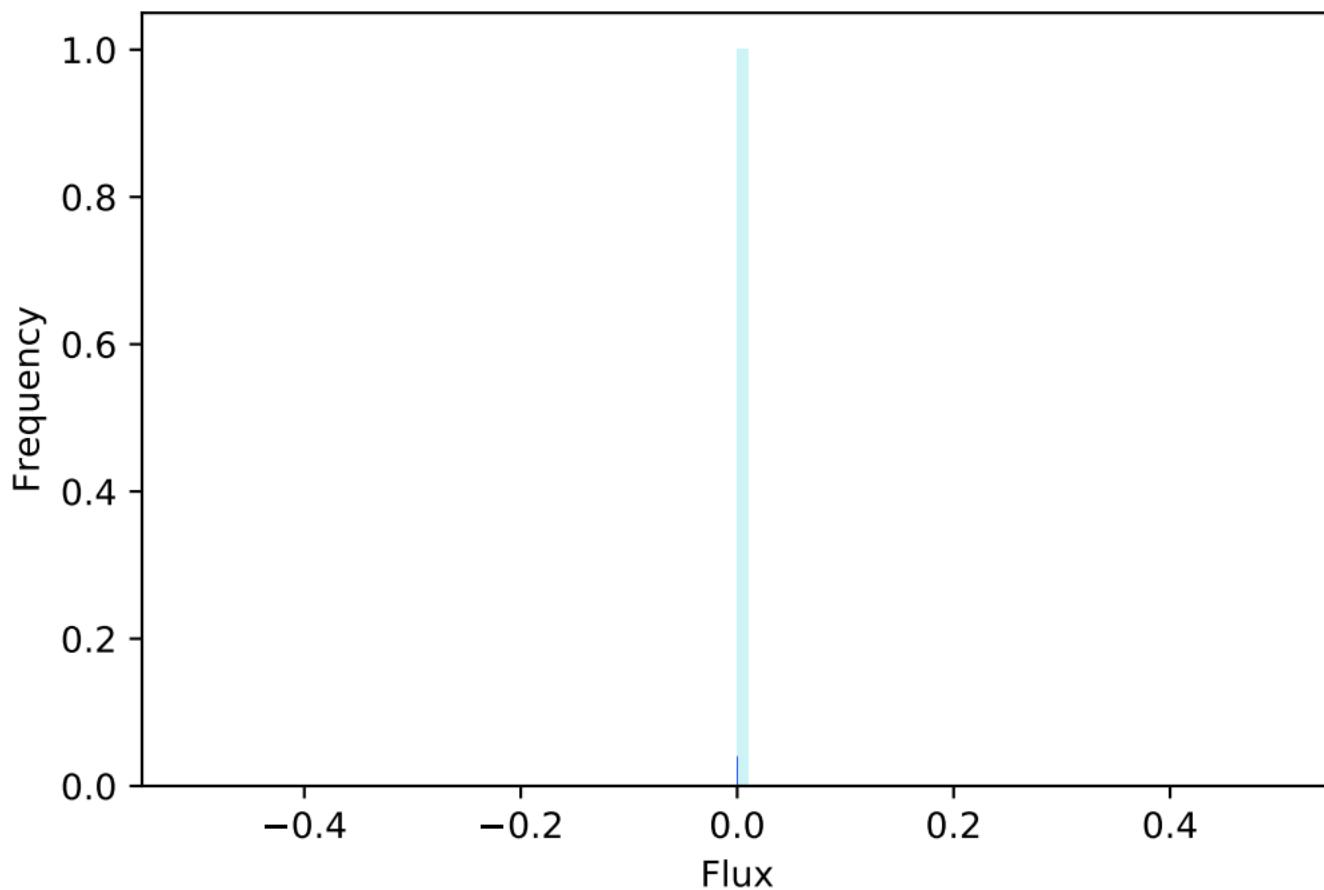


287 : AICAR_h + F_DASH_THF_h --> FAICAR_h + 2.0 H_h + THF_h
['AT2G35040']

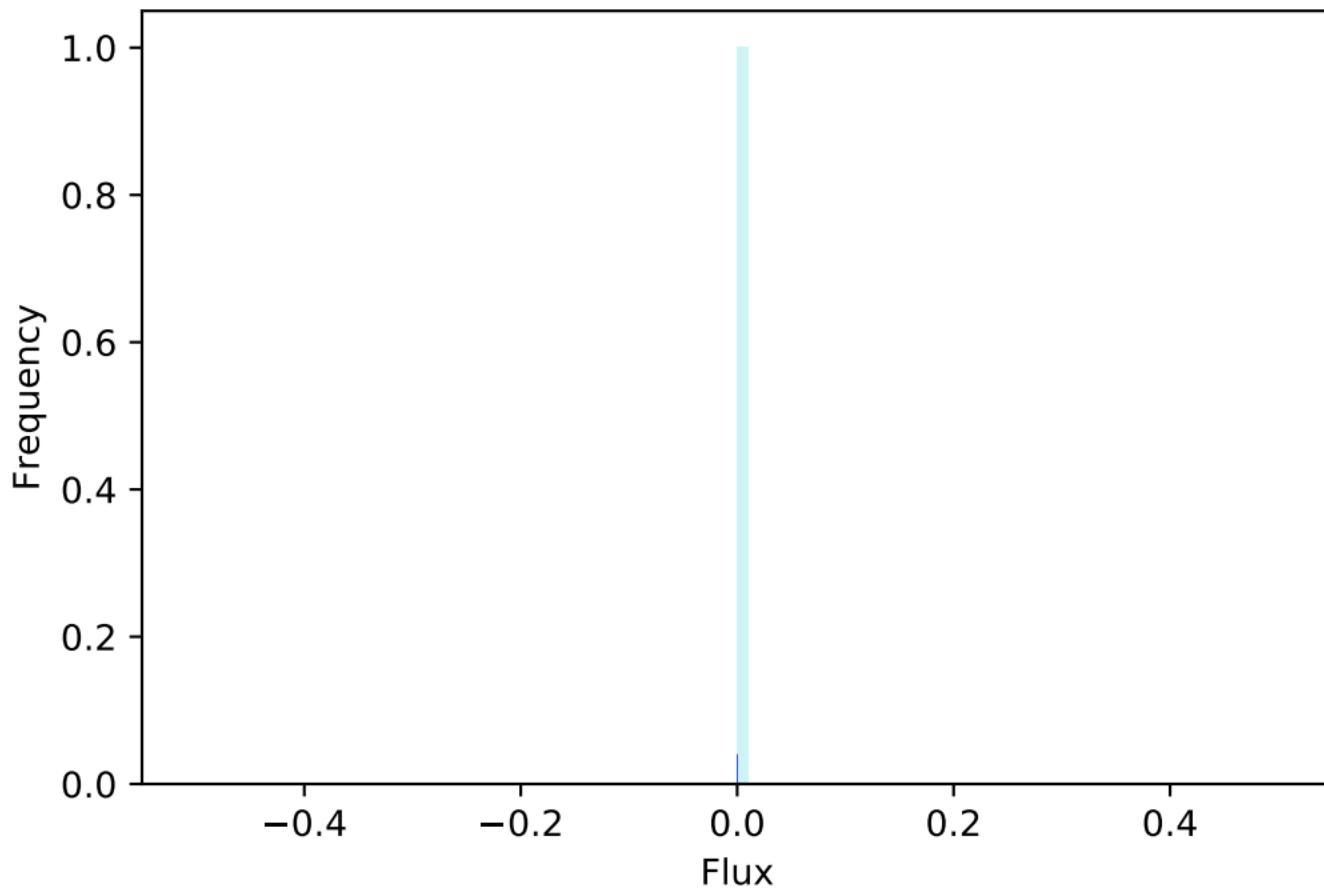


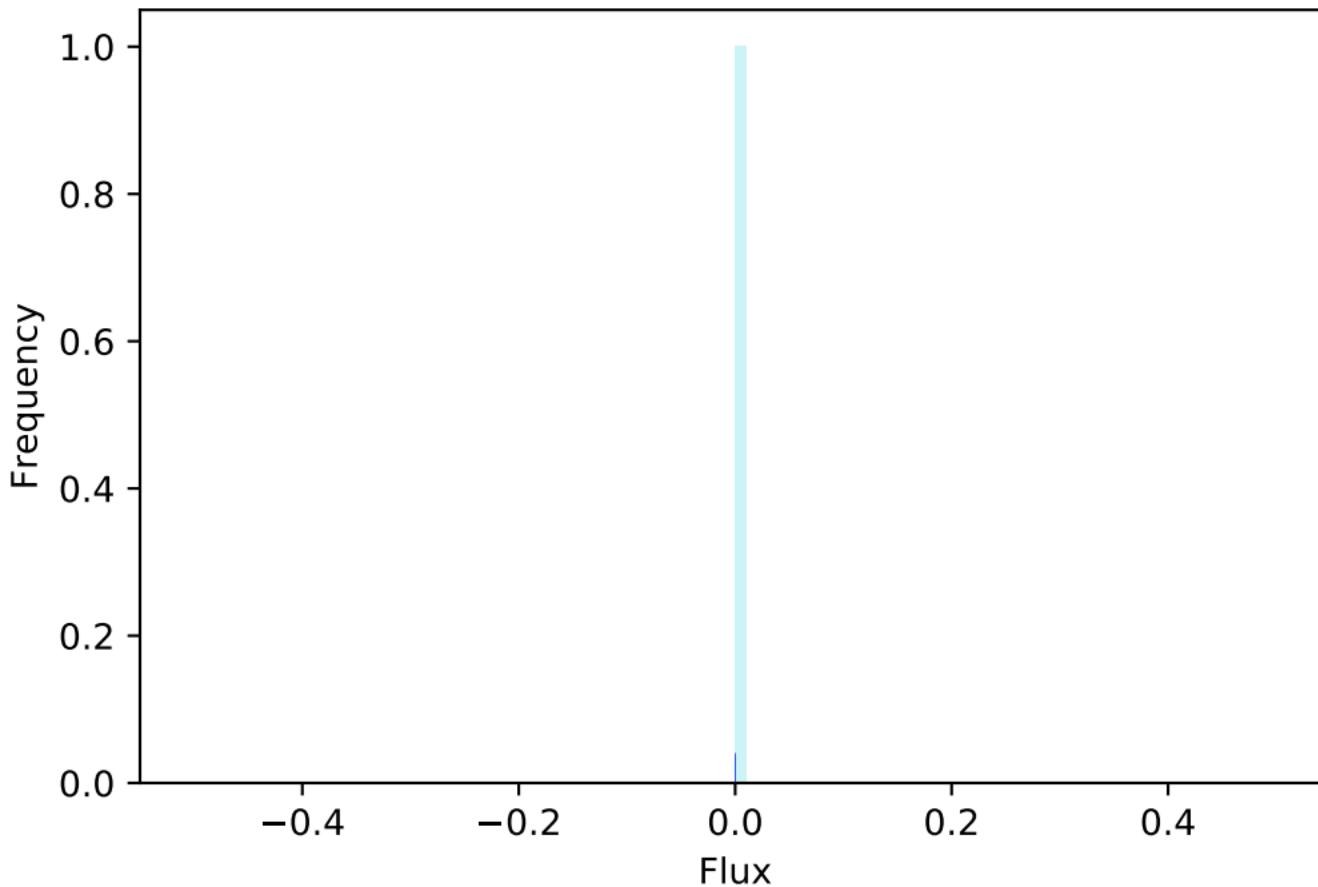
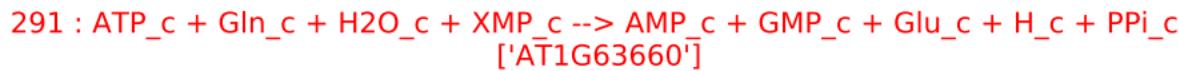
288 : FAICAR_h --> H2O_h + IMP_h
['AT2G35040']



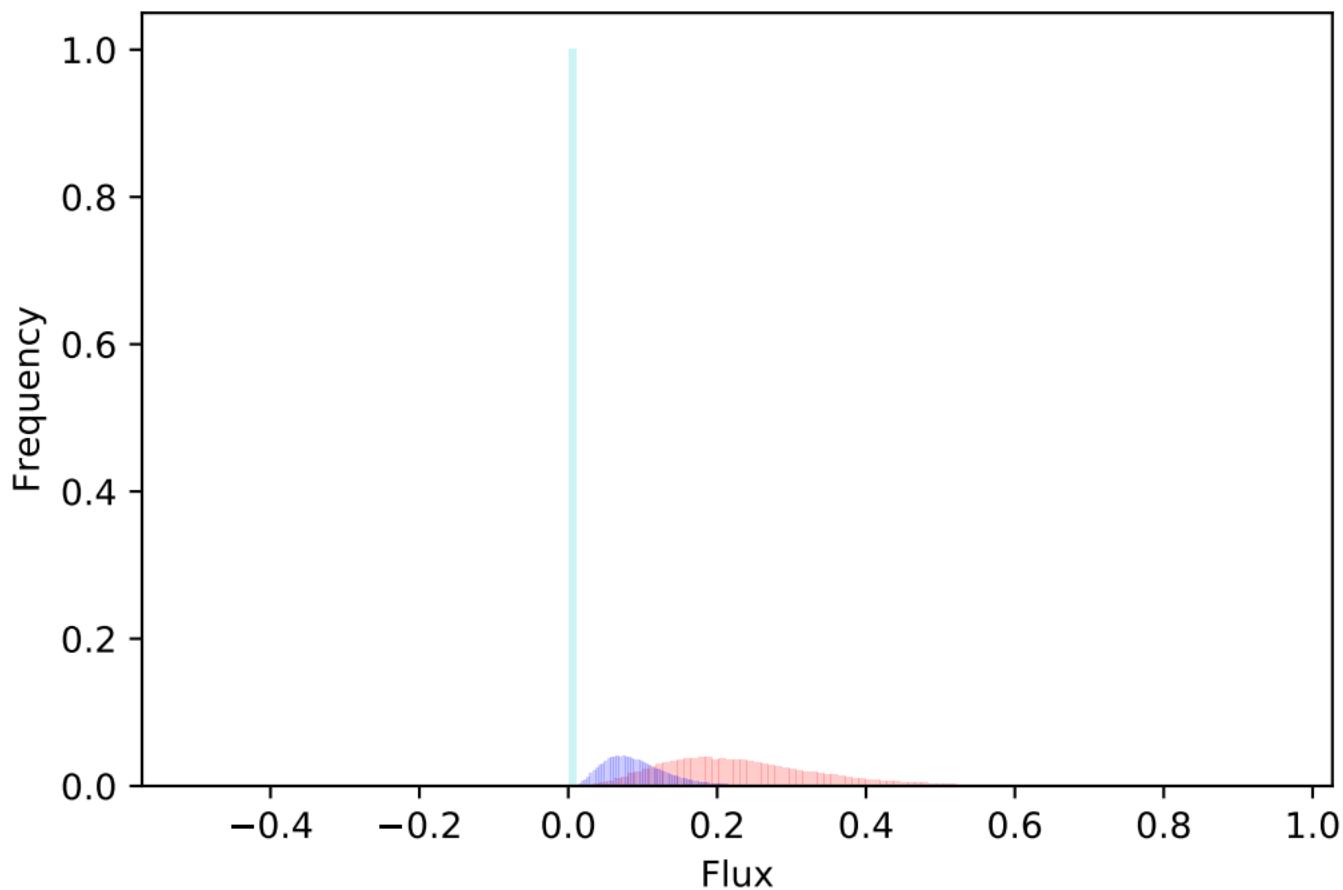


290 : H₂O_c + IMP_c + NAD_c --> NADH_c + XMP_c
['AT1G79470', 'AT1G16350']

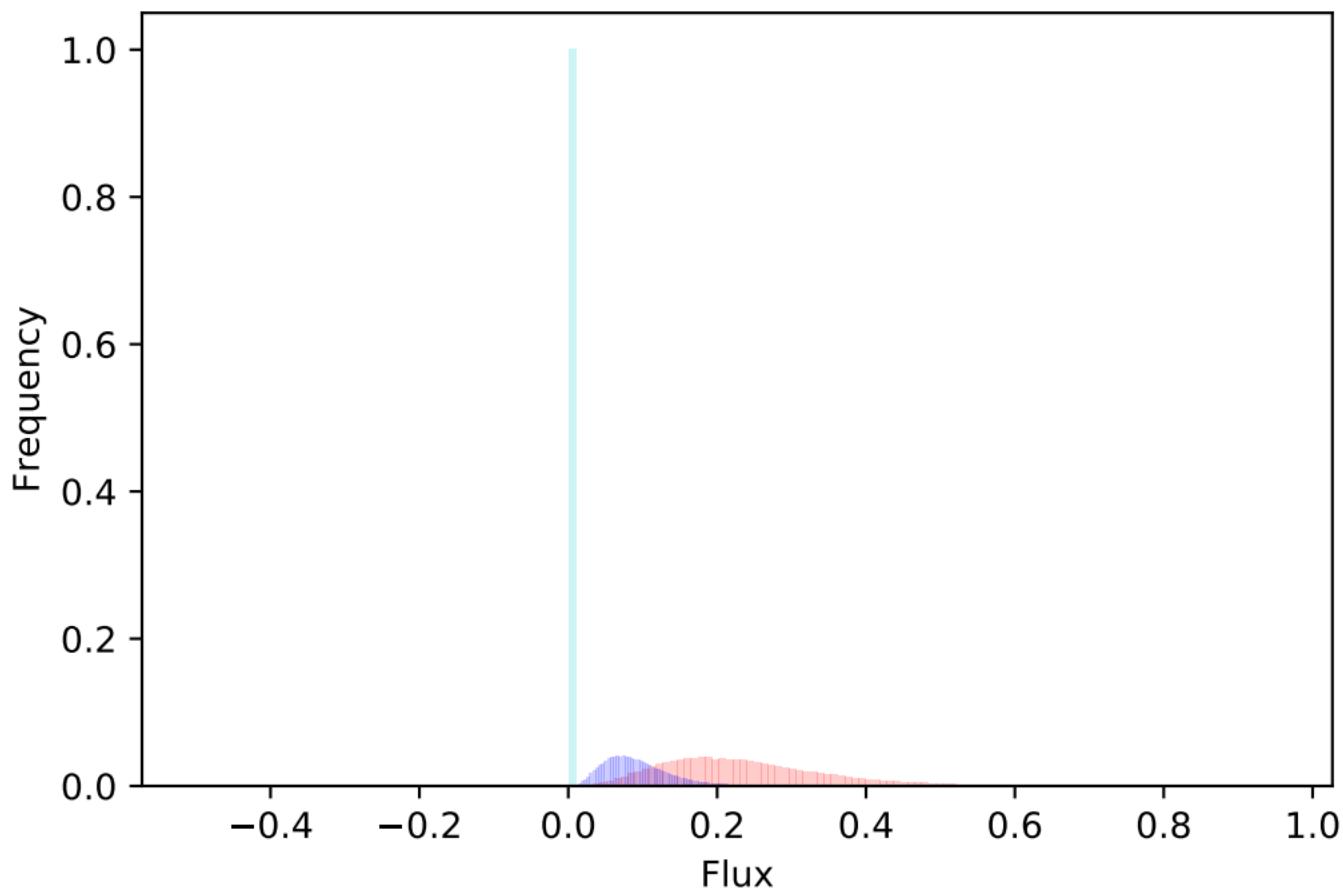




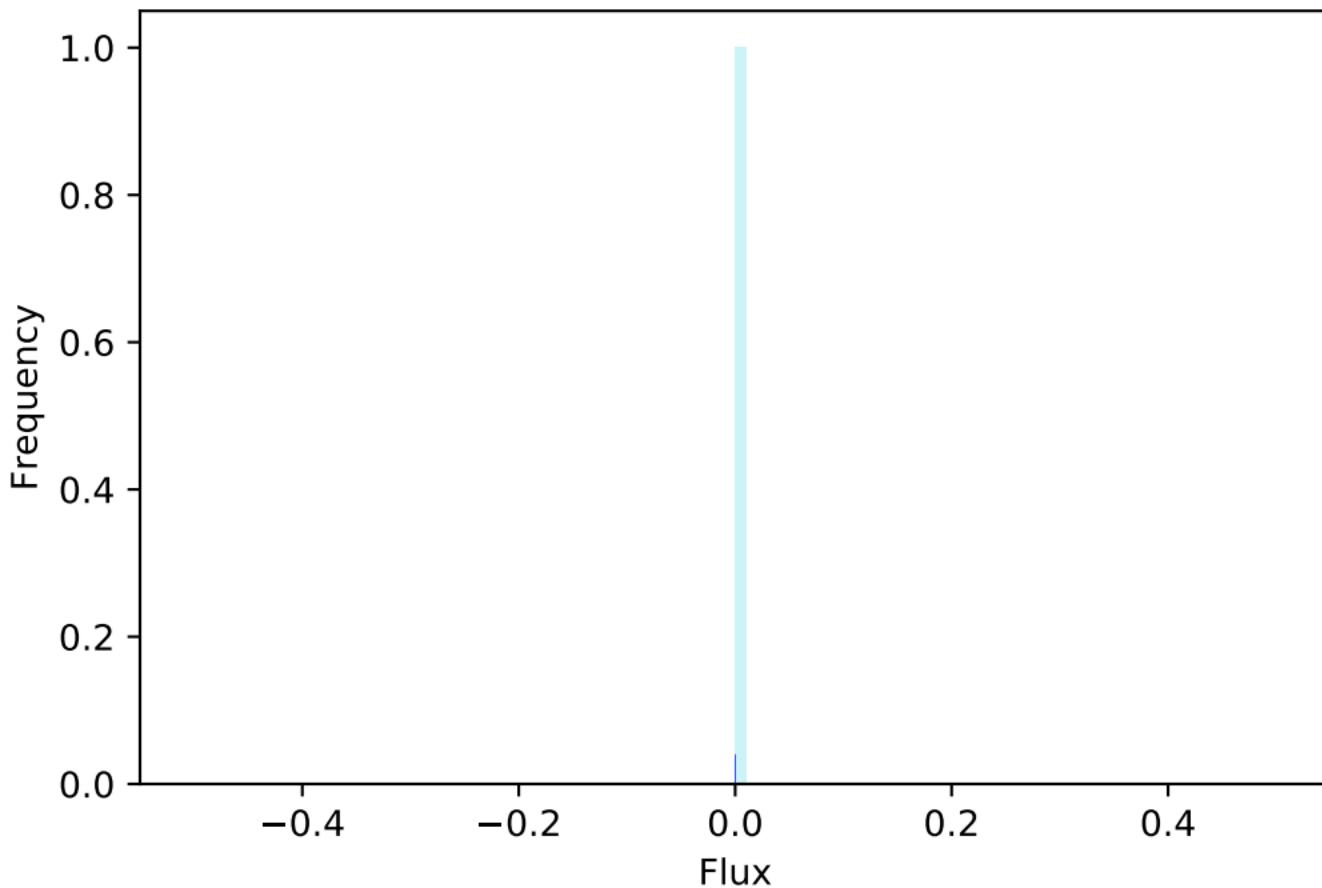
292 : Asp_h + GTP_h + IMP_h --> DC_DASH_AMP_h + GDP_h + H_h + Pi_h
['2*AT3G57610']



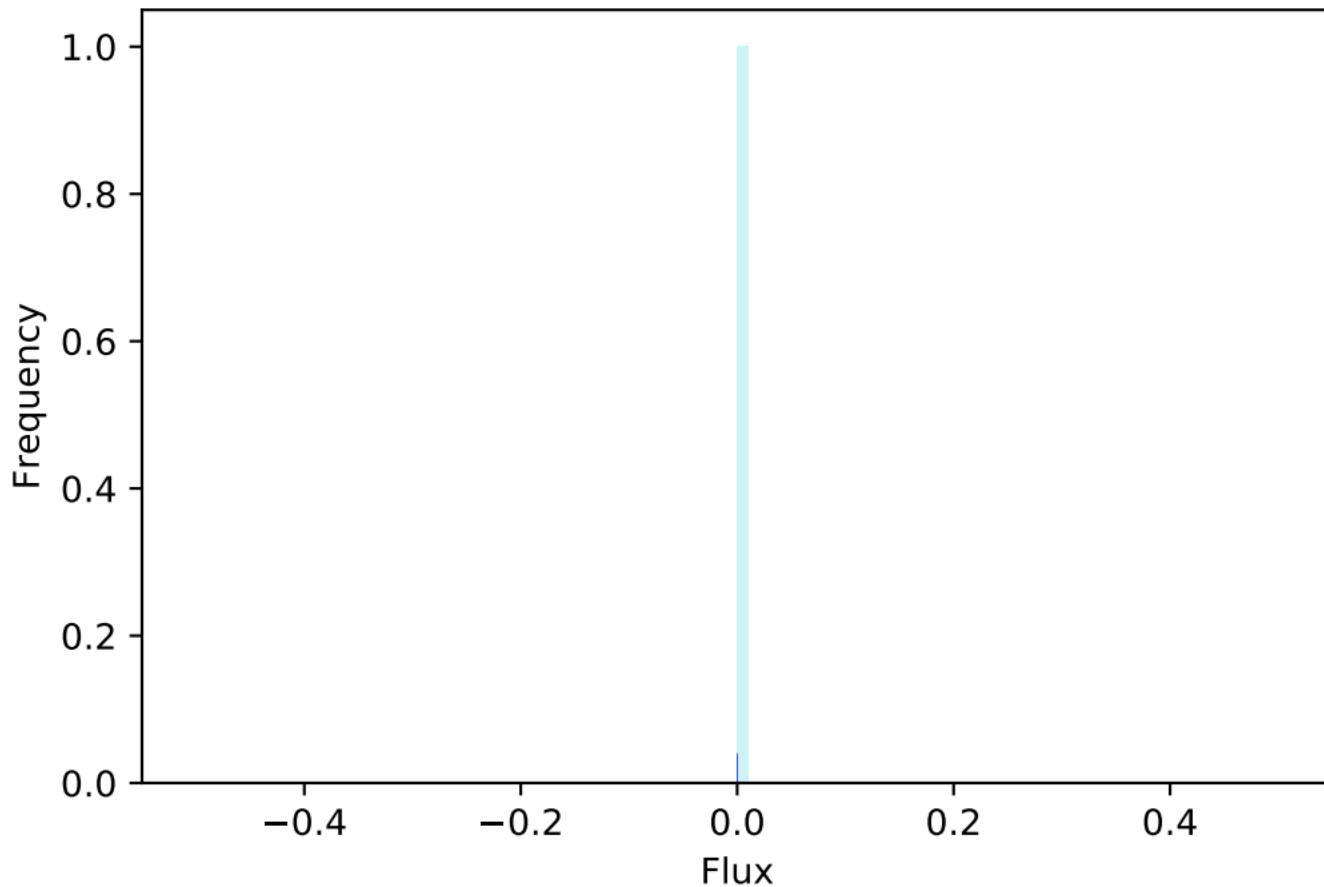
293 : DC_DASH_AMP_h --> AMP_h + Fum_h
['AT1G36280', 'AT4G18440']



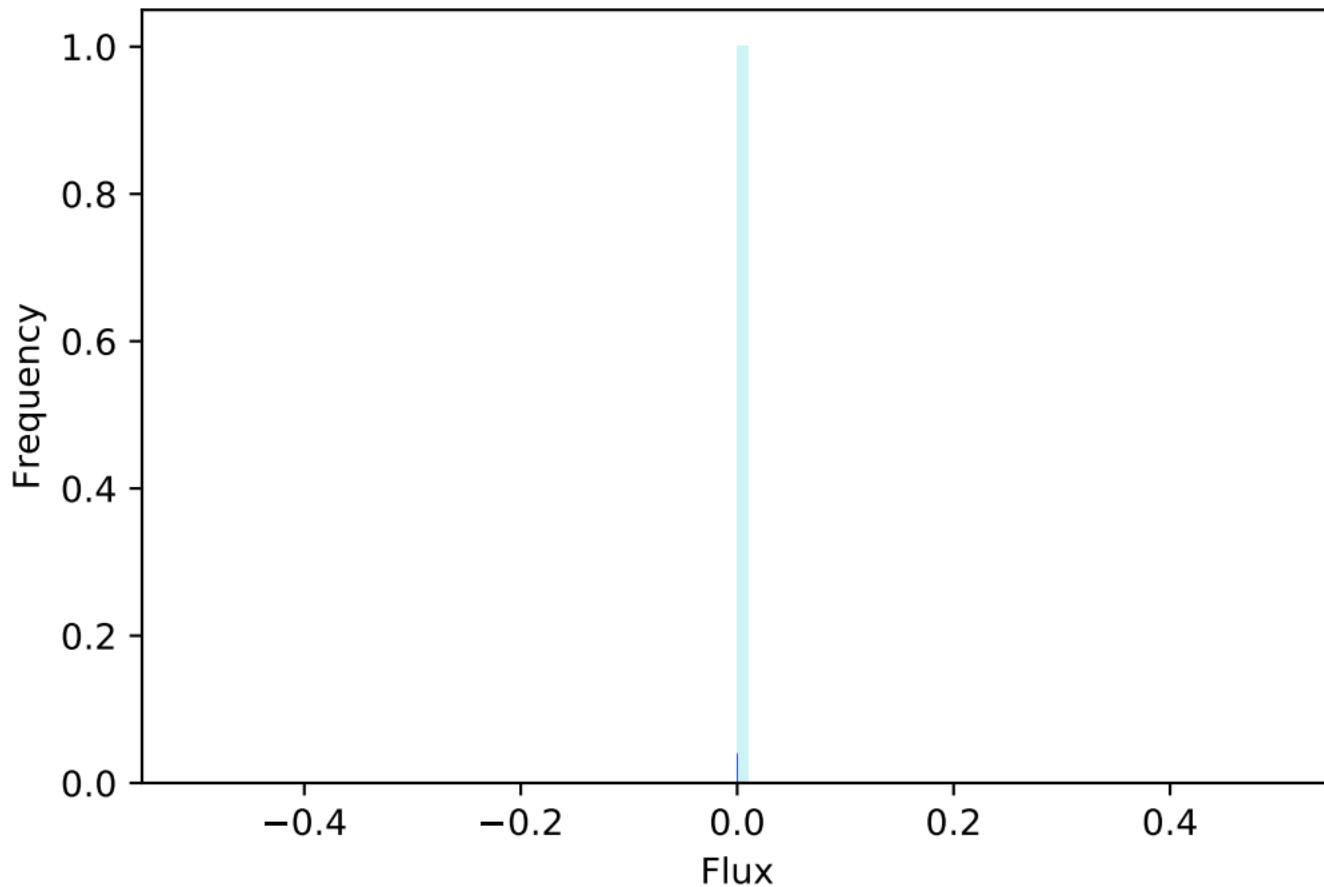
294 : Asp_h + CBP_h --> CB_DASH_Asp_h + Pi_h
['AT3G20330']



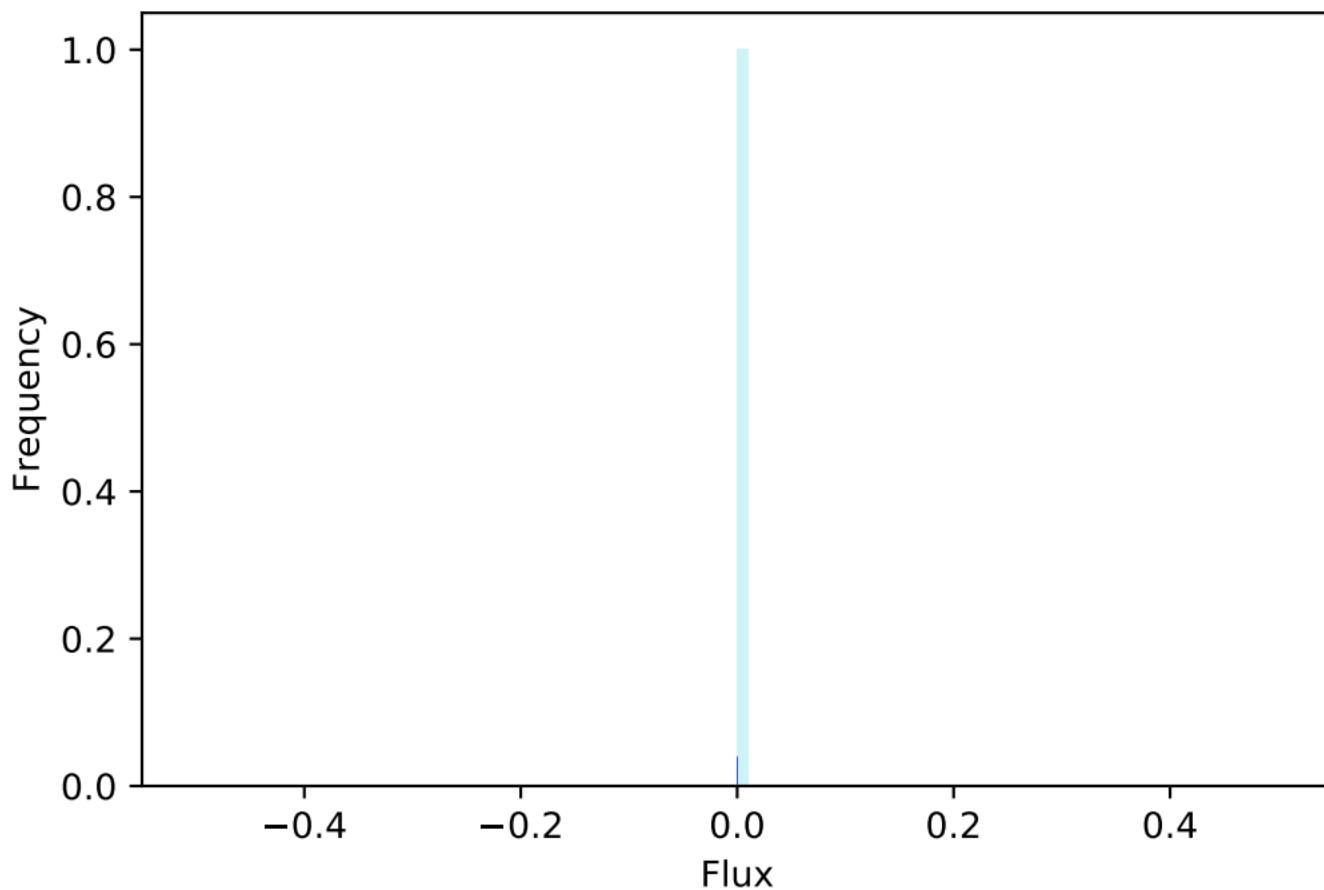
295 : CB_DASH_Asp_h --> DHO_h + H2O_h
['AT4G22930']



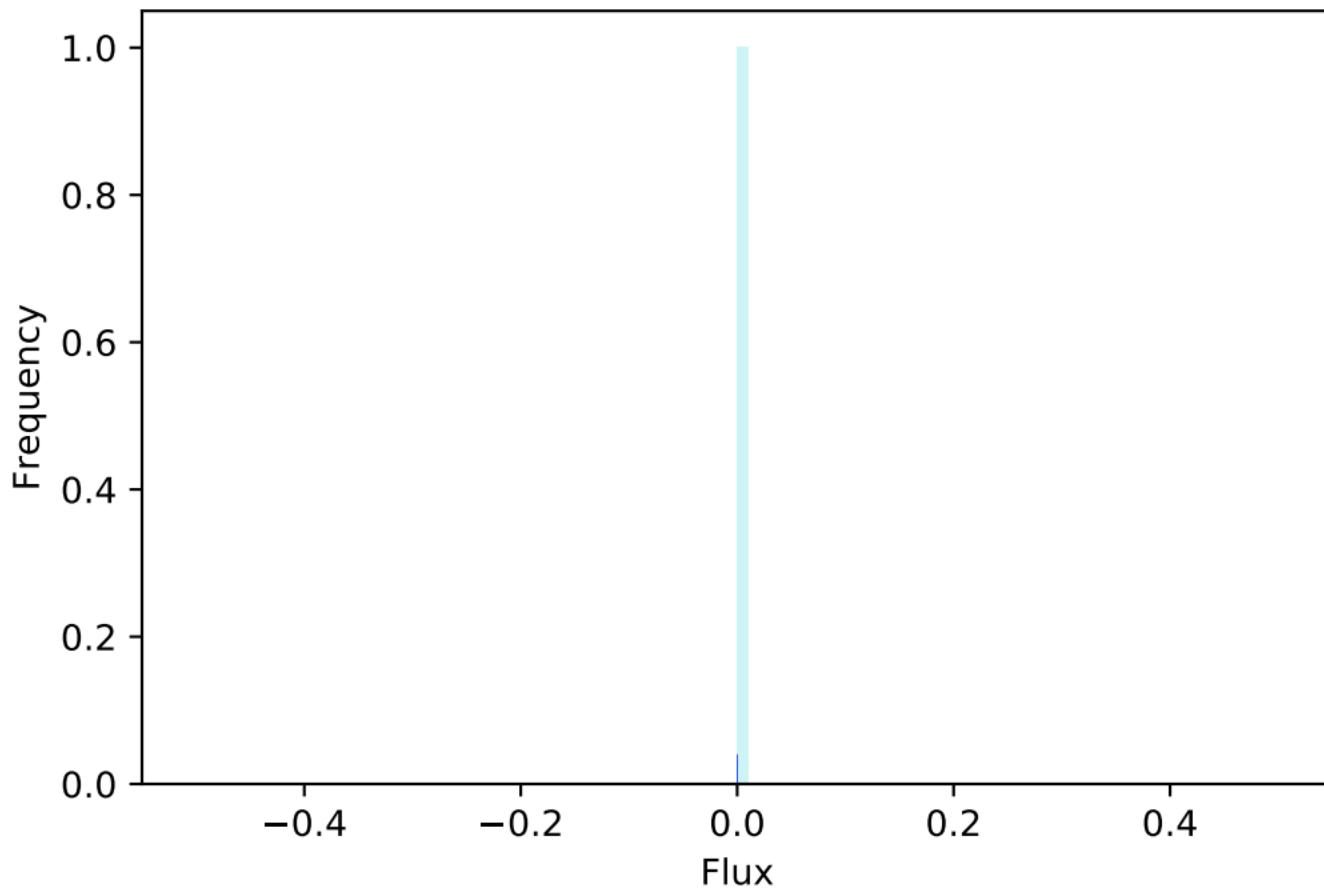
296 : DHO_m + H_m + Q_m --> QH2_m + orO_m
['AT5G23300']



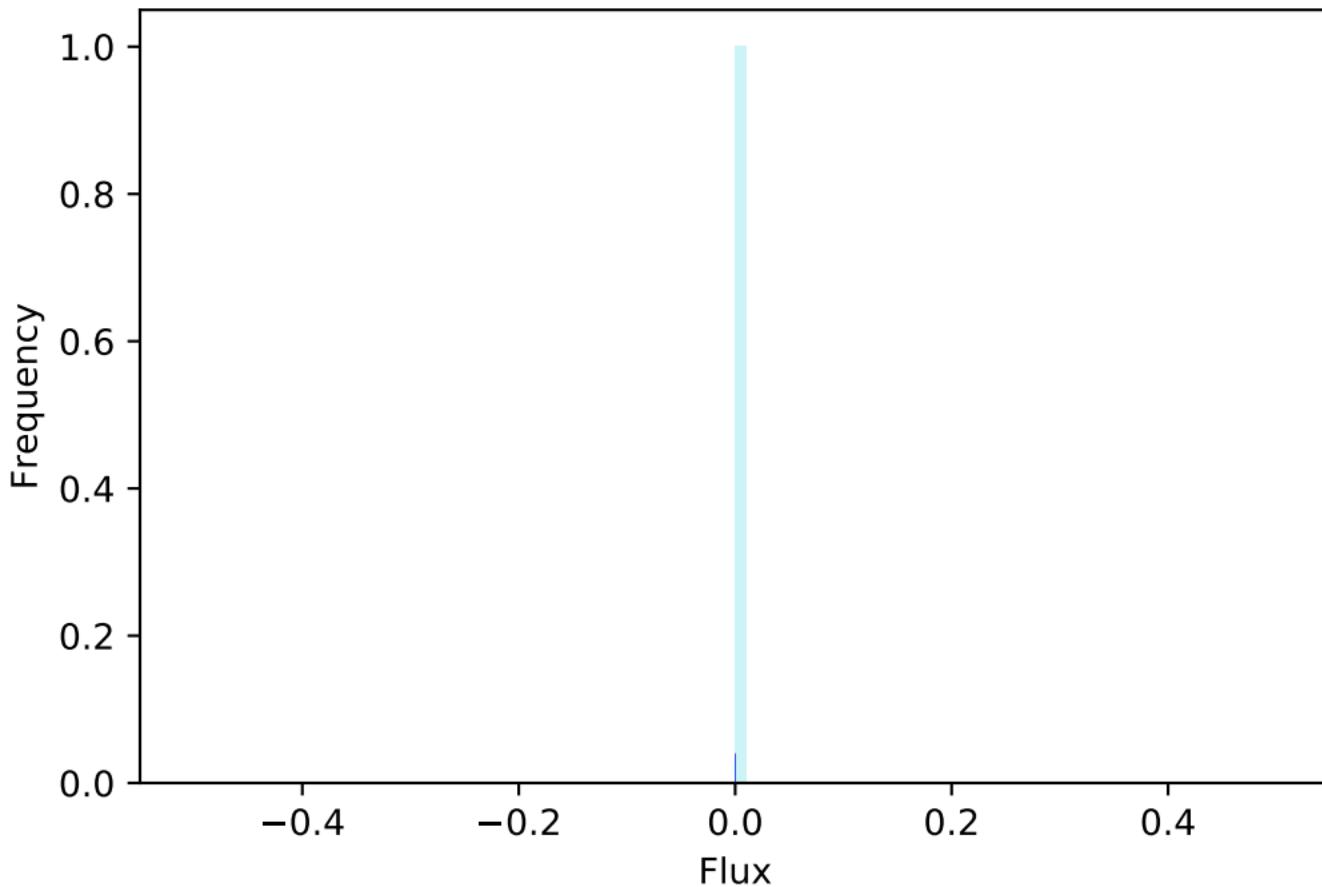
297 : PRPP_c + orO_c --> H_c + OMP_c + PPi_c
['AT3G54470']



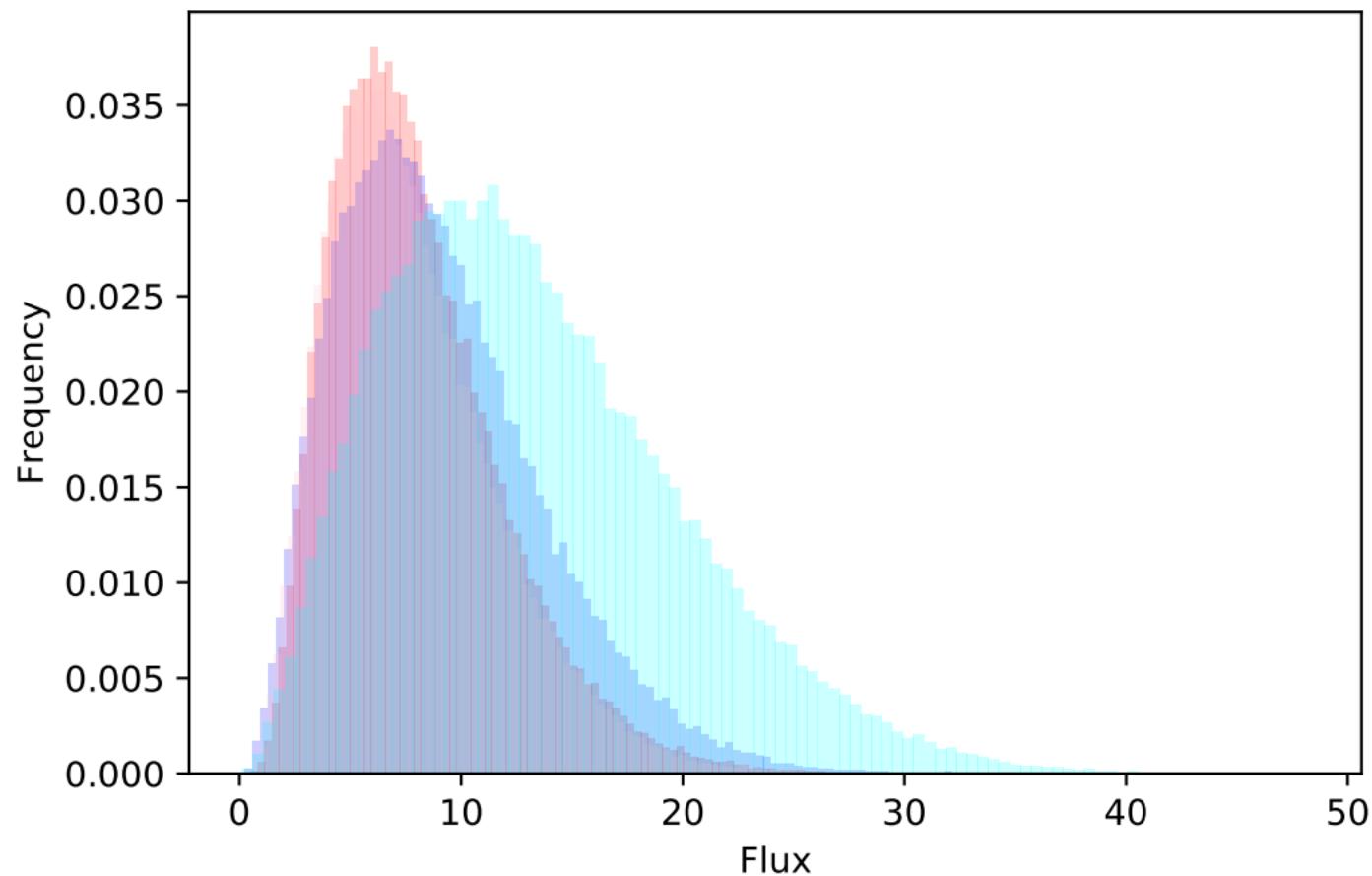
298 : H_c + OMP_c --> CO2_c + UMP_c
['AT3G54470']



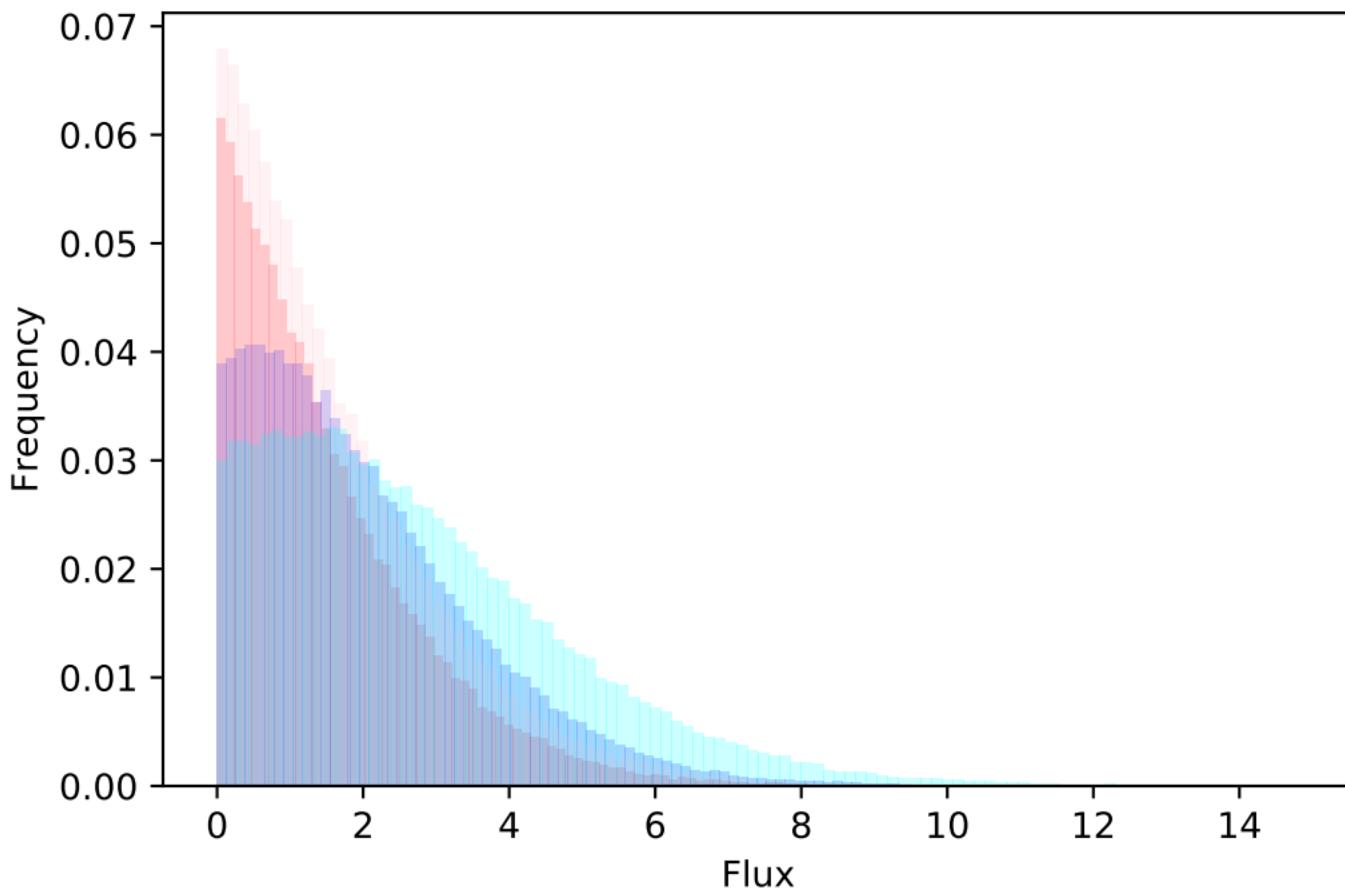
299 : ATP_c + Gln_c + H2O_c + UTP_c --> ADP_c + CTP_c + Glu_c + 2.0 H_c + Pi_c
['AT4G20320', 'AT2G34890', 'AT1G30820', 'AT3G12670', 'AT4G02120']



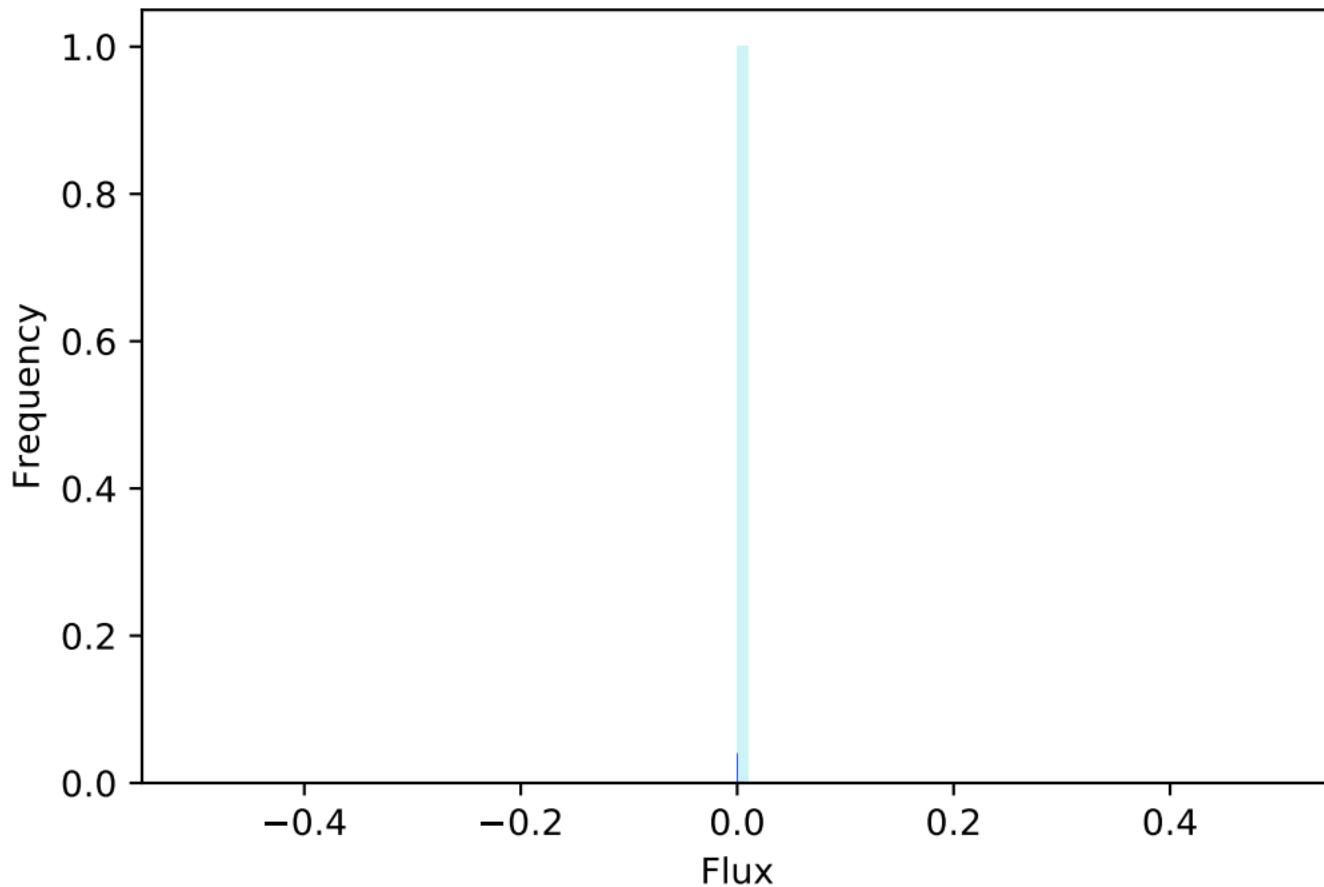
300 : AMP_c + ATP_c --> 2.0 ADP_c
['AT5G63400', 'AT2G37250', 'AT5G50370']



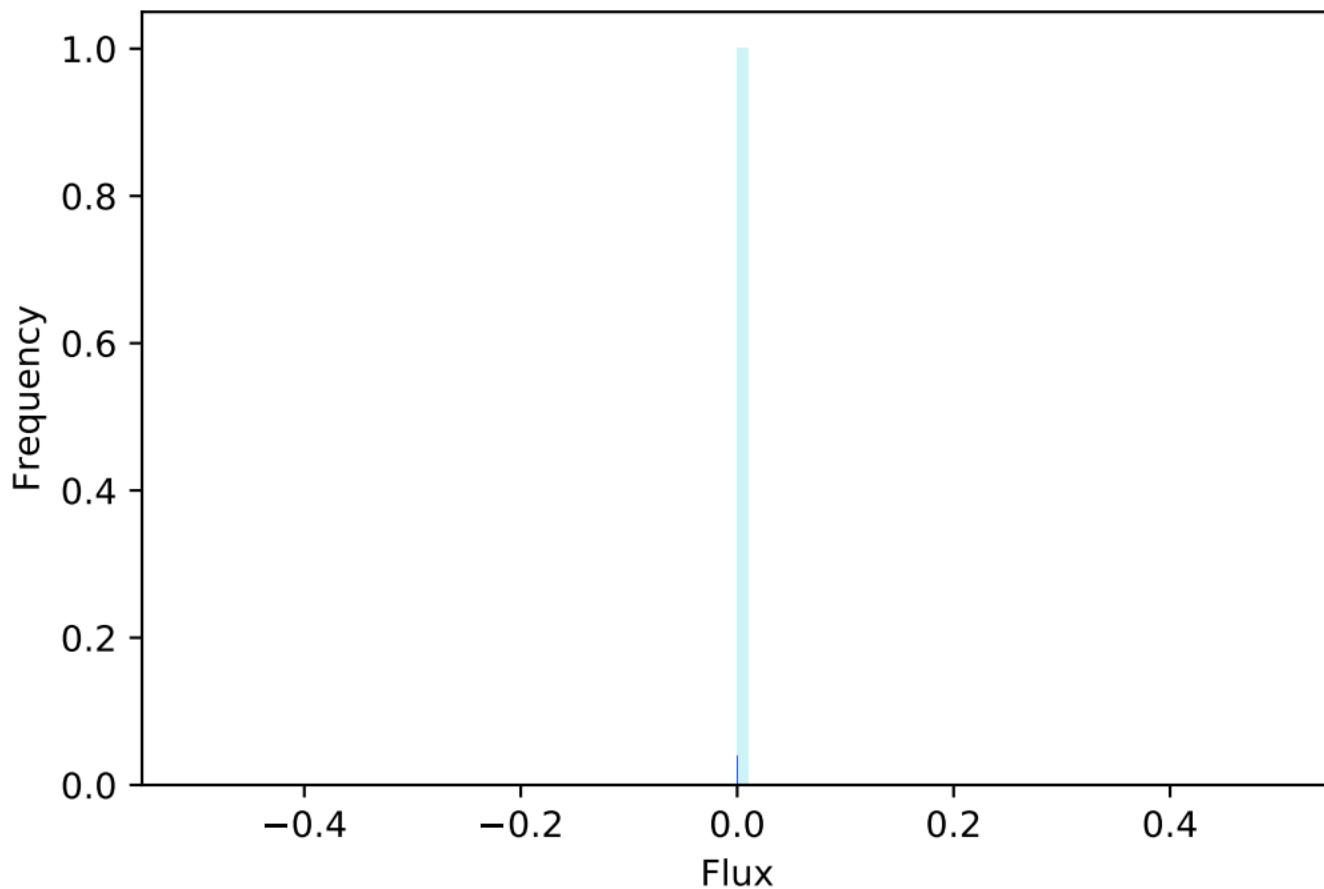
301 : AMP_h + ATP_h --> 2.0 ADP_h
['AT5G35170', 'AT2G37250', 'AT5G47840']



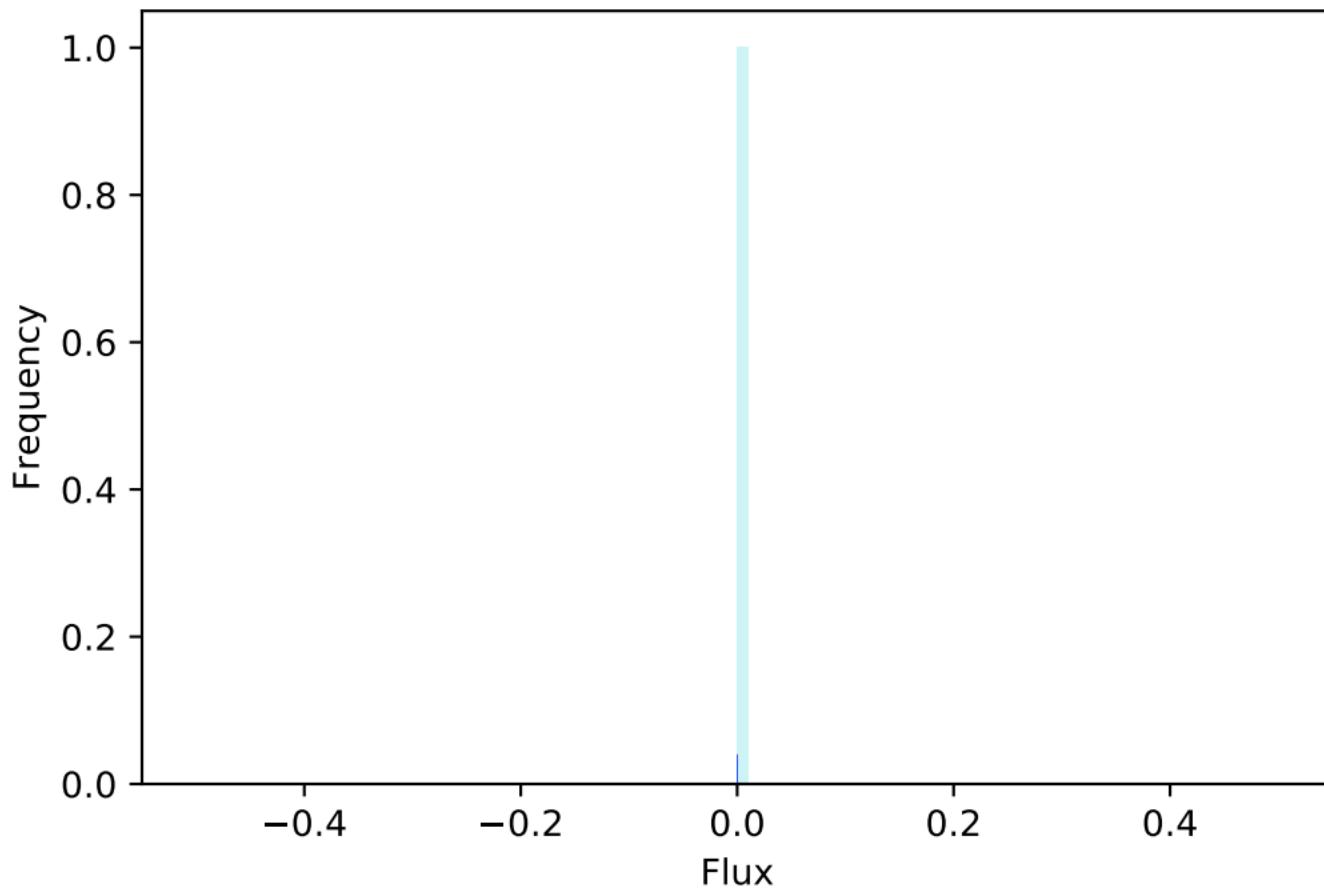
302 : ATP_c + GMP_c + H_c --> ADP_c + GDP_c
['AT2G41880', 'AT3G57550']



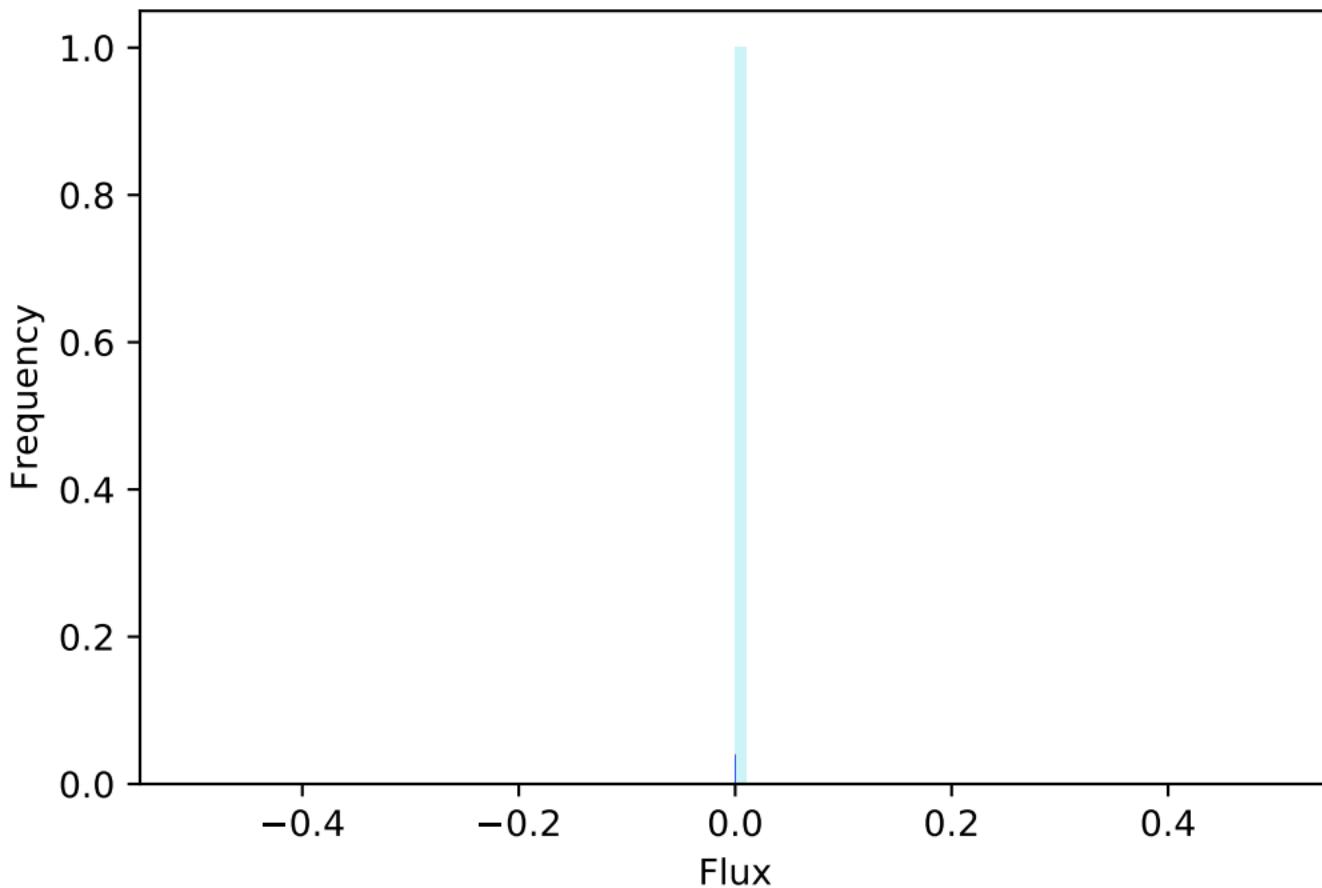
303 : ATP_c + H_c + UMP_c --> ADP_c + UDP_c
['AT5G26667']



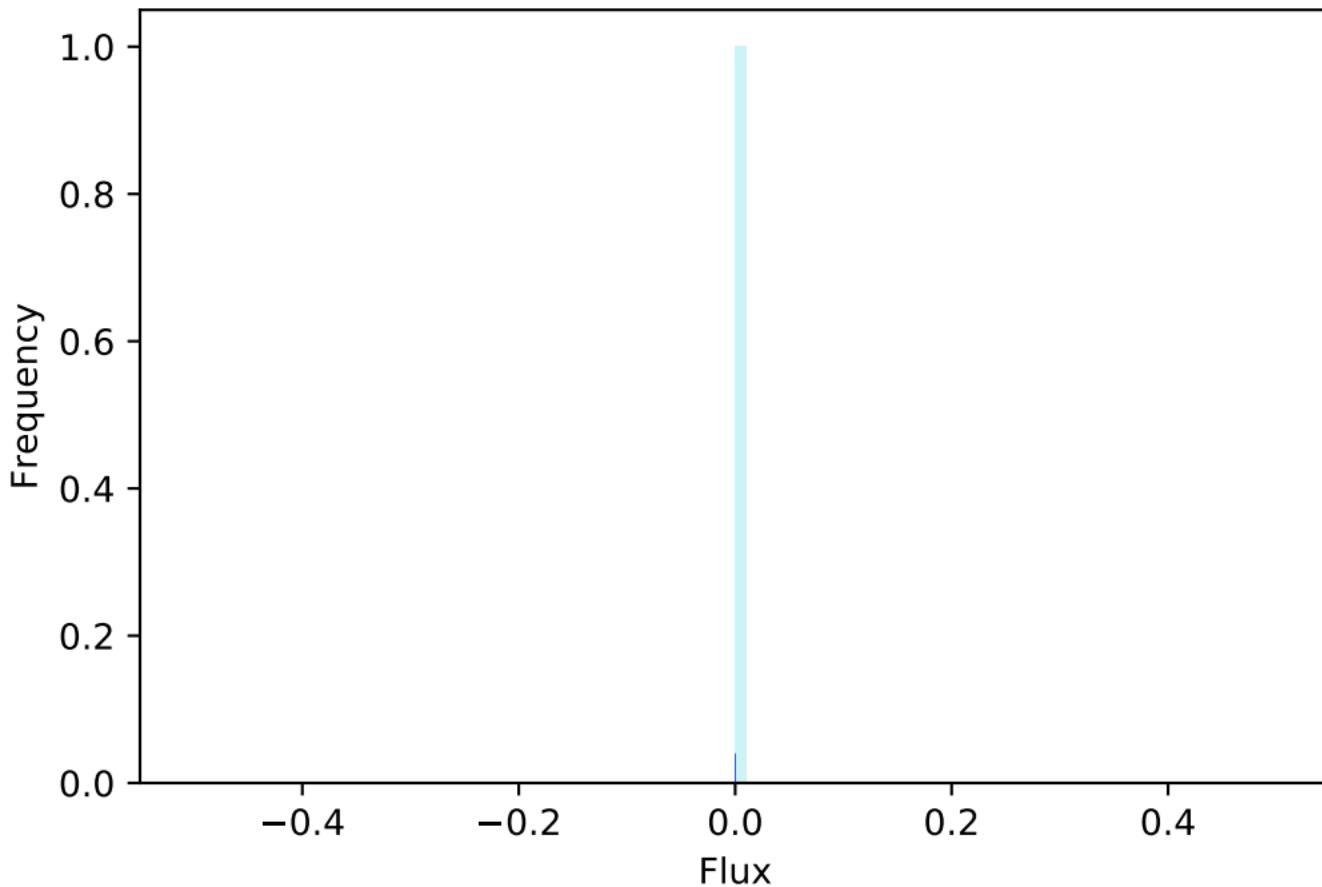
304 : CTP_c + H2O_c --> CDP_c + Pi_c
['AT3G04080']



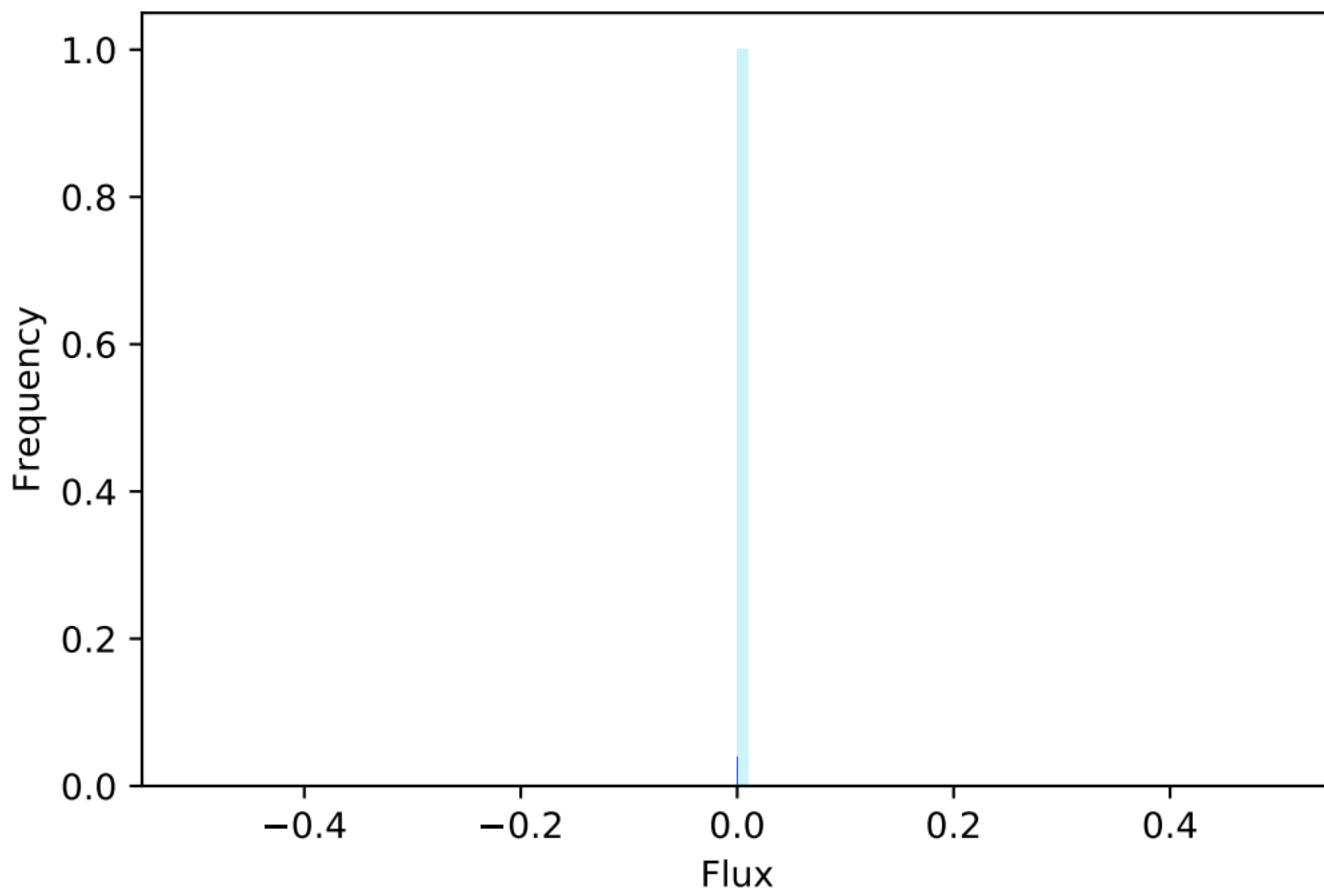
305 : ADP_c + H_c + TRXrd_c --> H2O_c + TRXox_c + dADP_c
['2*AT2G21790', 'AT3G27060', '2*AT3G23580']



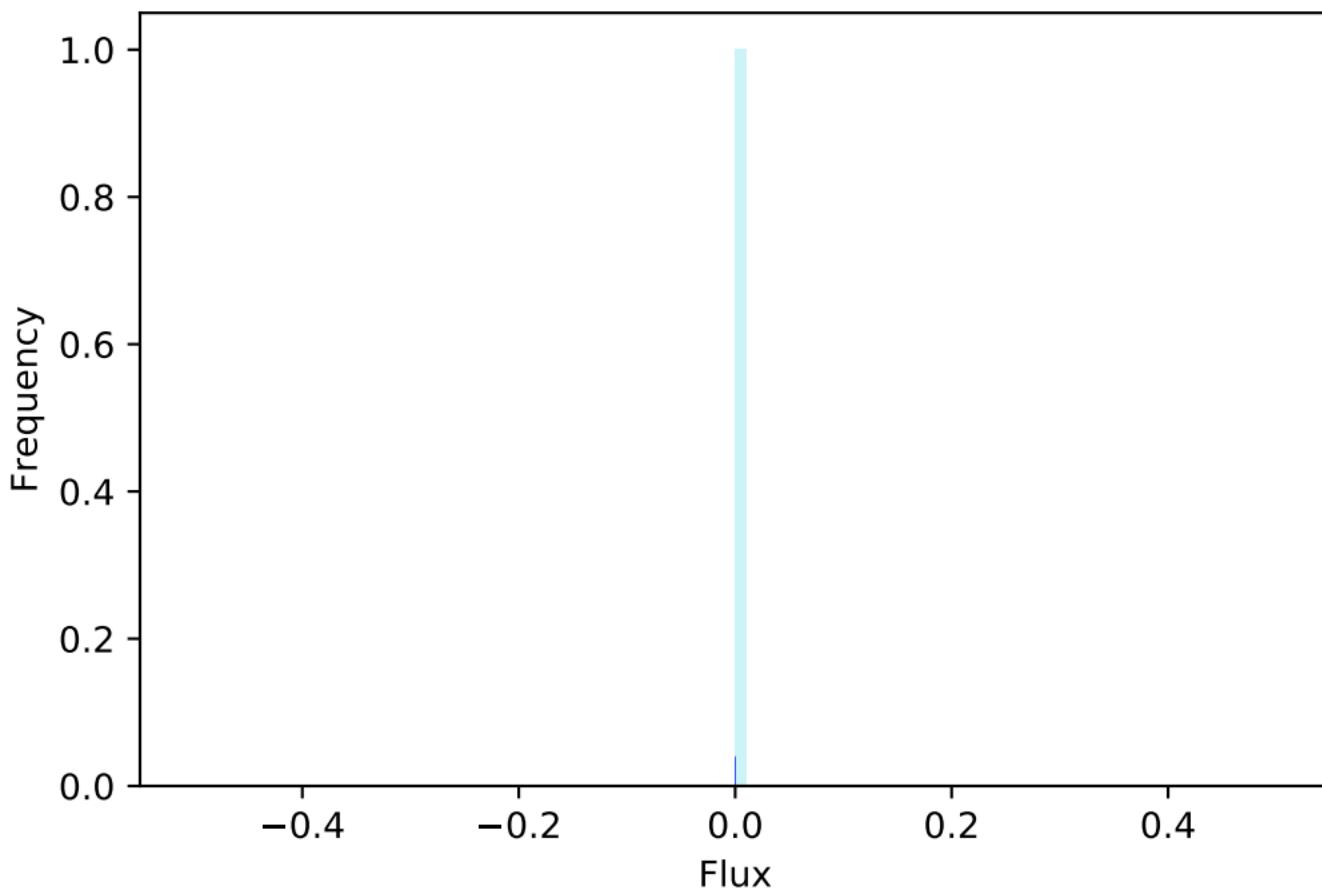
306 : CDP_c + TRXrd_c --> H2O_c + TRXox_c + dCDP_c
['2*AT2G21790', 'AT3G27060', '2*AT3G23580']



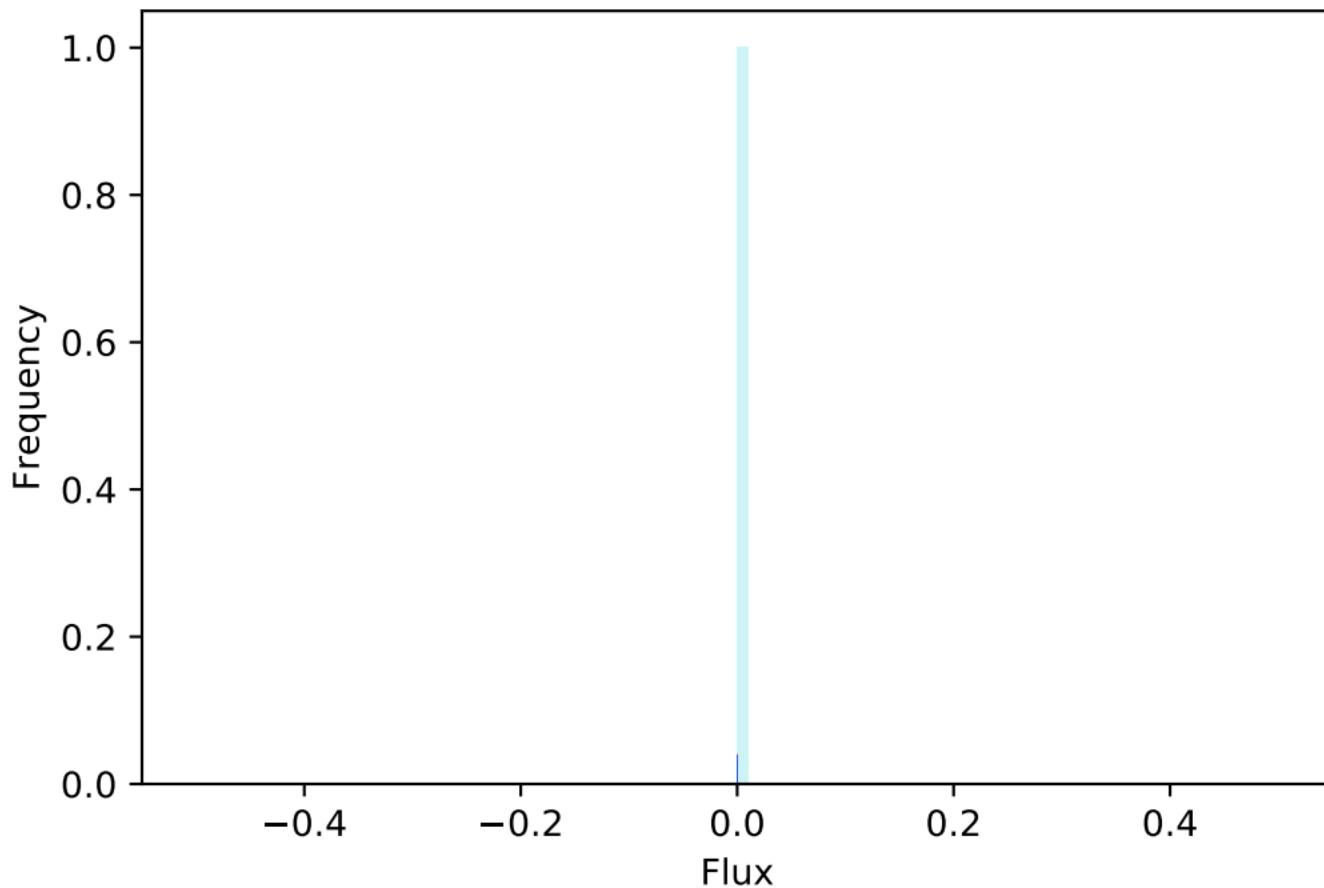
307 : GDP_c + TRXrd_c --> H2O_c + TRXox_c + dGDP_c
['2*AT2G21790', 'AT3G27060', '2*AT3G23580']



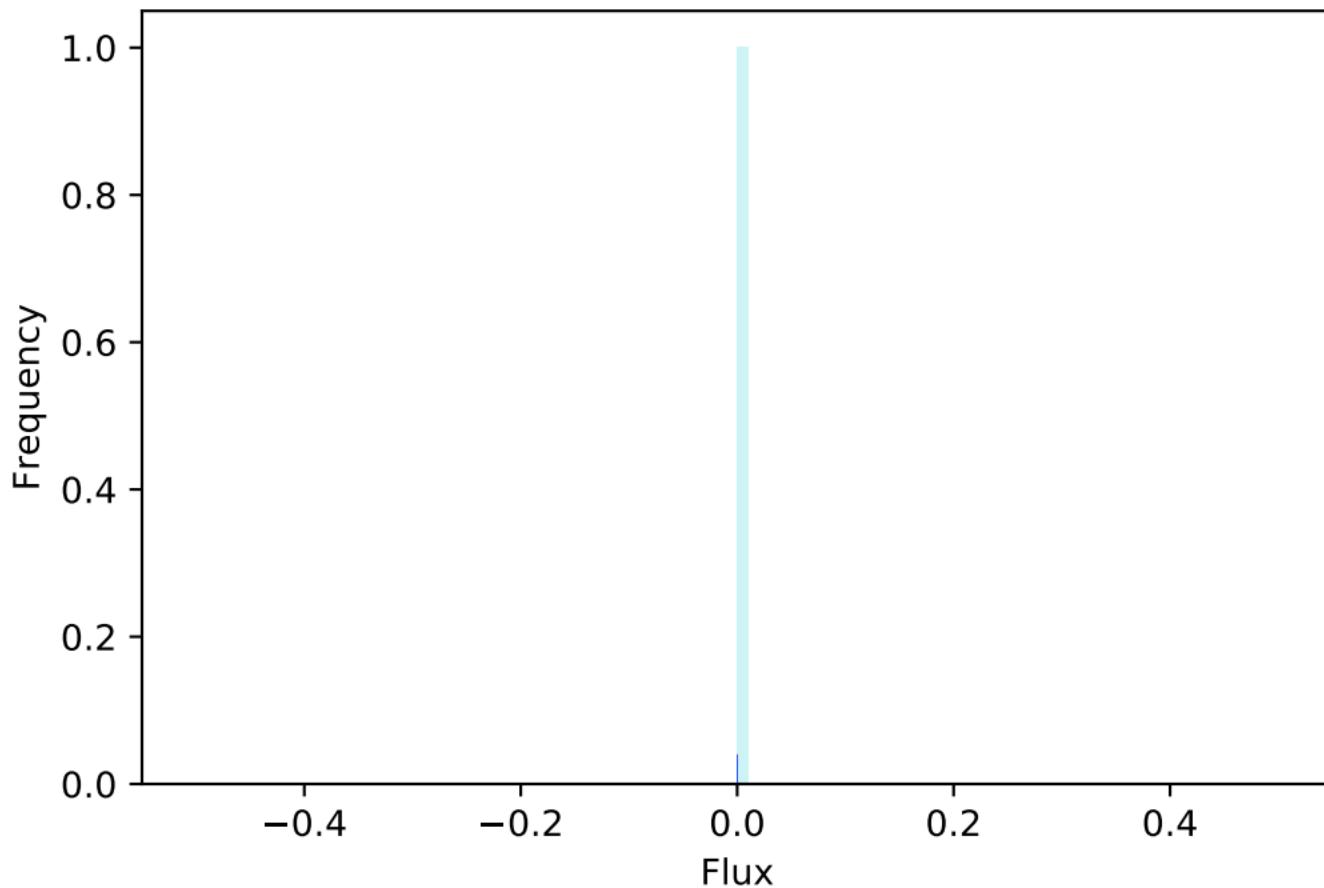
308 : TRXrd_c + UDP_c --> H2O_c + TRXox_c + dUDP_c
['2*AT2G21790', 'AT3G27060', '2*AT3G23580']



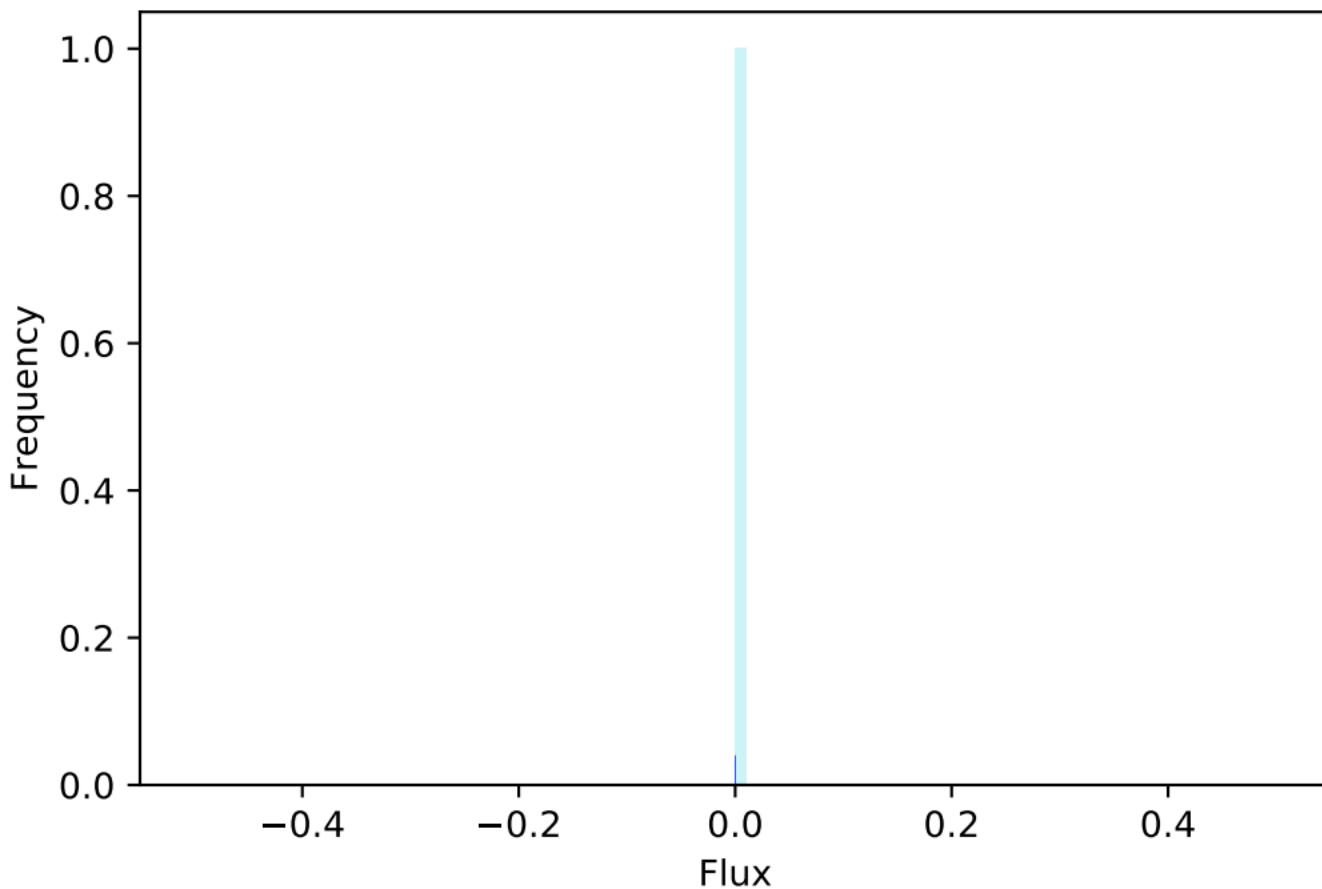
309 : H₂O_c + dUTP_c --> 2.0 H_c + PPi_c + dUMP_c
['3*AT3G46940']



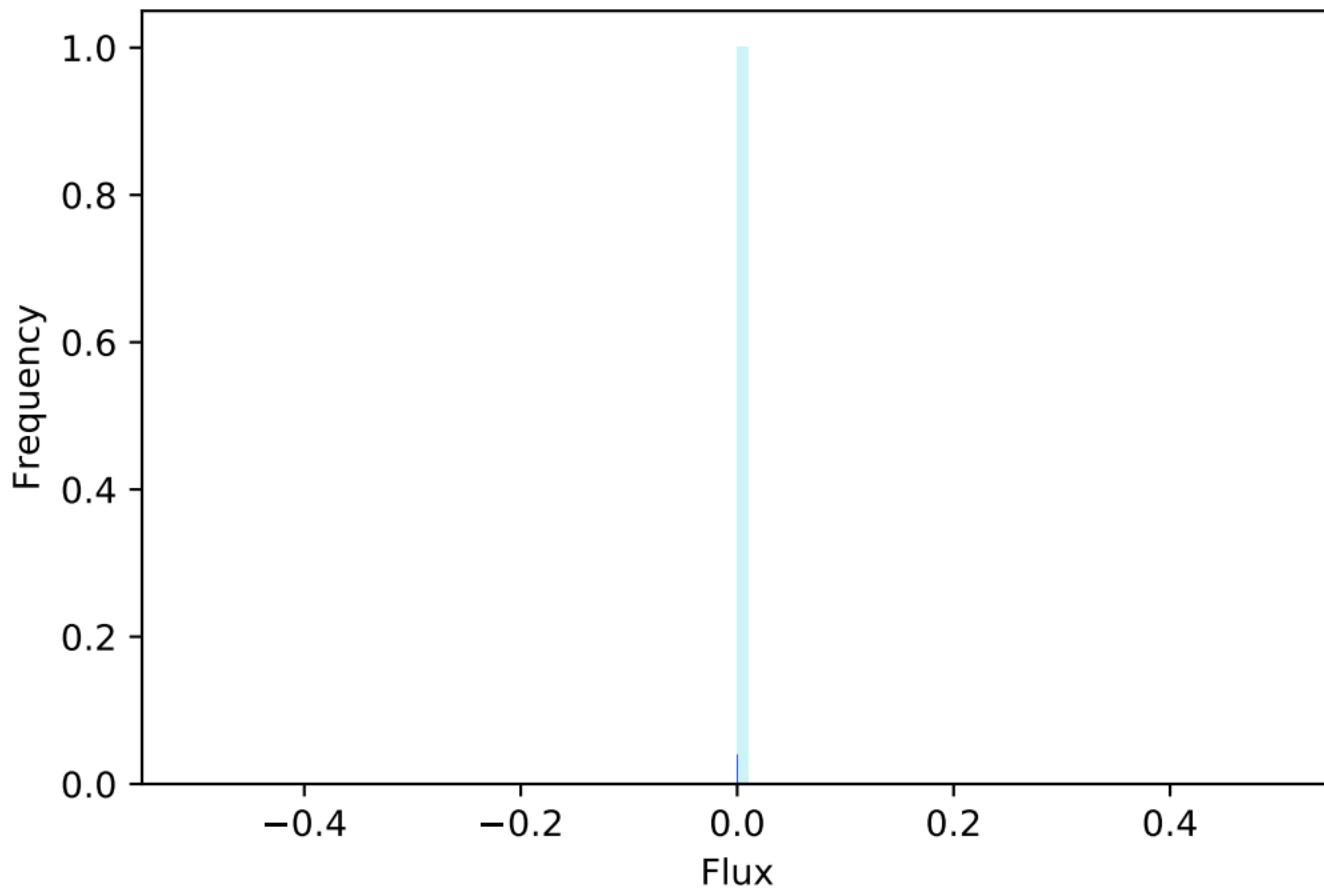
310 : M_DASH_THF_c + dUMP_c --> DHF_c + dTMP_c
['AT2G16370', 'AT2G21550']



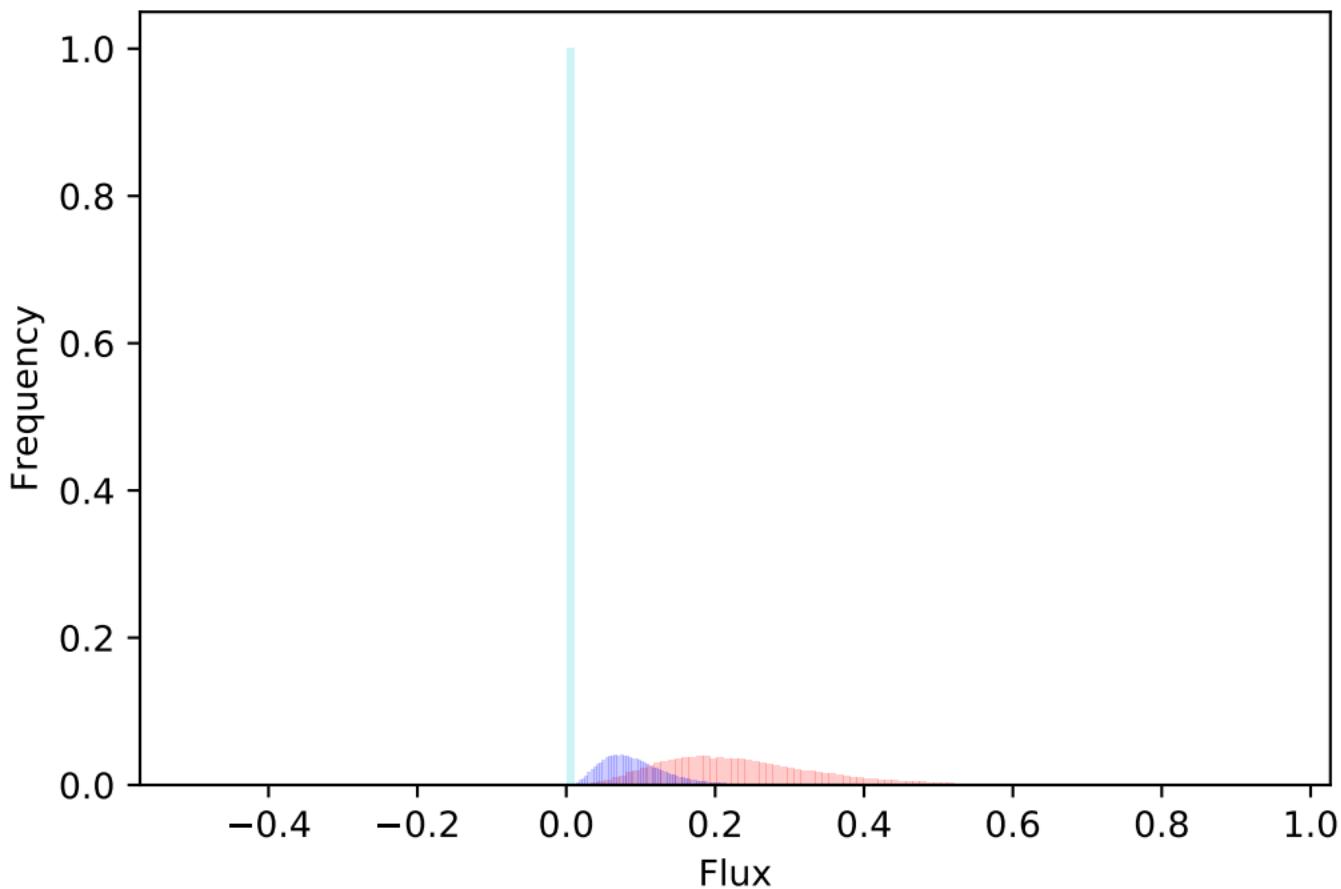
311 : ATP_c + H_c + dTMP_c --> ADP_c + dTDP_c
['AT5G59440']



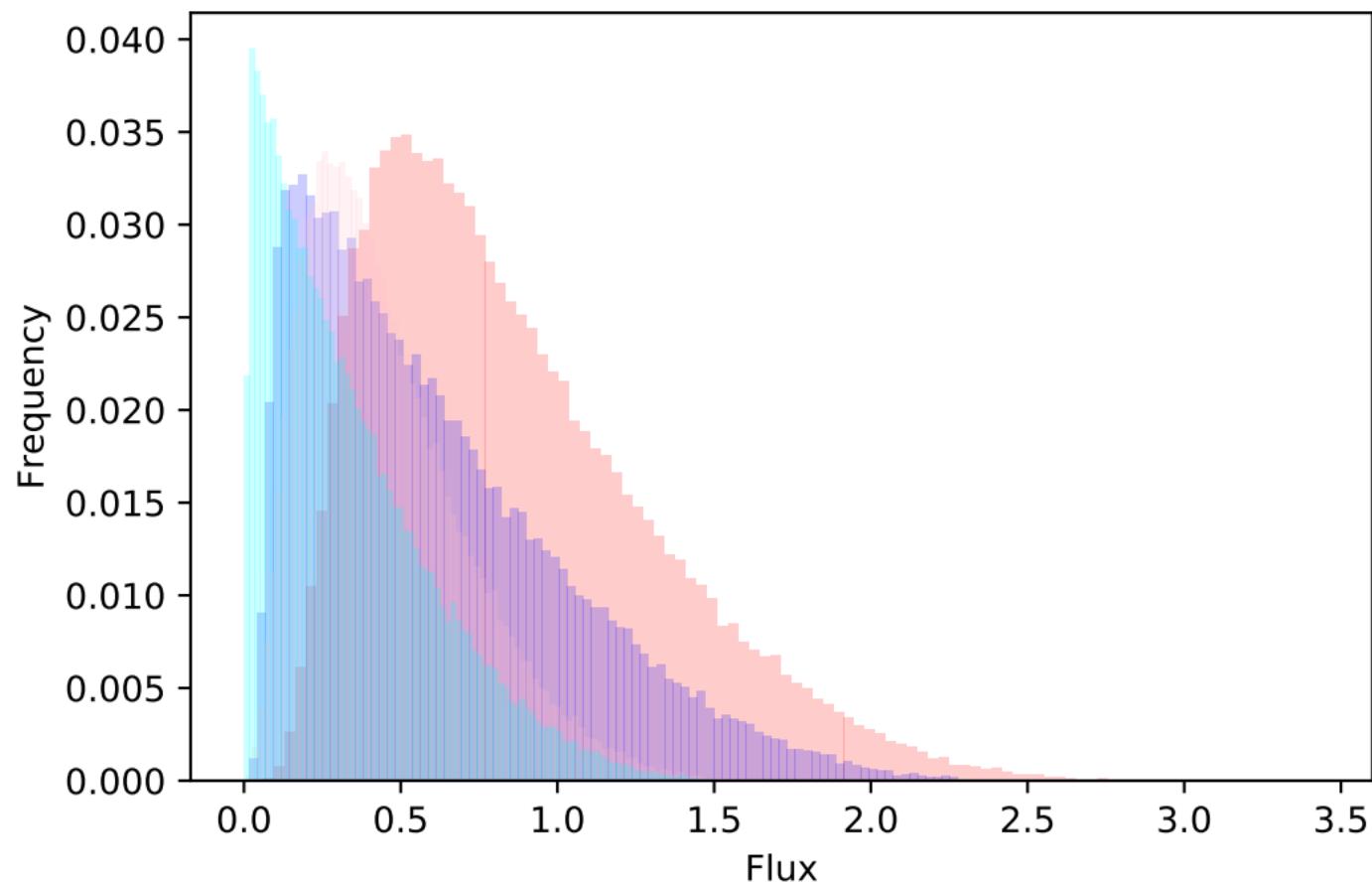
312 : ATP_c + GDP_c --> ADP_c + GTP_c + H_c
['AT5G63310', '6*AT4G09320']



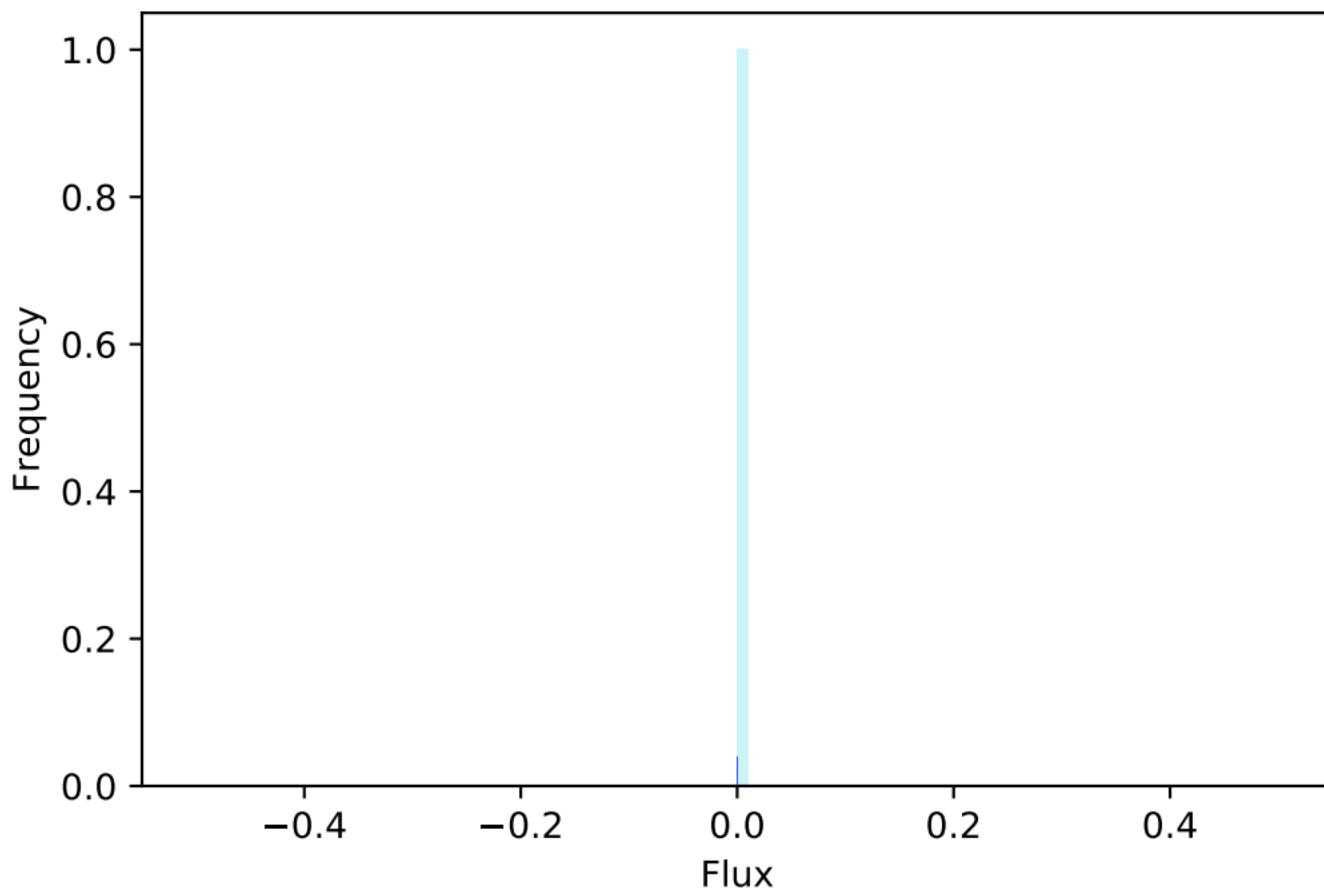
313 : ATP_h + GDP_h --> ADP_h + GTP_h + H_h
['AT5G63310', '6*AT4G09320']



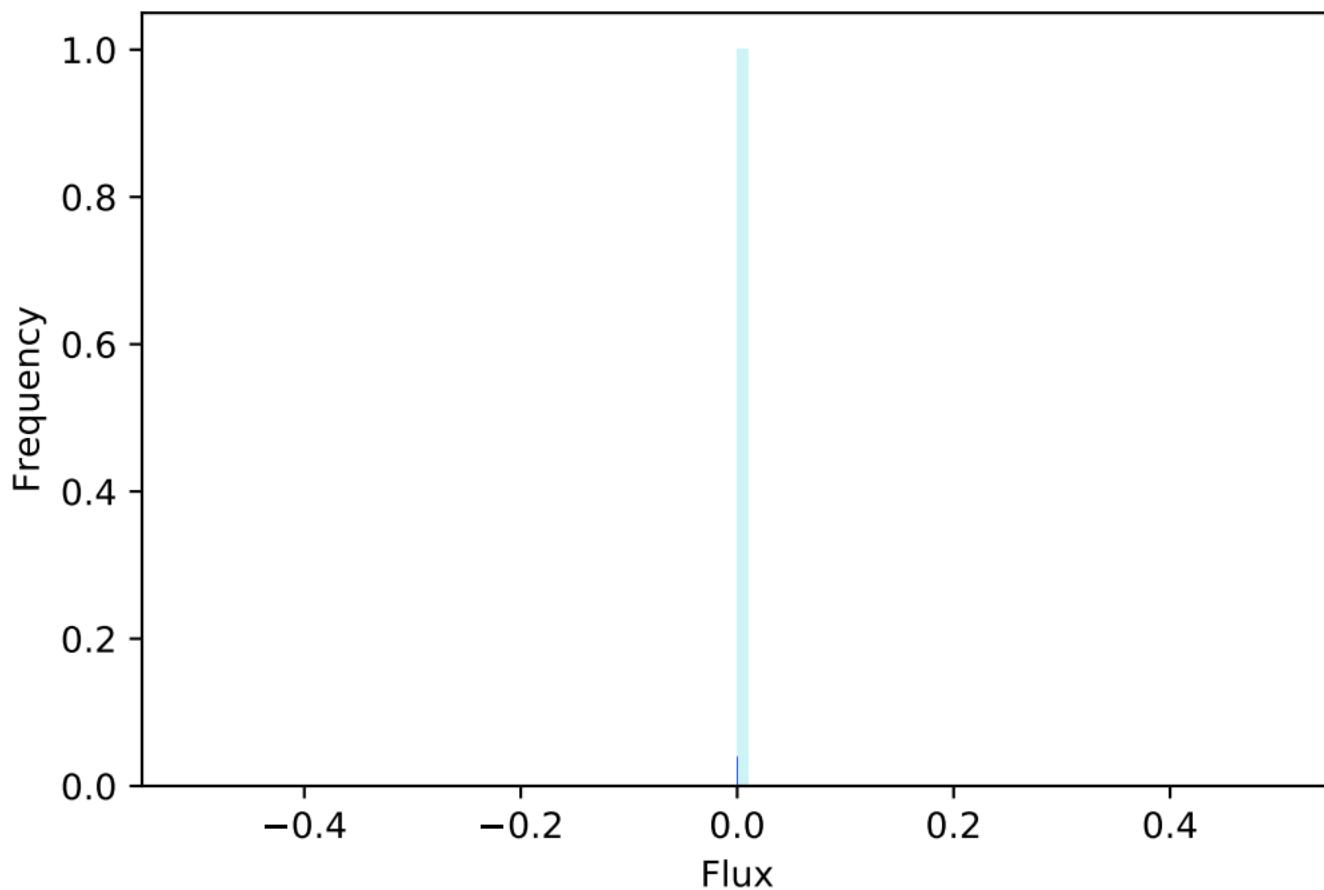
314 : ATP_c + UDP_c --> ADP_c + H_c + UTP_c
['AT5G63310', '6*AT4G09320']



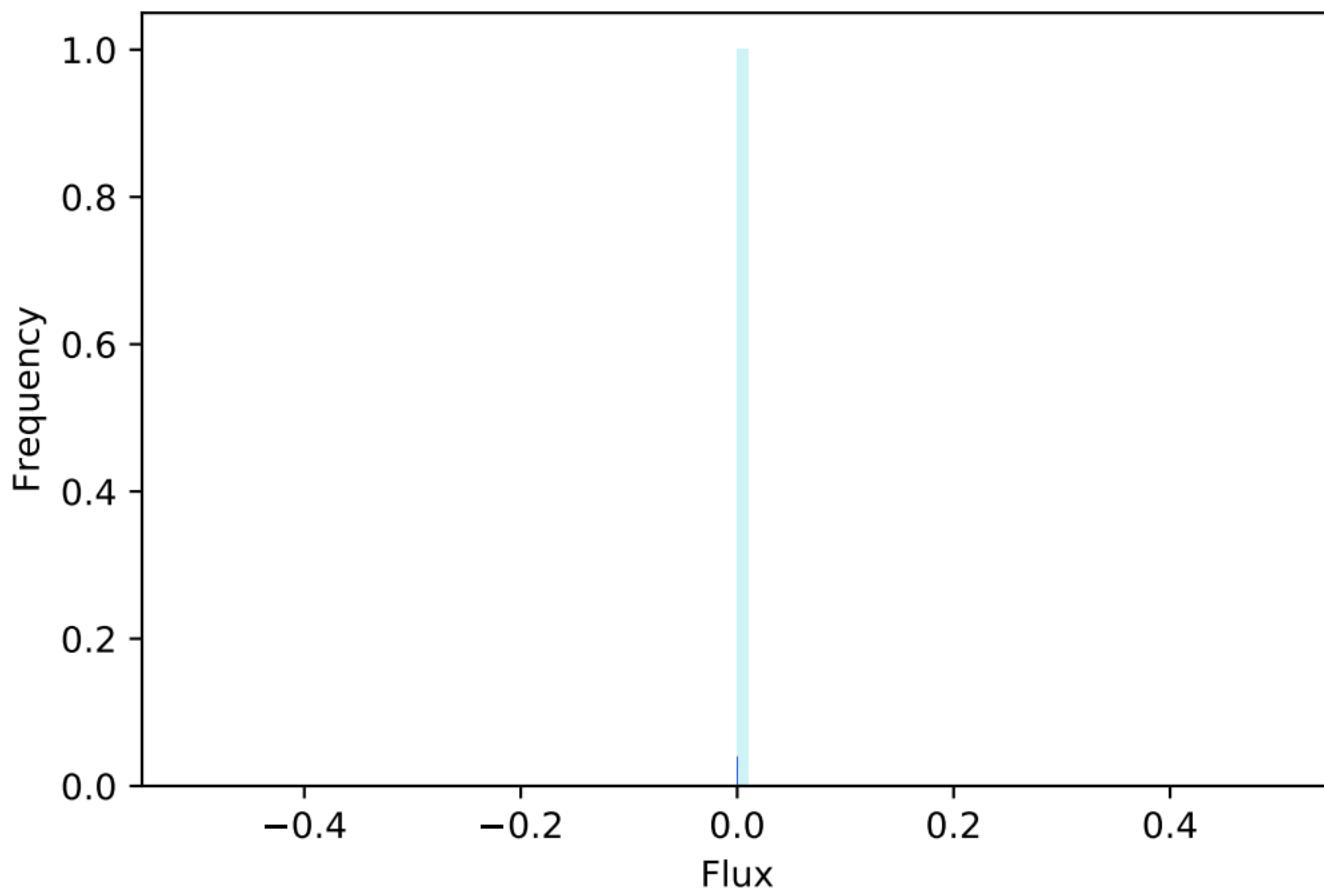
315 : ATP_c + dADP_c --> ADP_c + dATP_c
['AT5G63310', '6*AT4G09320']



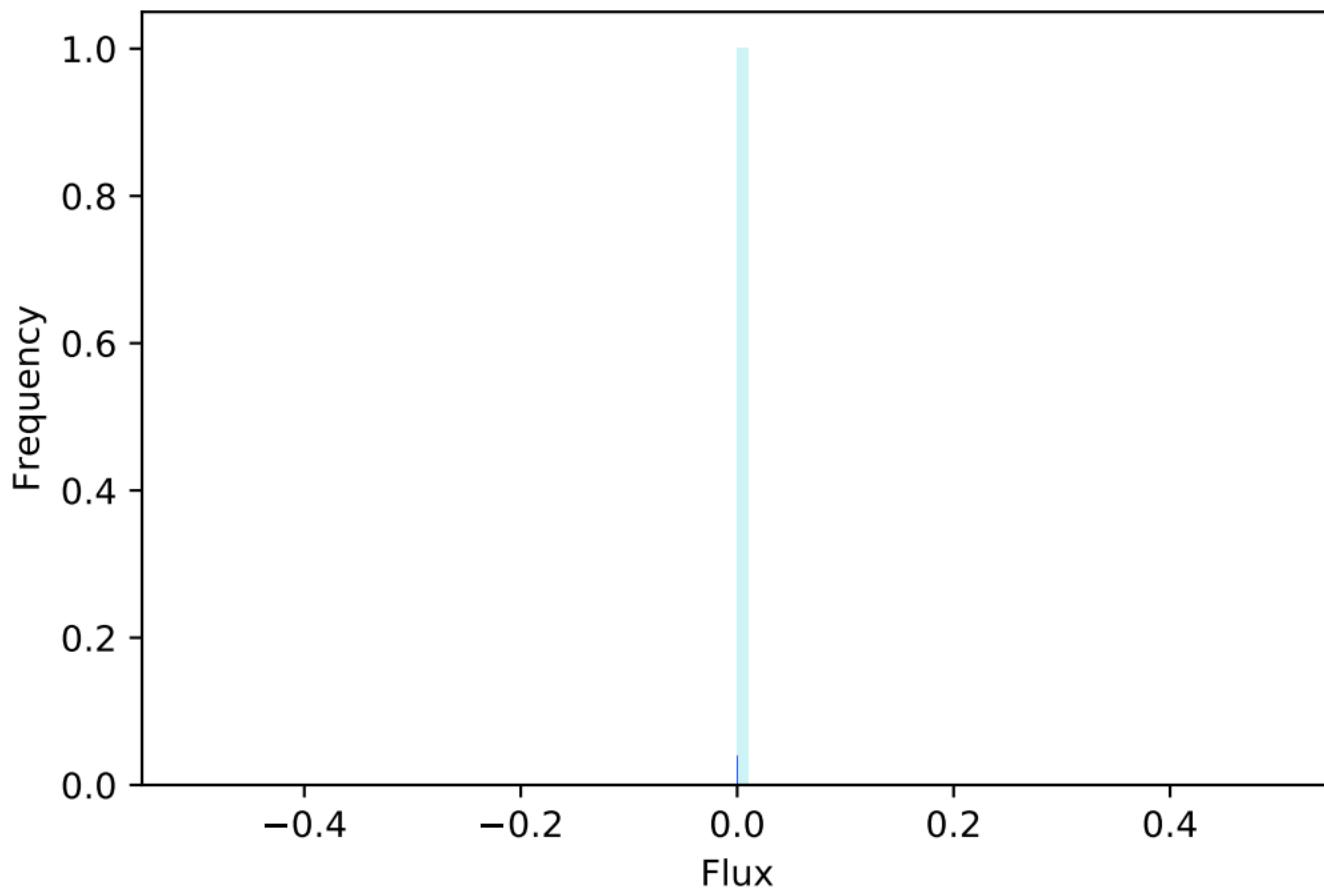
316 : ATP_c + dCDP_c --> ADP_c + dCTP_c
['AT5G63310', '6*AT4G09320']



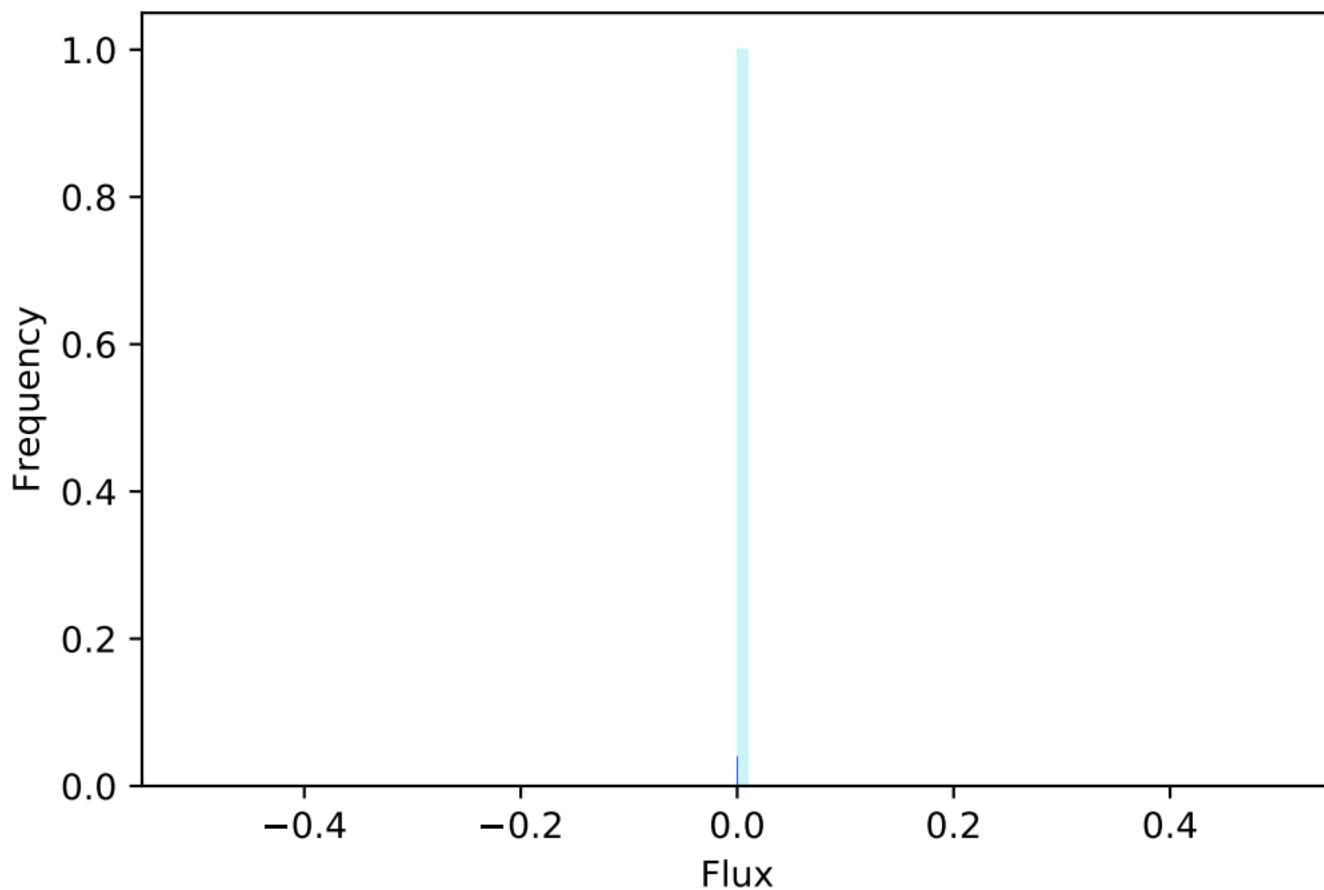
317 : ATP_c + dGDP_c --> ADP_c + dGTP_c
['AT5G63310', '6*AT4G09320']



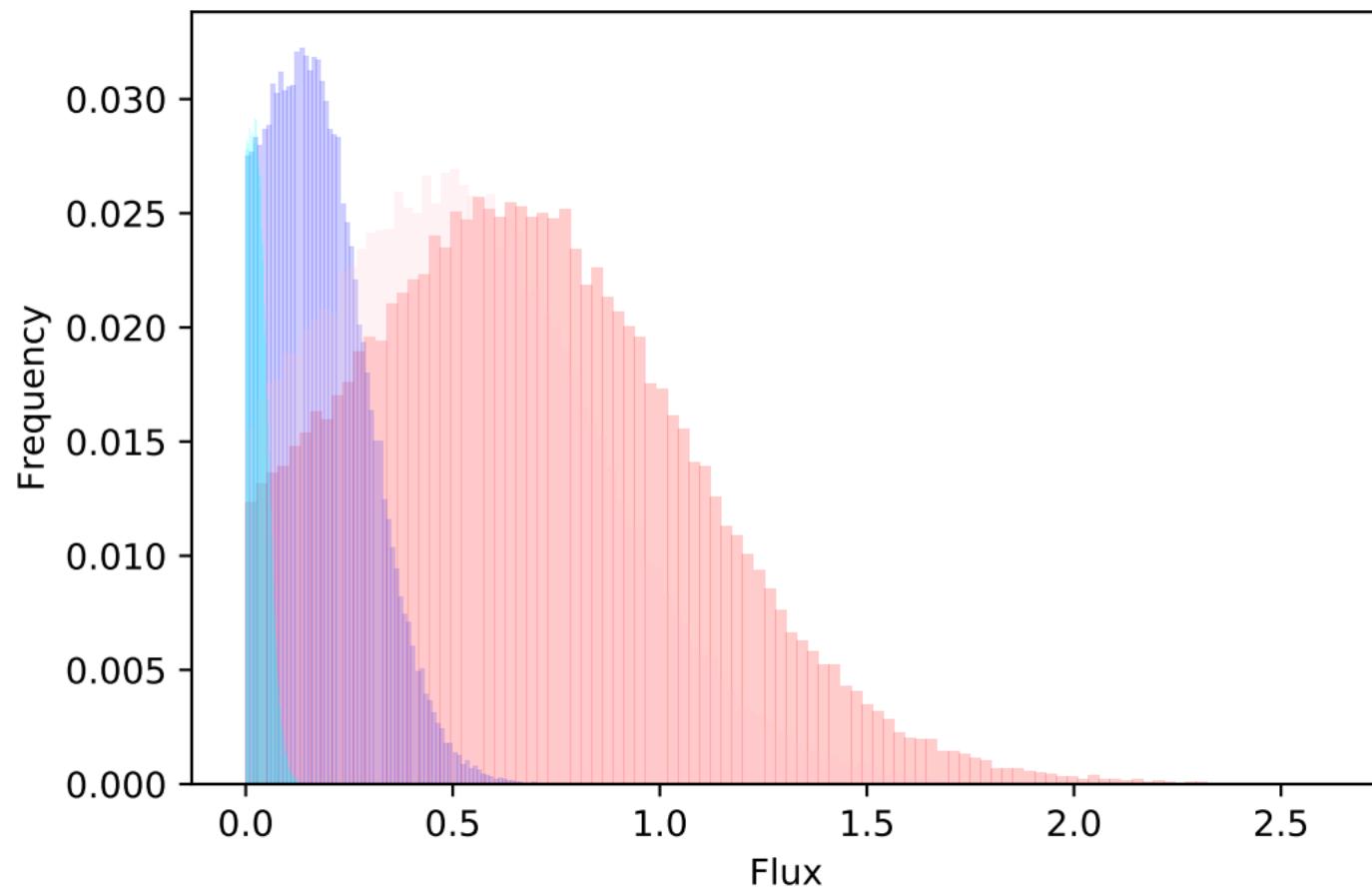
318 : ATP_c + dTDP_c --> ADP_c + dTTP_c
['AT5G63310', '6*AT4G09320']



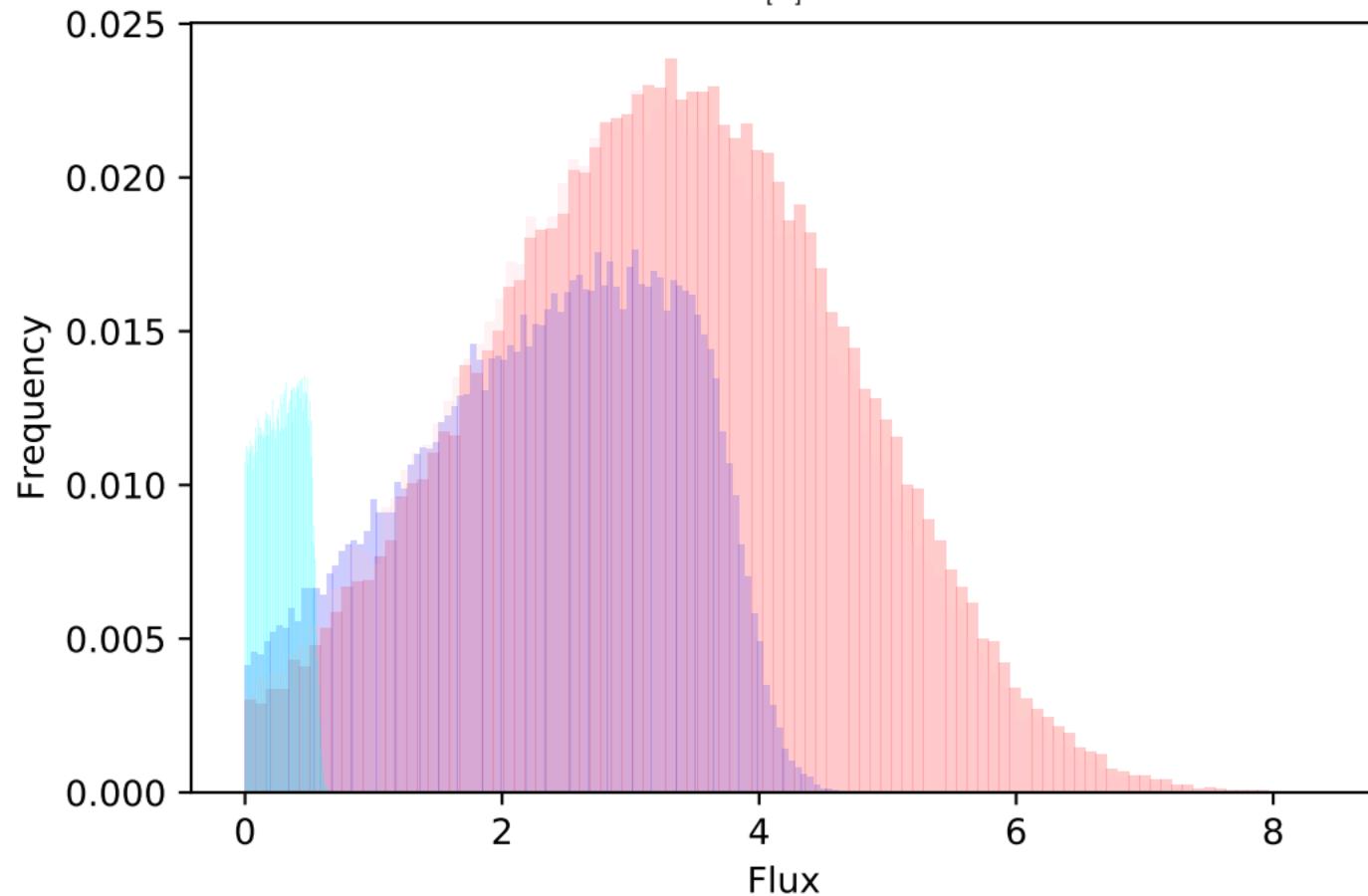
319 : ATP_c + dUDP_c --> ADP_c + dUTP_c
['AT5G63310', '6*AT4G09320']

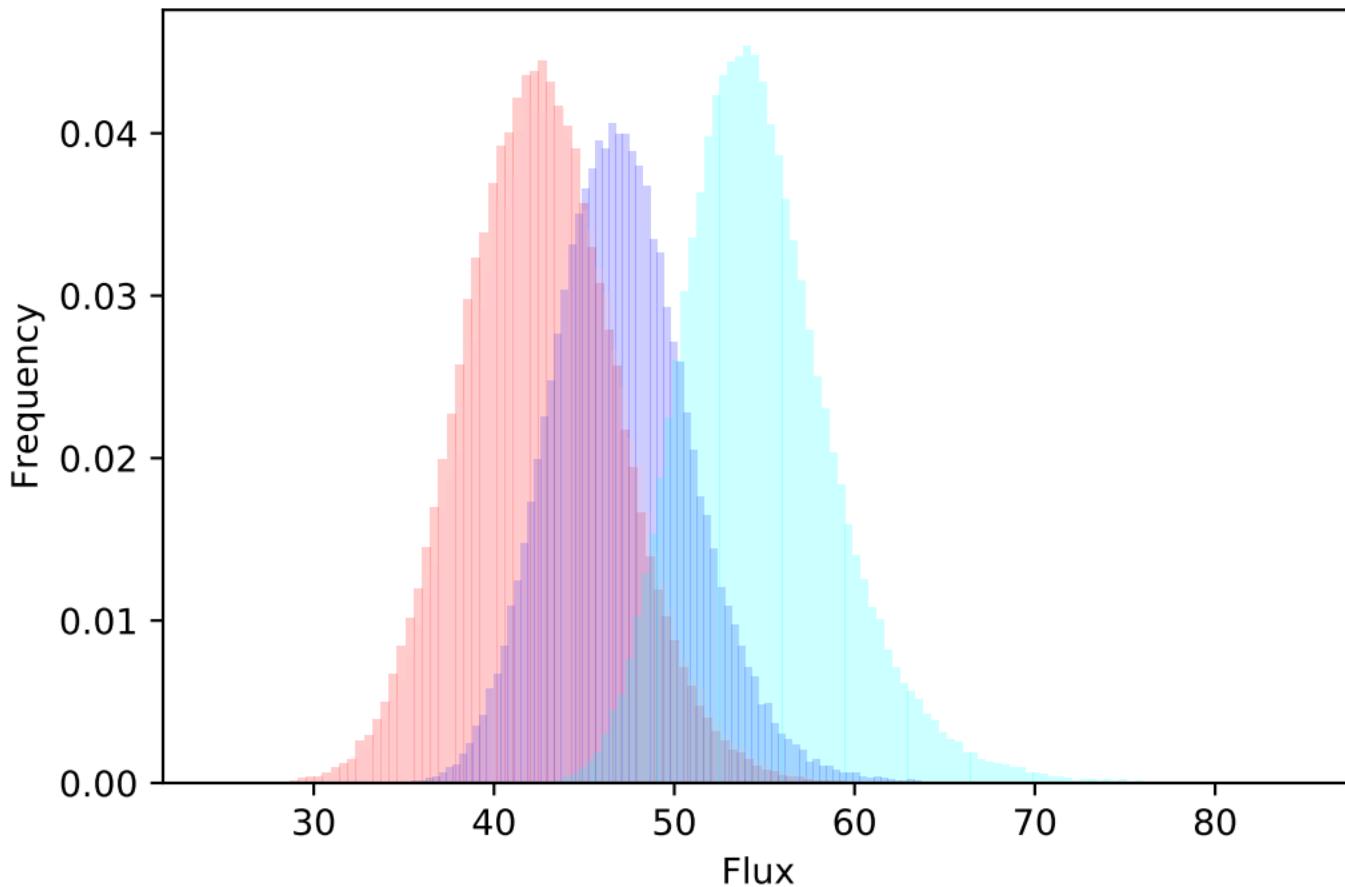
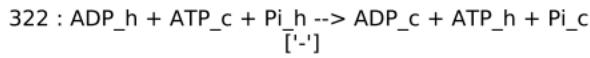


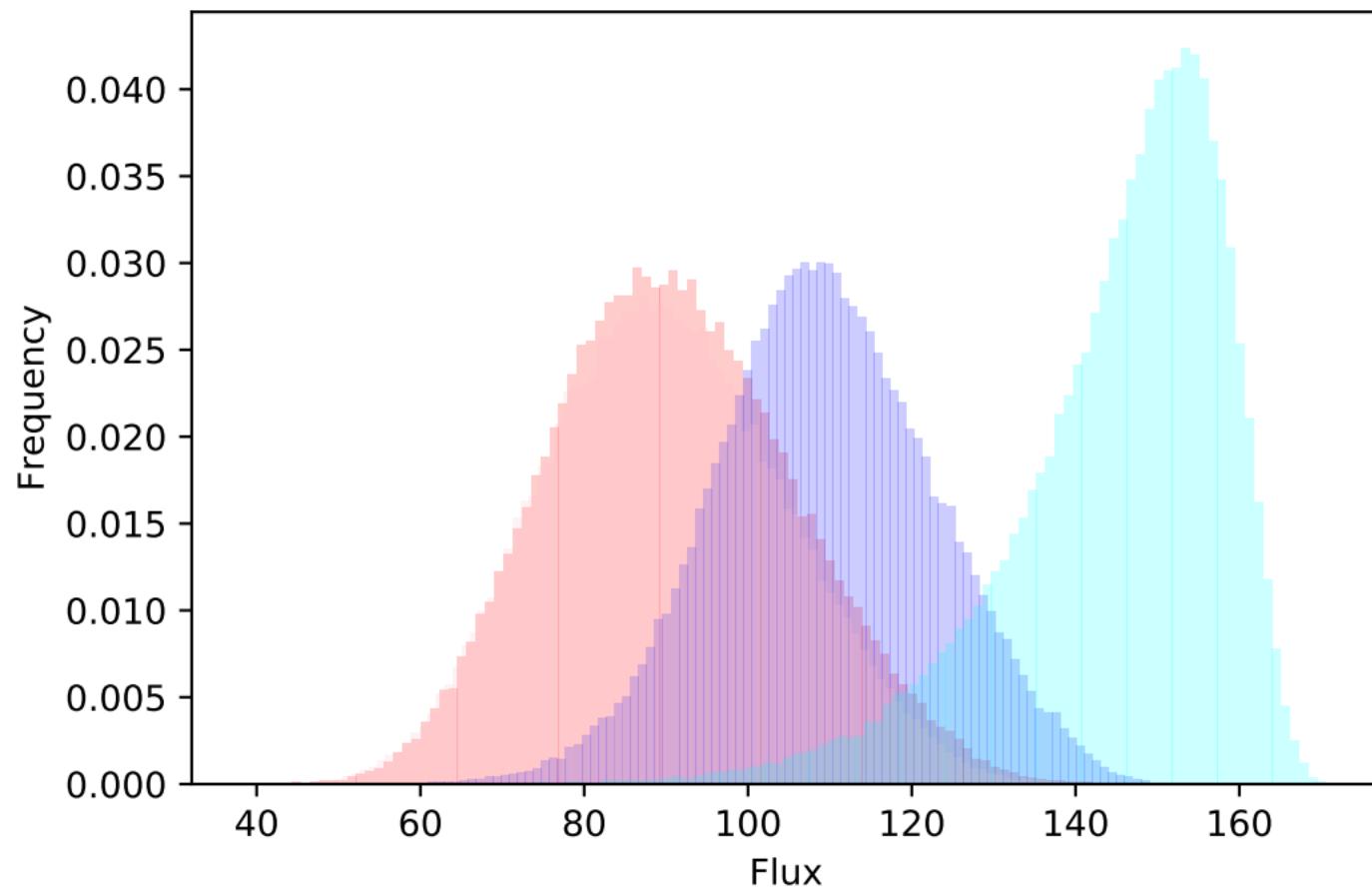
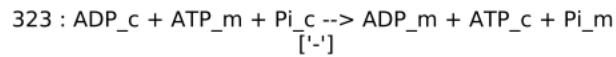
320 : SO4_c <=> SO4_h
[!-!]



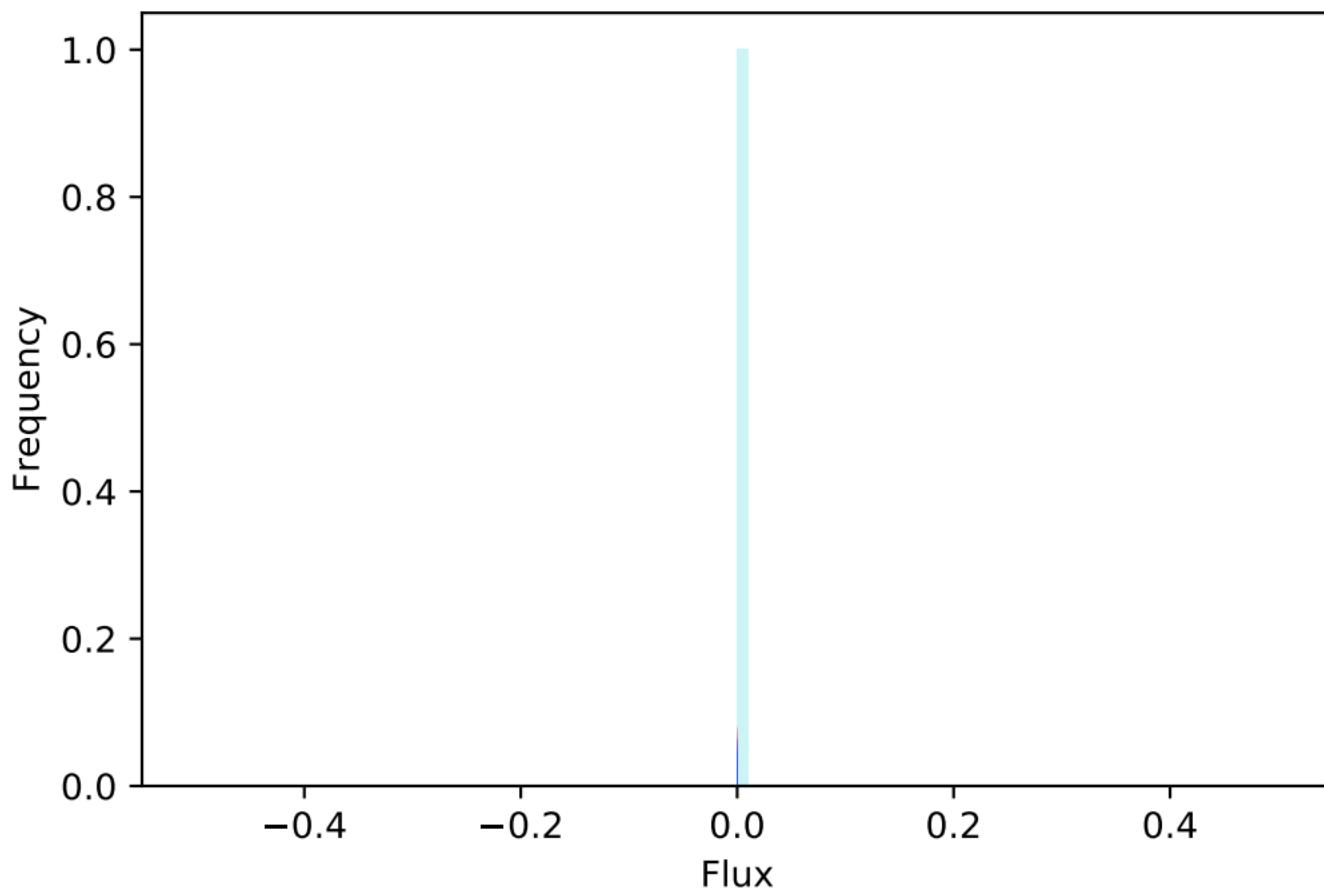
321 : NO₂_c --> NO₂_h
[-]



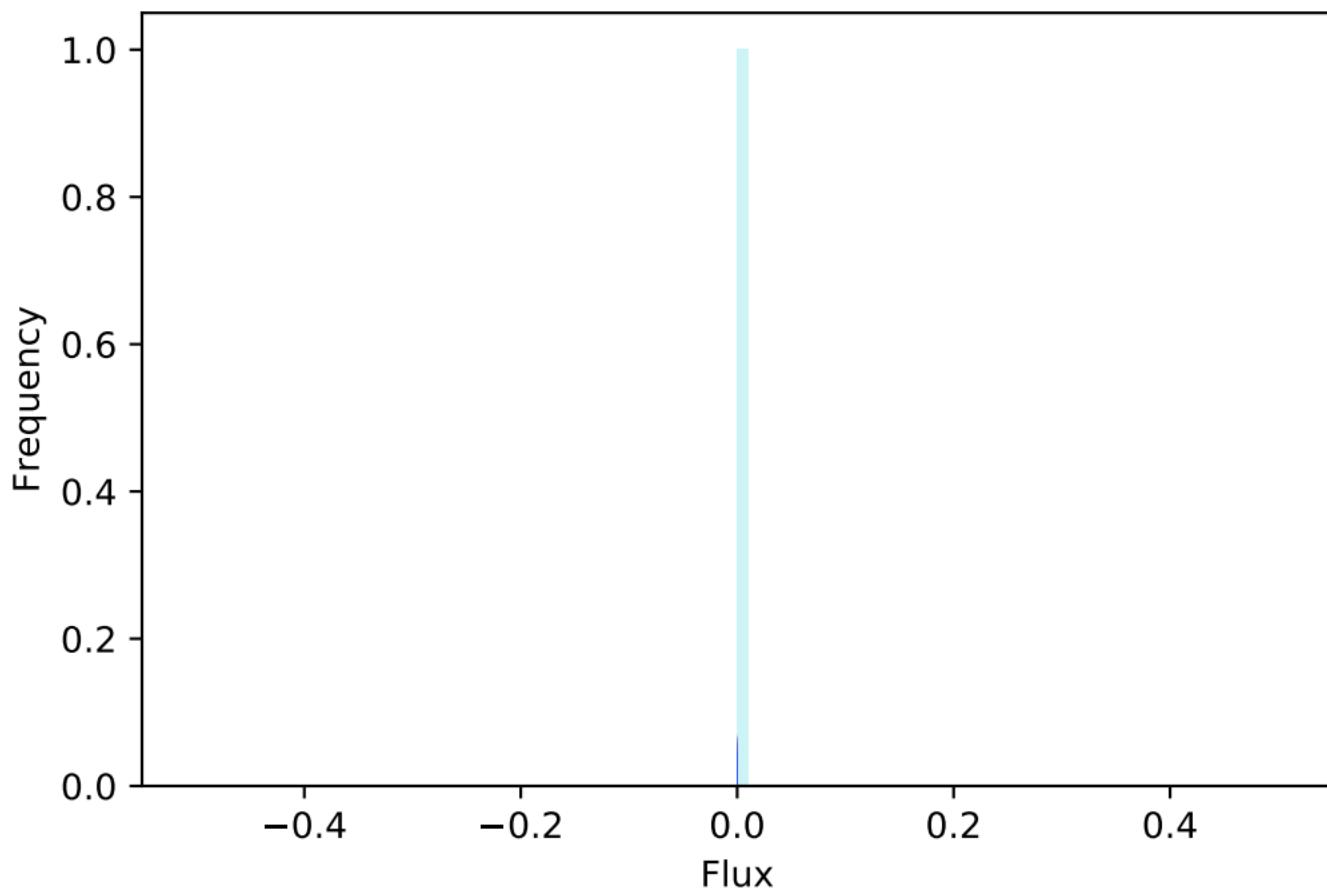




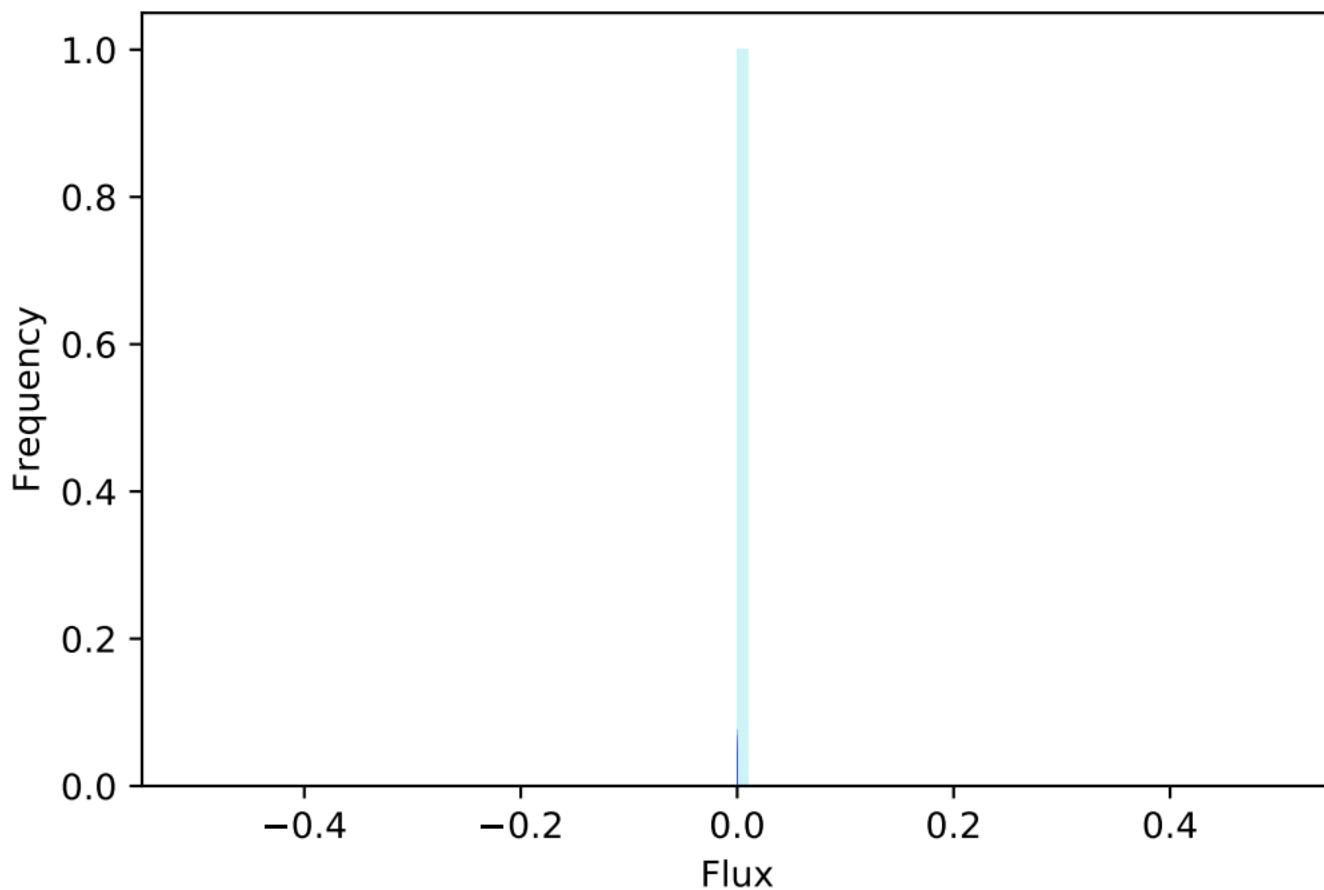
324 : AMP_h --> AMP_c
[-]

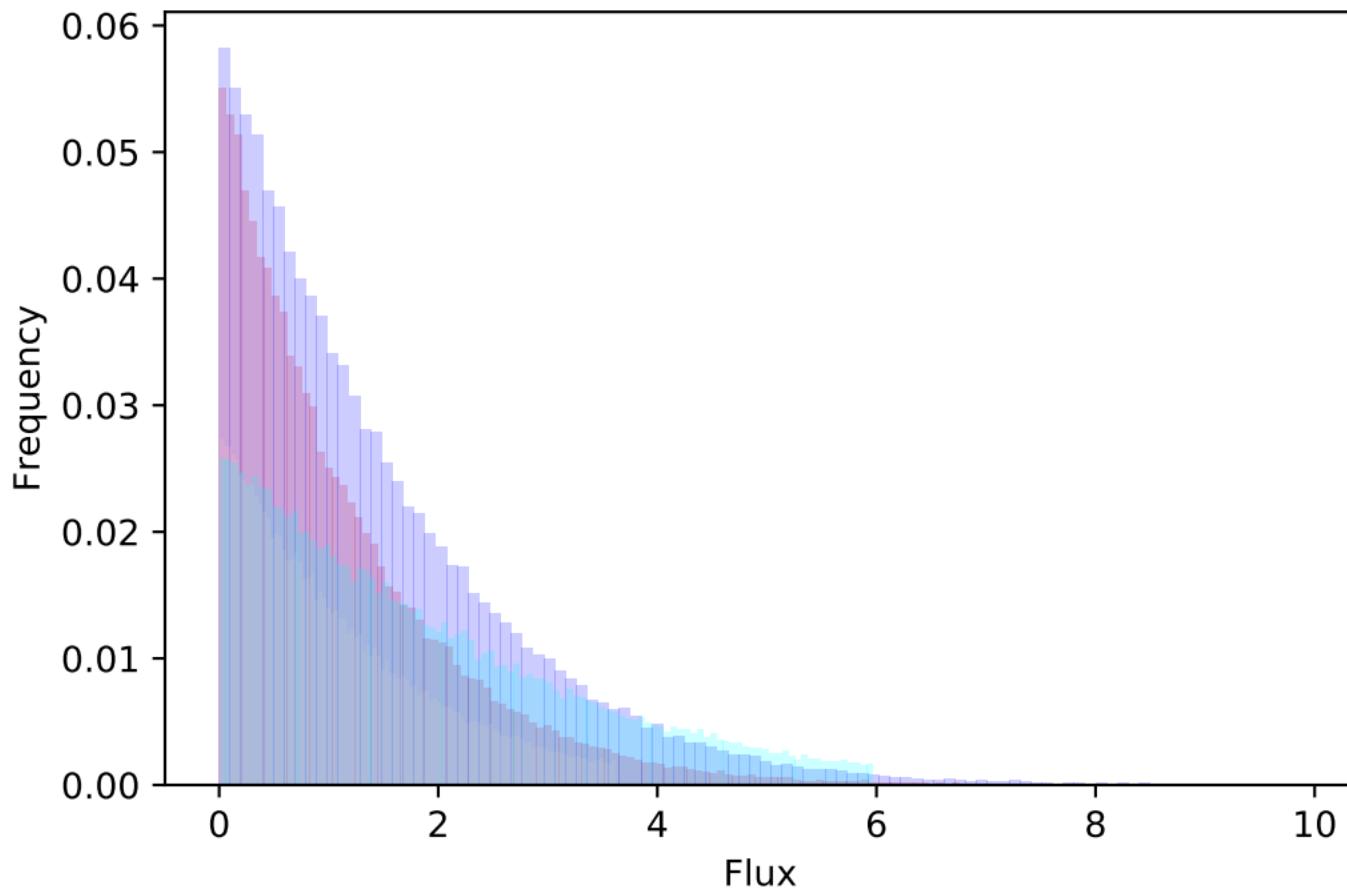
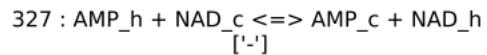


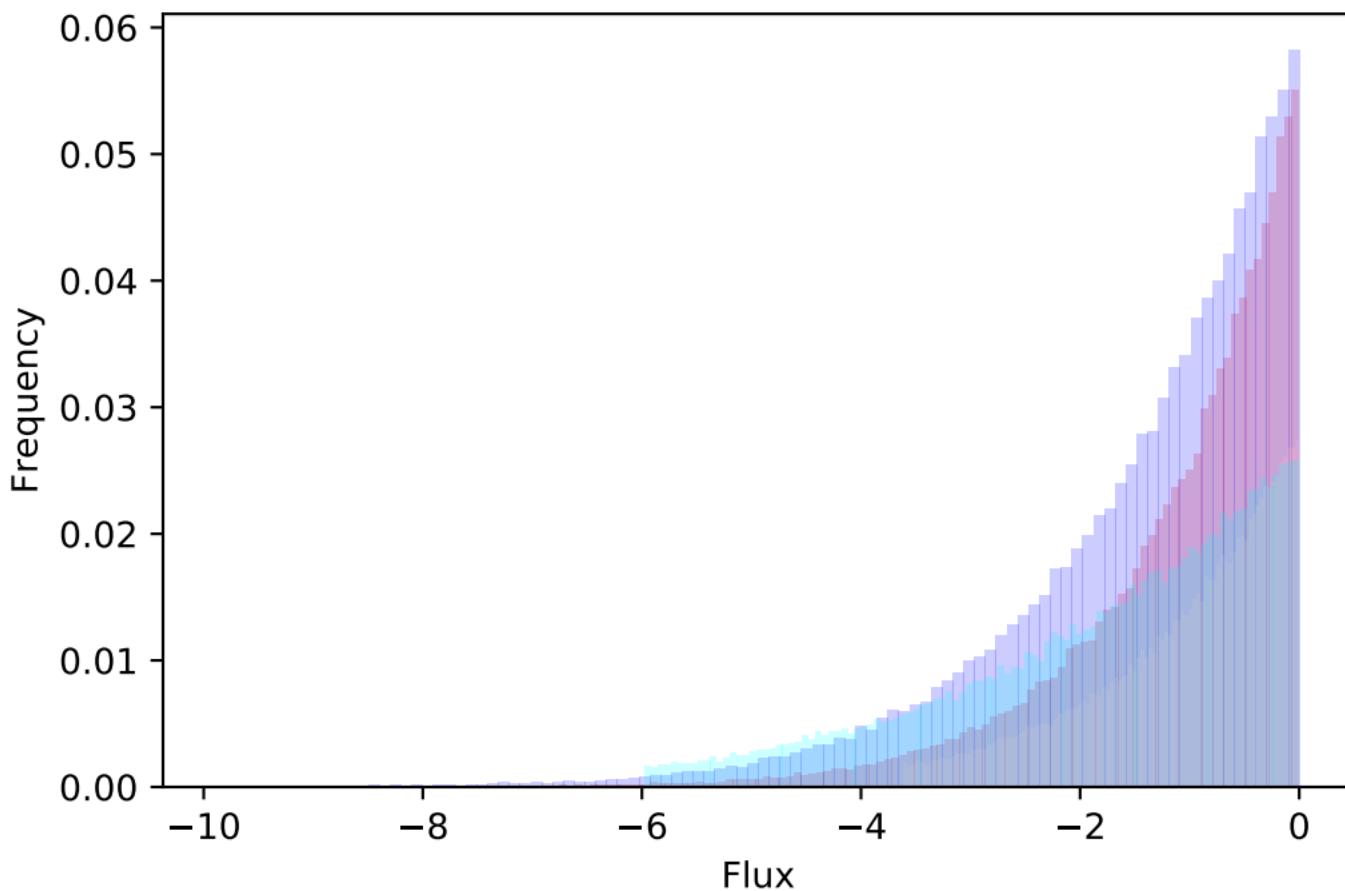
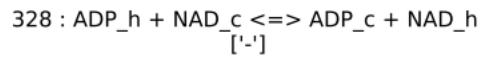
325 : ADP_h --> ADP_c
[-]



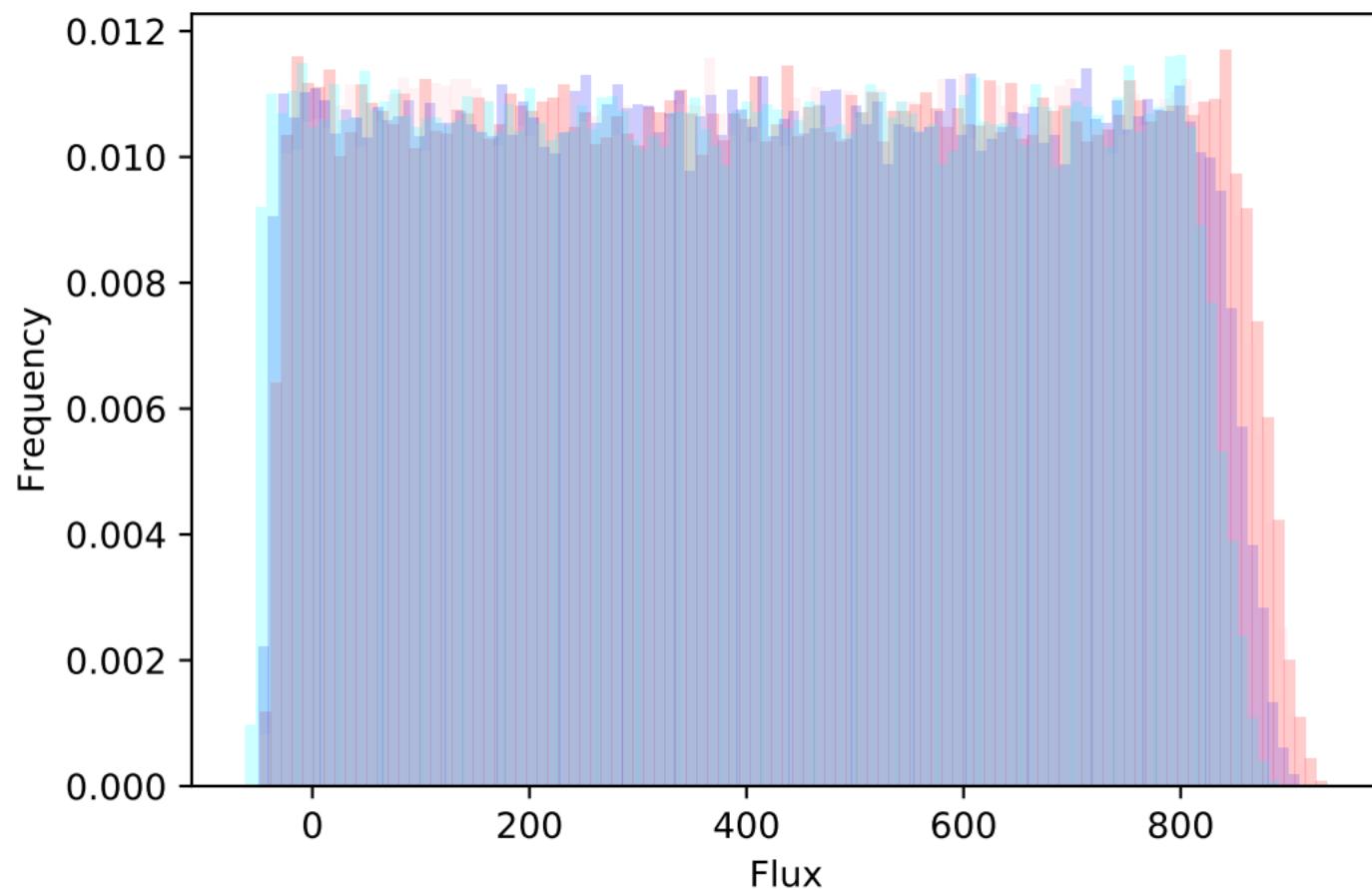
326 : ATP_h --> ATP_c
[-]

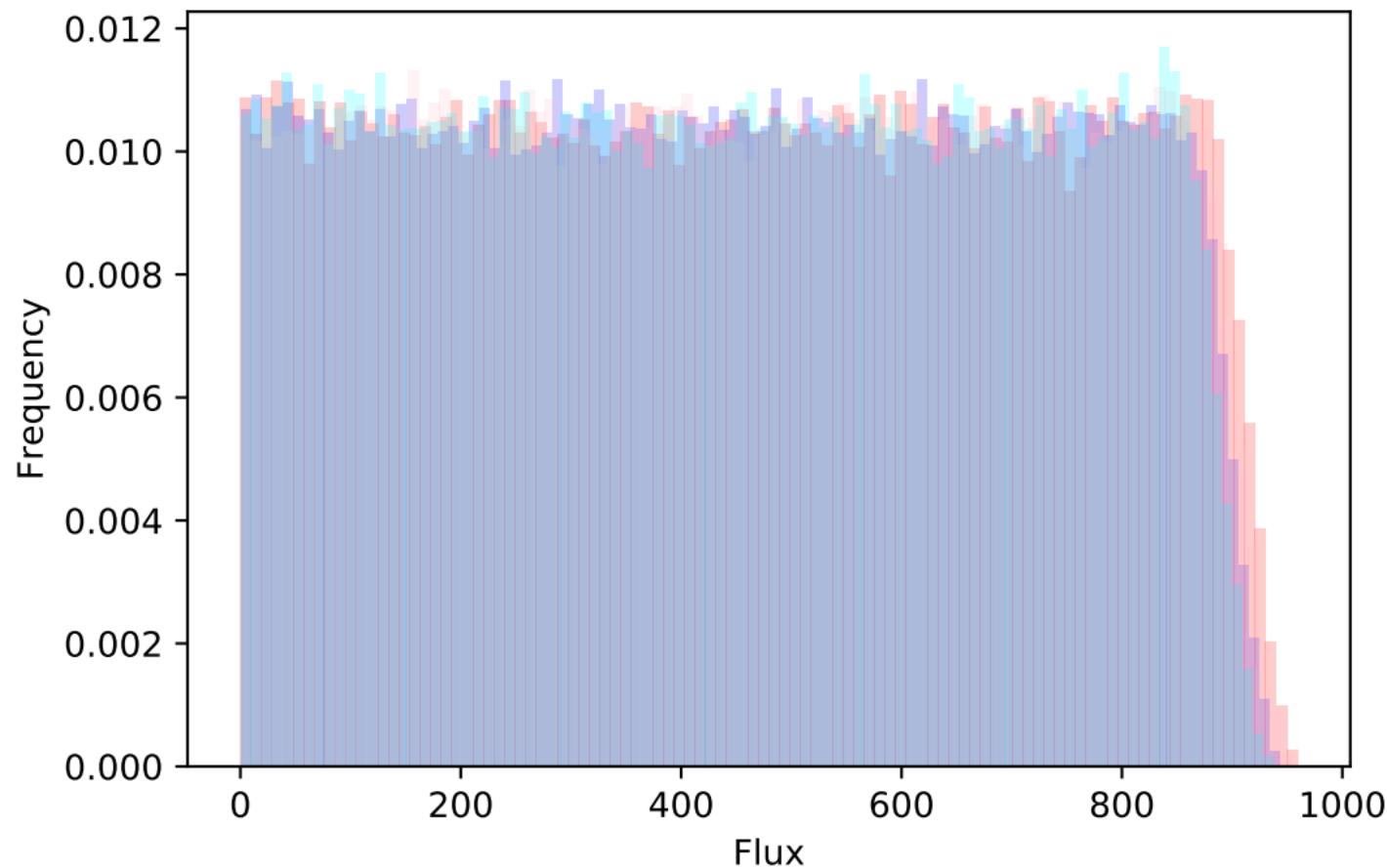
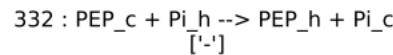




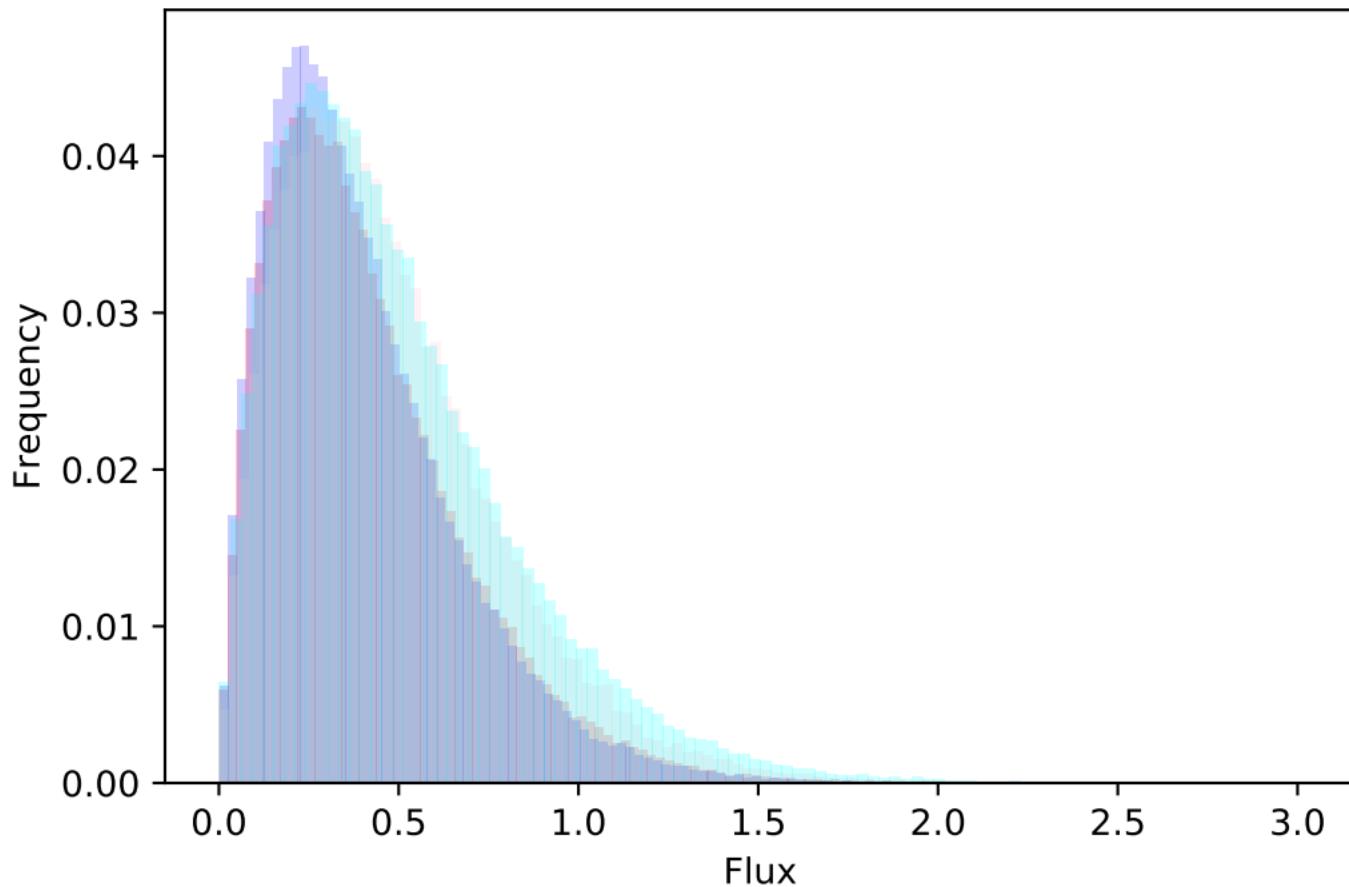


329 : PGA_h + Pi_c <=> PGA_c + Pi_h
['-']

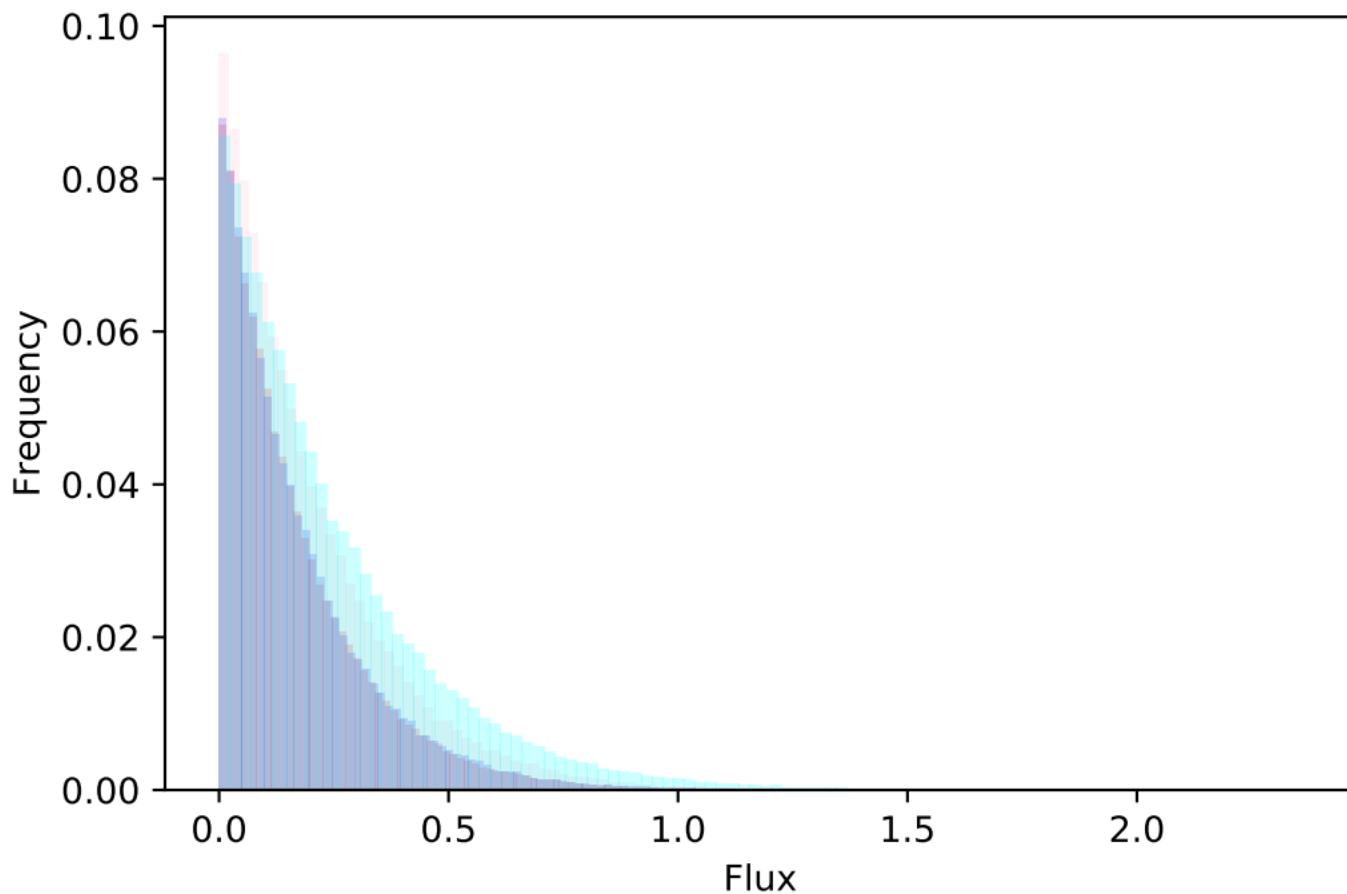


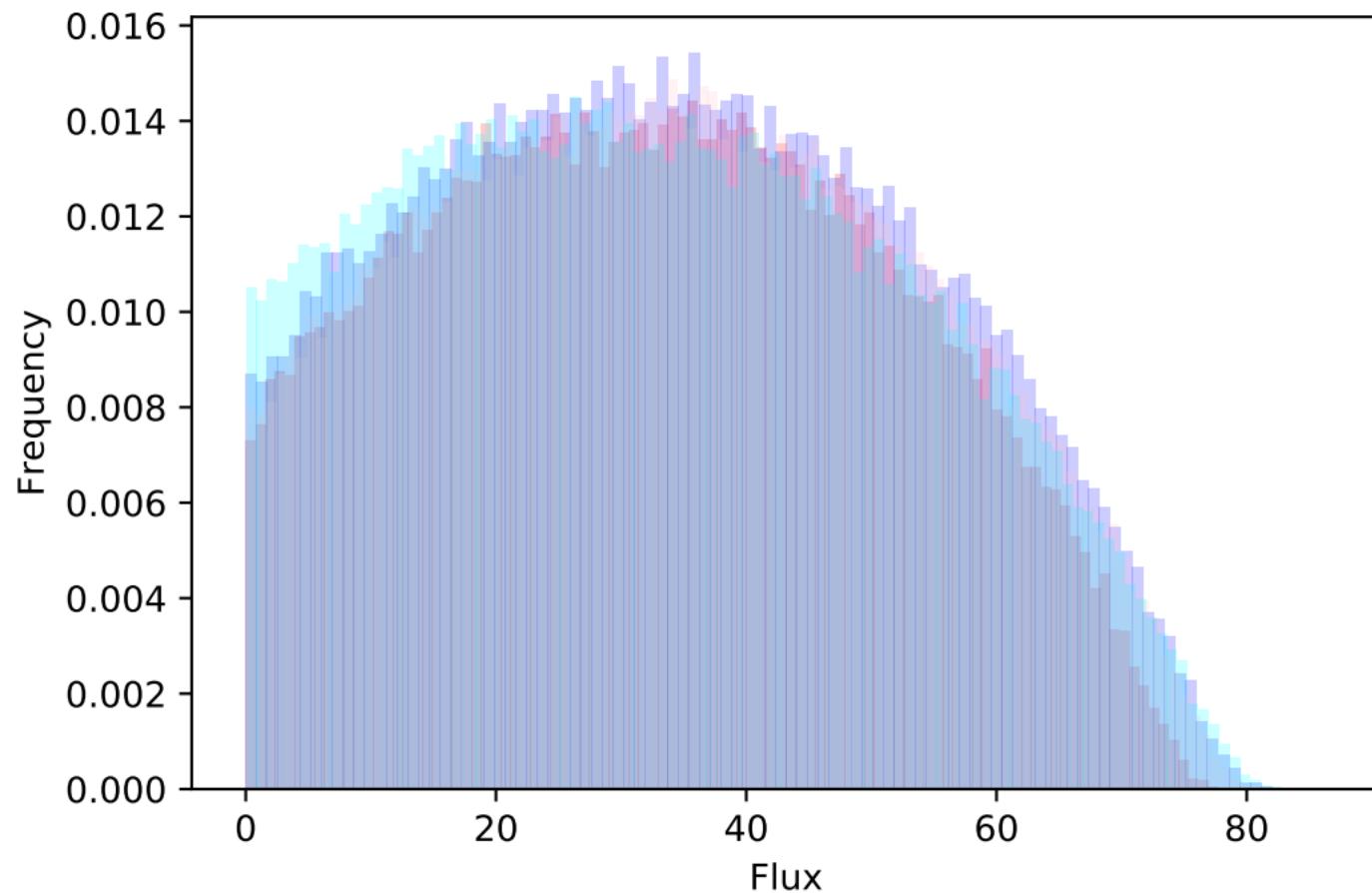
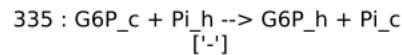


333 : GCA_h --> GCA_c
[-]

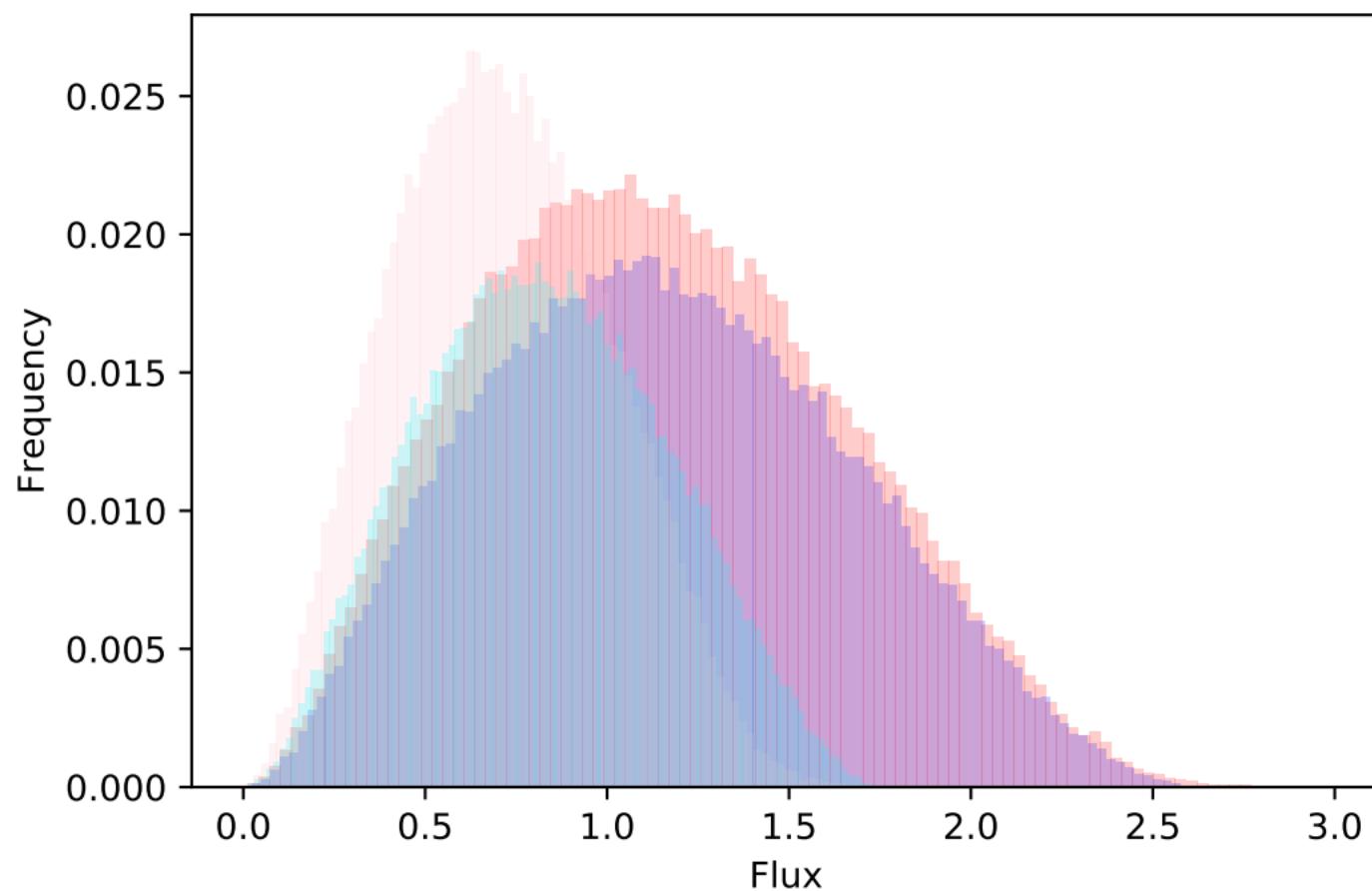


334 : GCEA_c --> GCEA_h
[-]

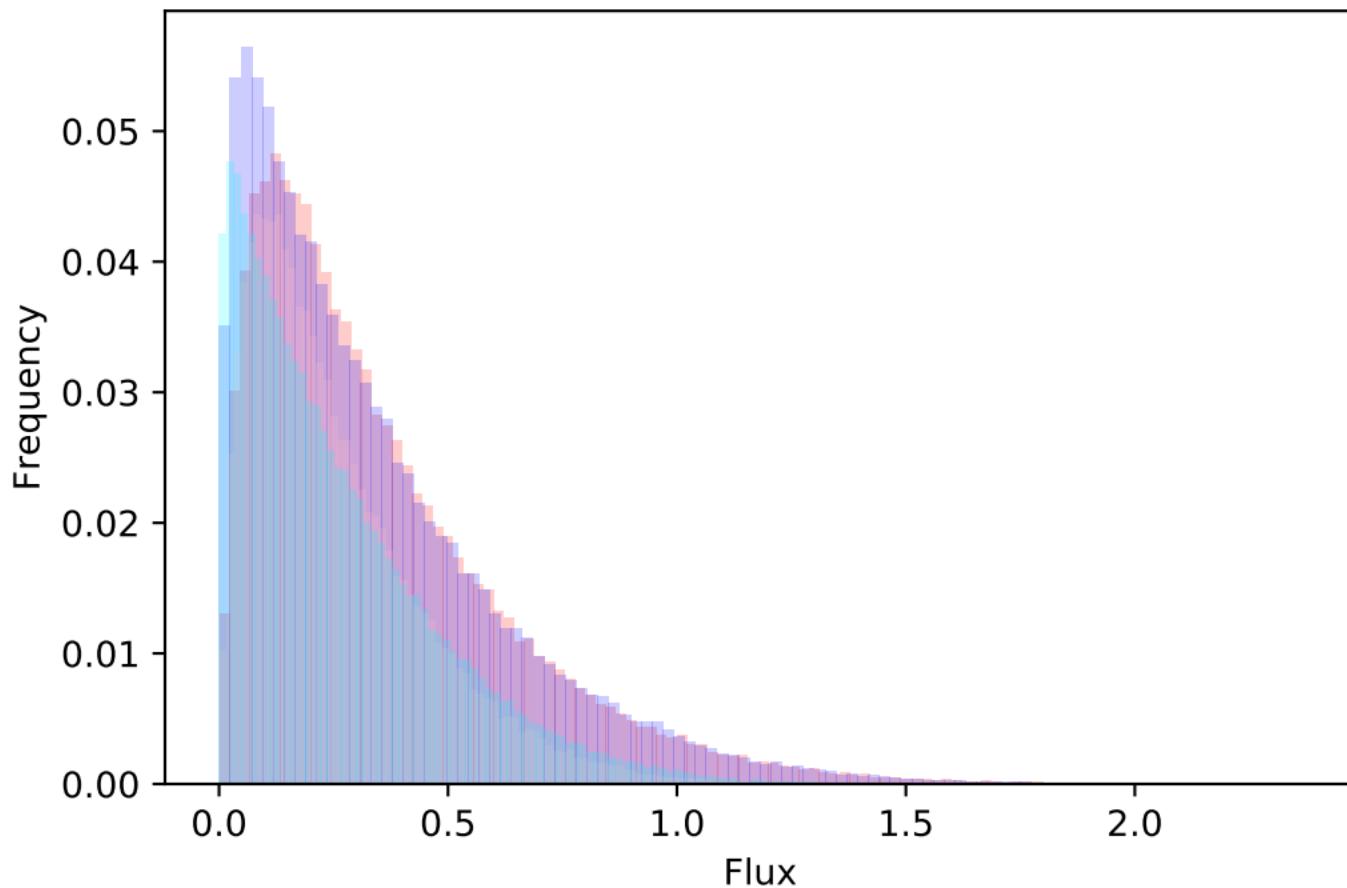




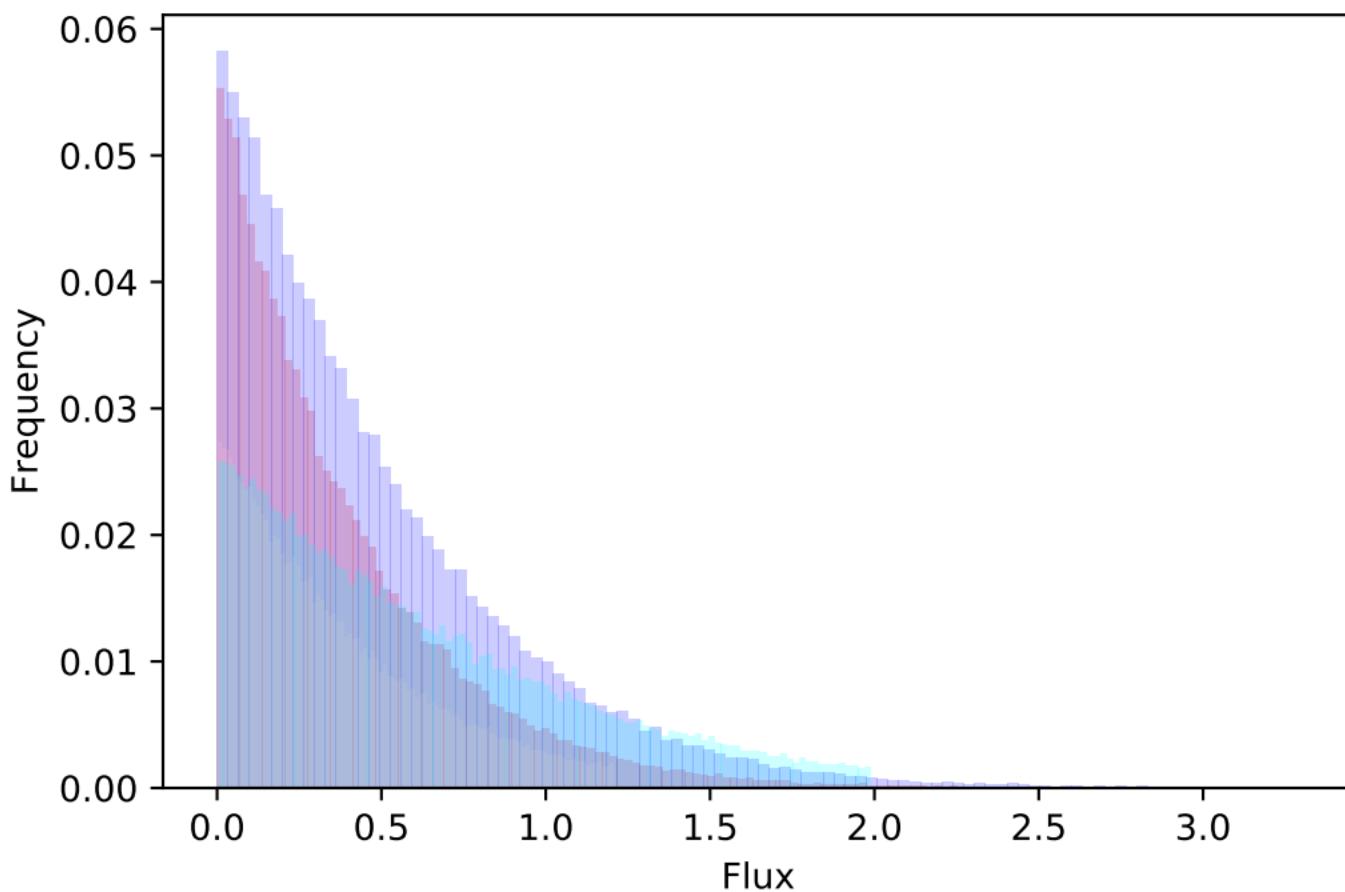
336 : Glc_h --> Glc_c
[-]



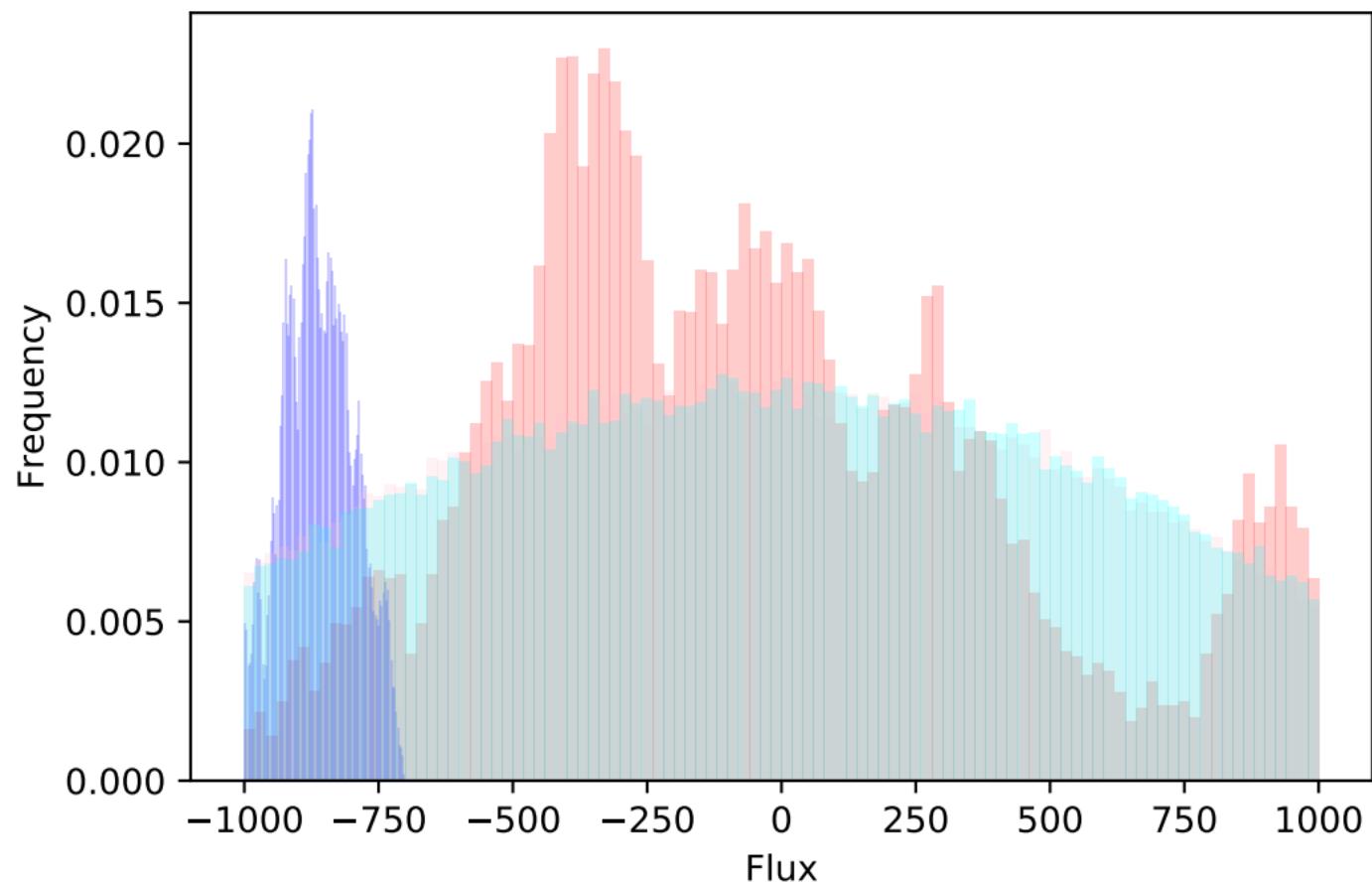
337 : $\text{Mas_h} \rightarrow \text{Mas_c}$
[-]



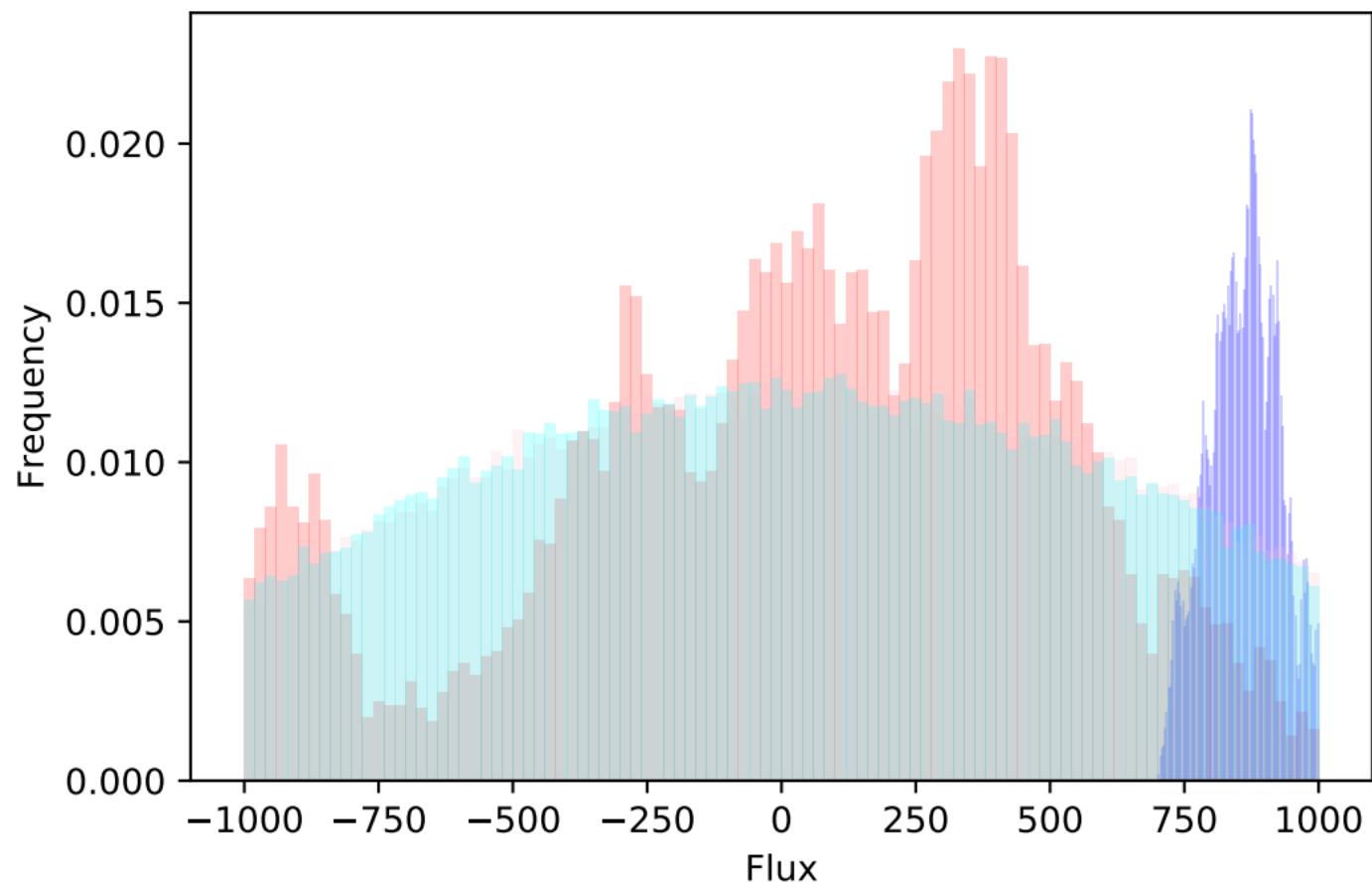
338 : Rib_c --> Rib_h
[-]

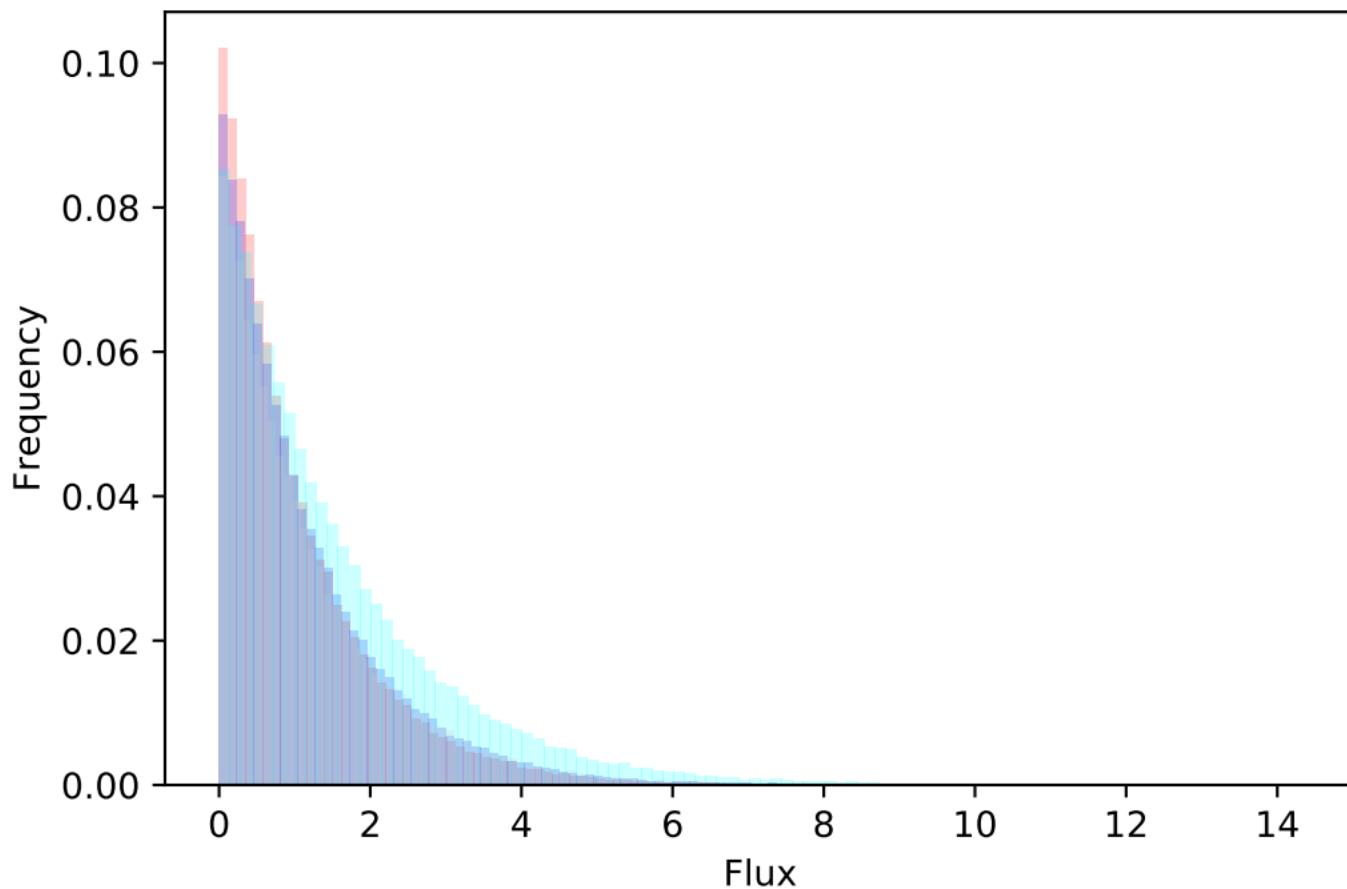
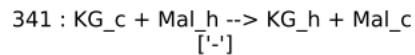


339 : $\text{Mal}_c + \text{Pi}_m \rightleftharpoons \text{Mal}_m + \text{Pi}_c$
[-]

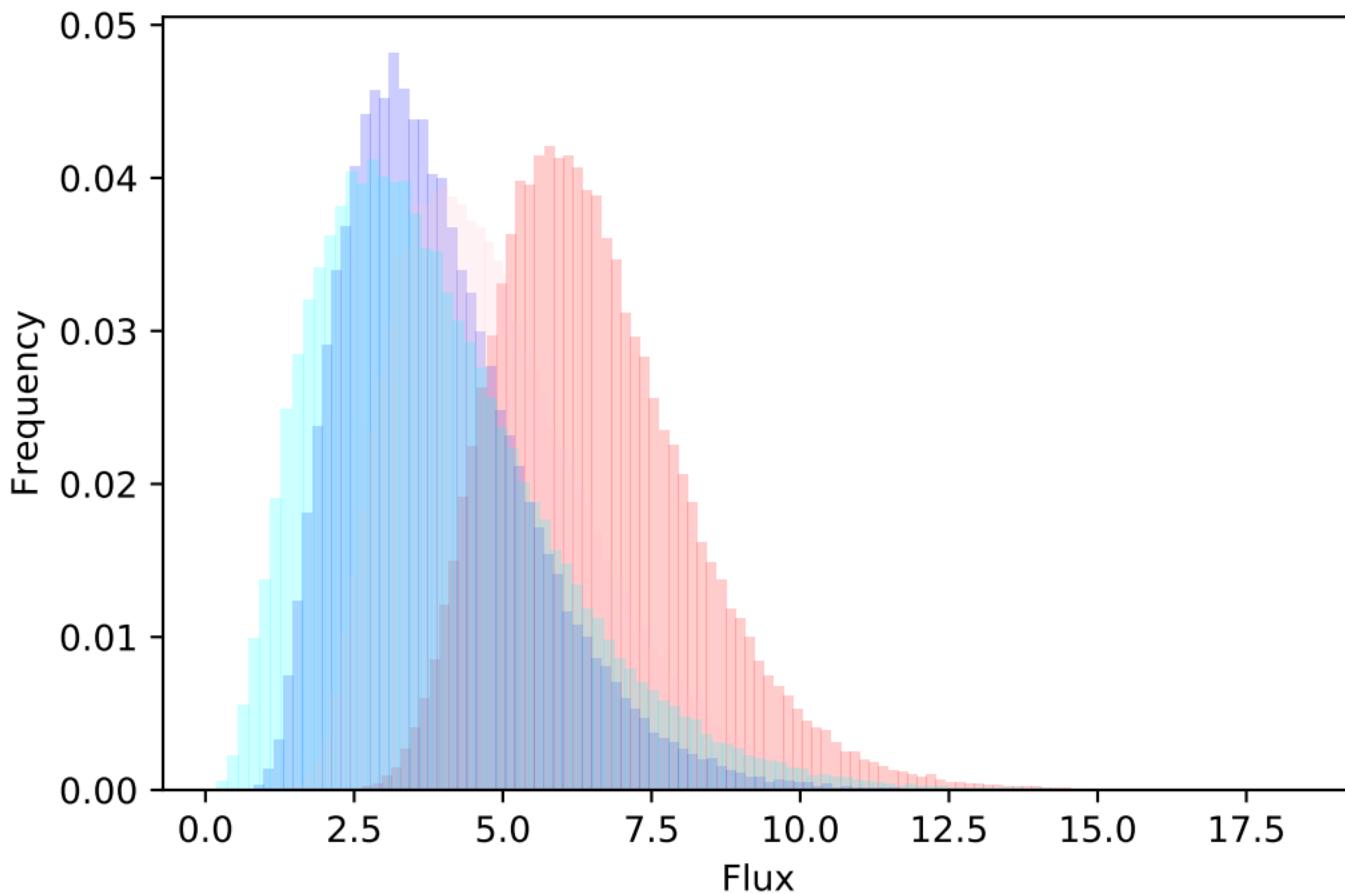


340 : $\text{Pi}_m + \text{SCA}_c \rightleftharpoons \text{Pi}_c + \text{SCA}_m$
[$^-$]

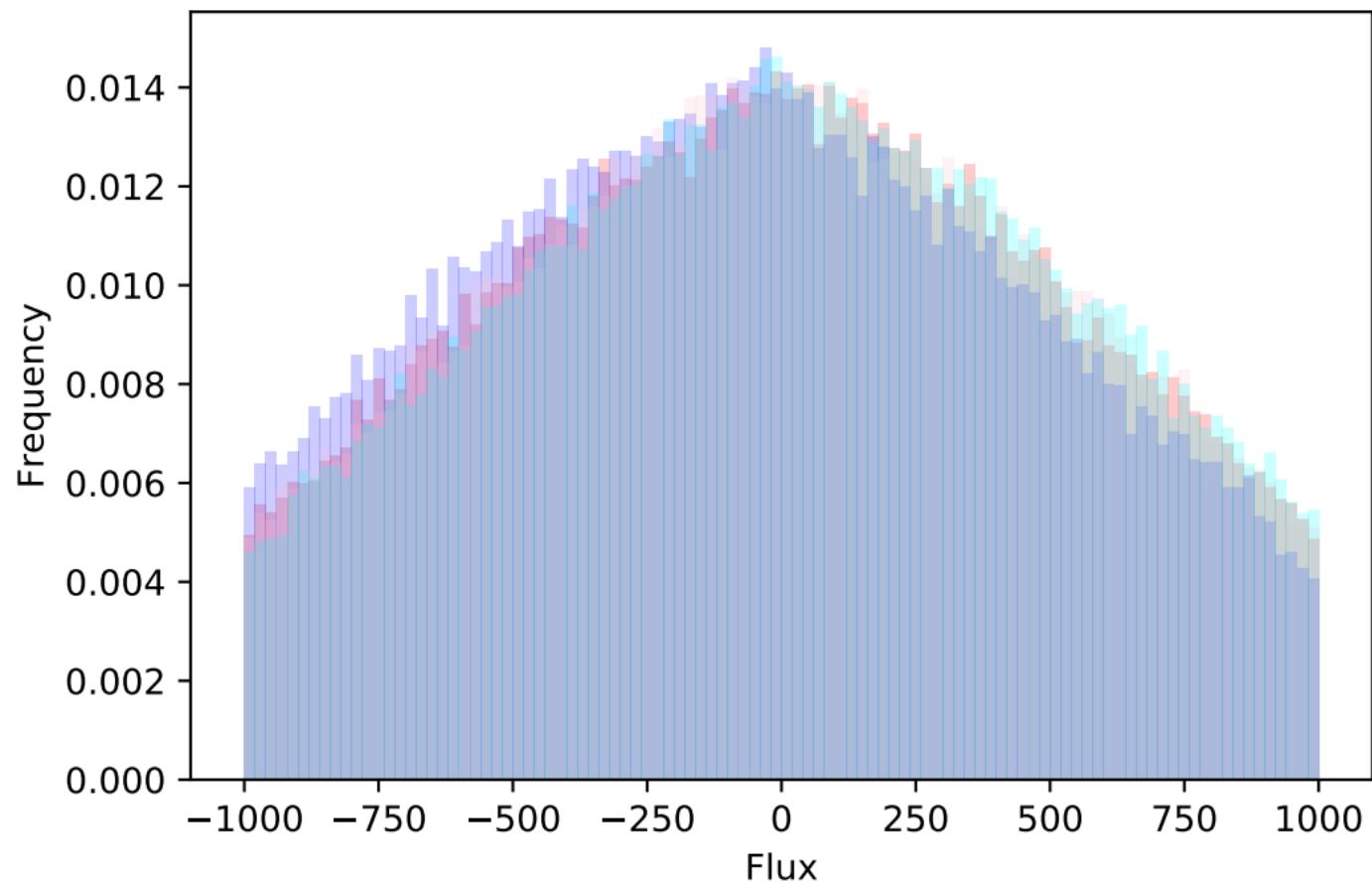




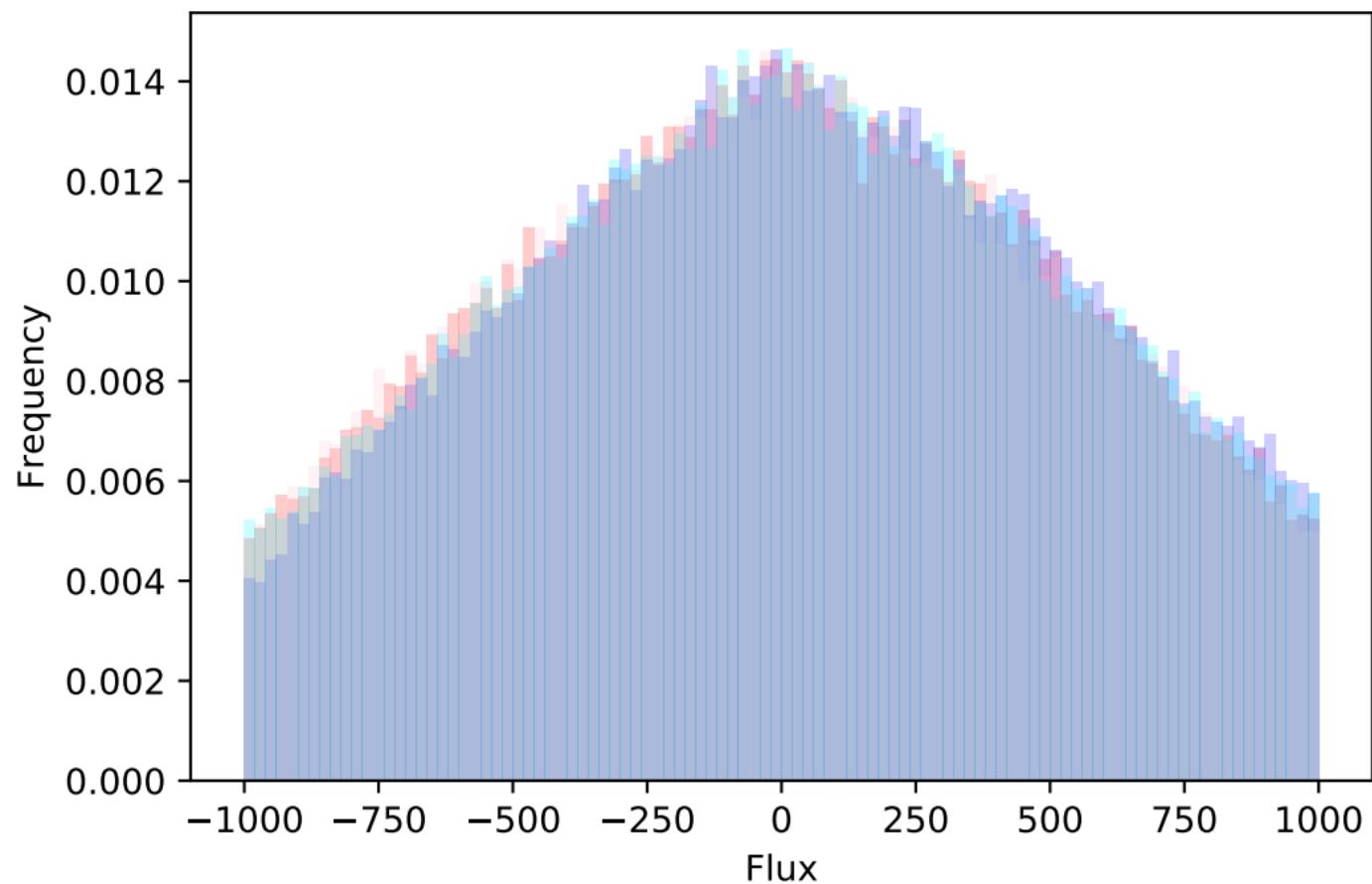
342 : $\text{Glu_h} + \text{Mal_c} \rightarrow \text{Glu_c} + \text{Mal_h}$
[${}^{\circ}$]



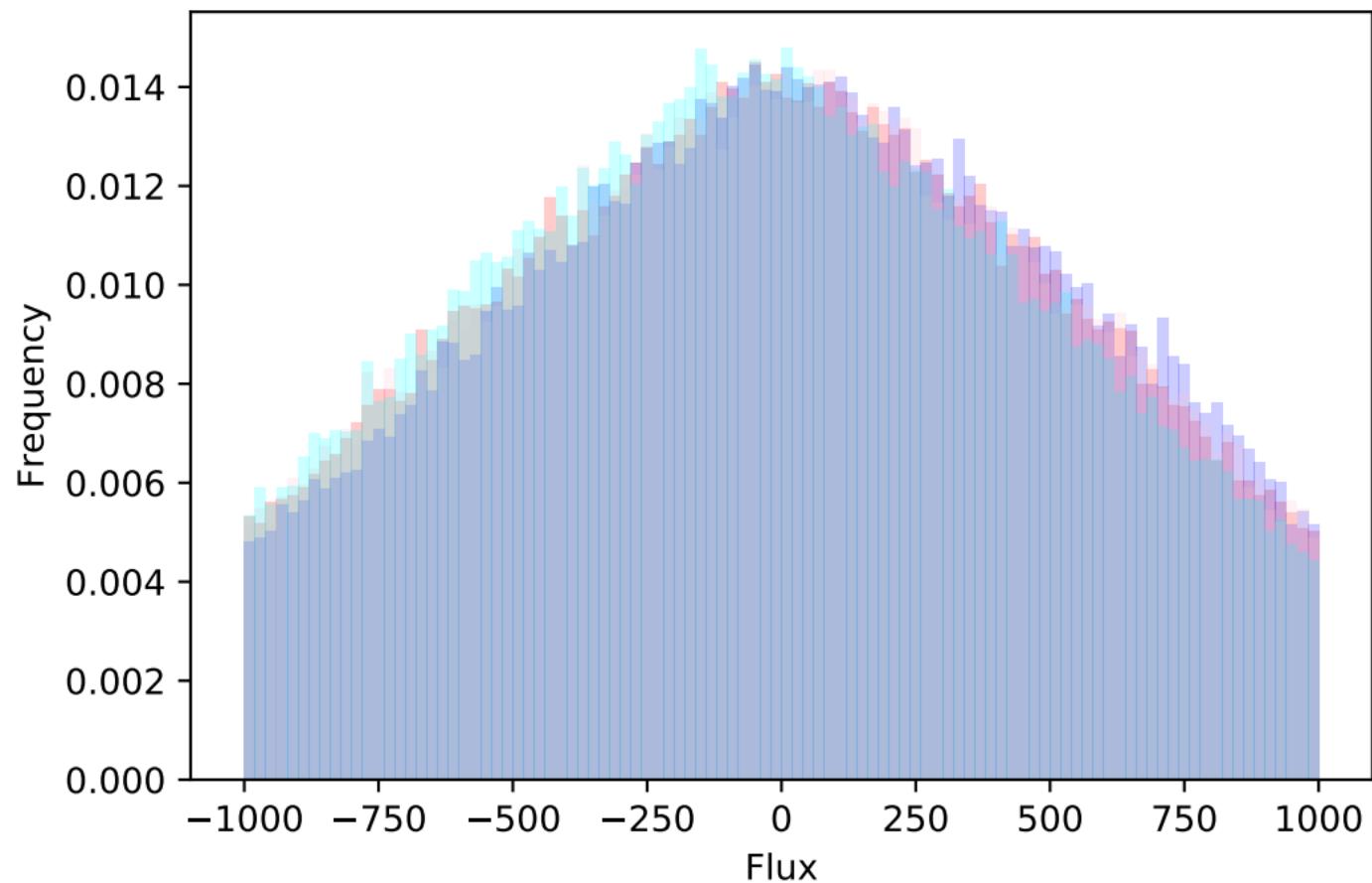
343 : Cit_m + KG_c <=> Cit_c + KG_m
['-']



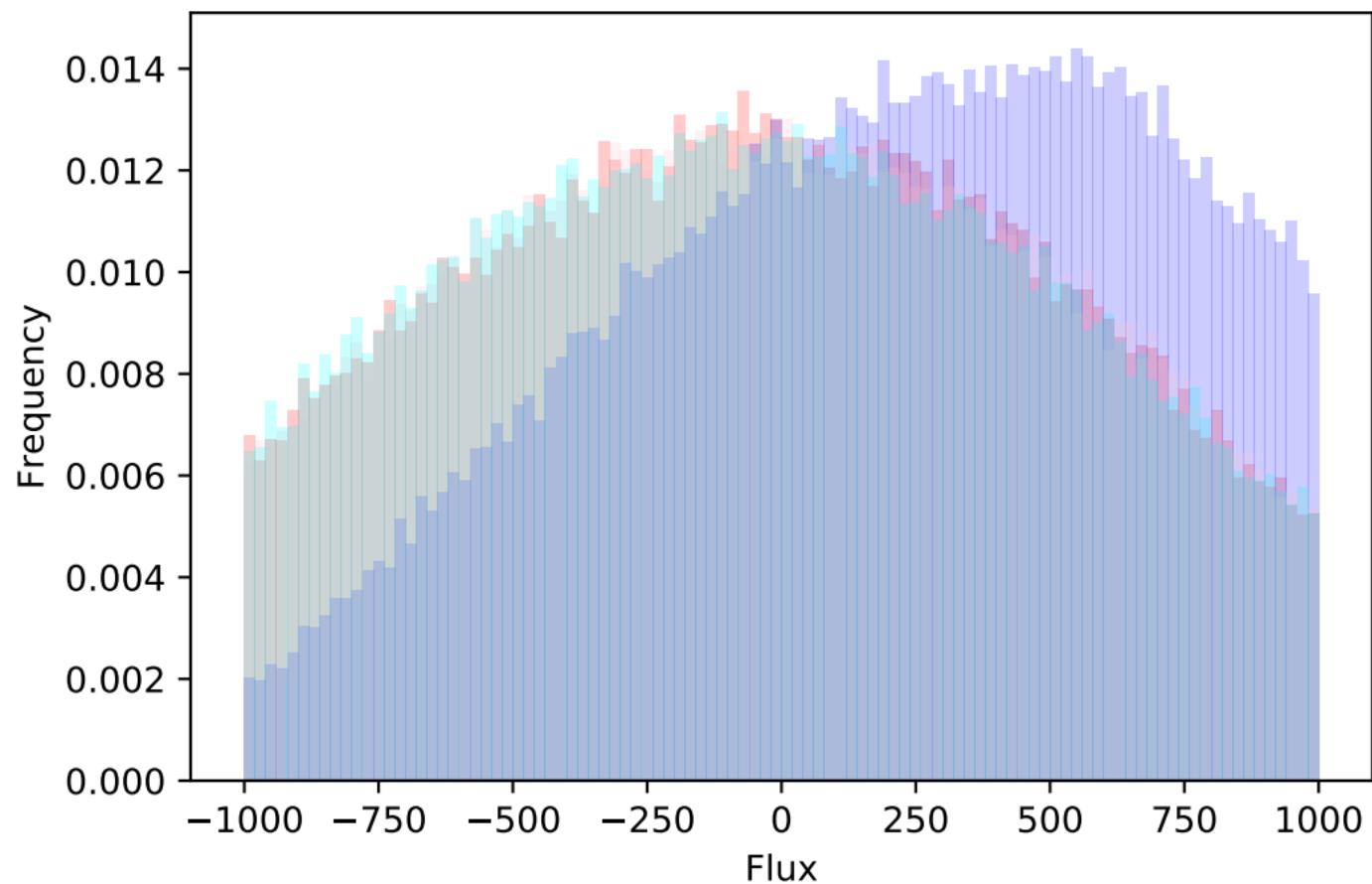
344 : KG_c + iCit_m <=> KG_m + iCit_c
['-']



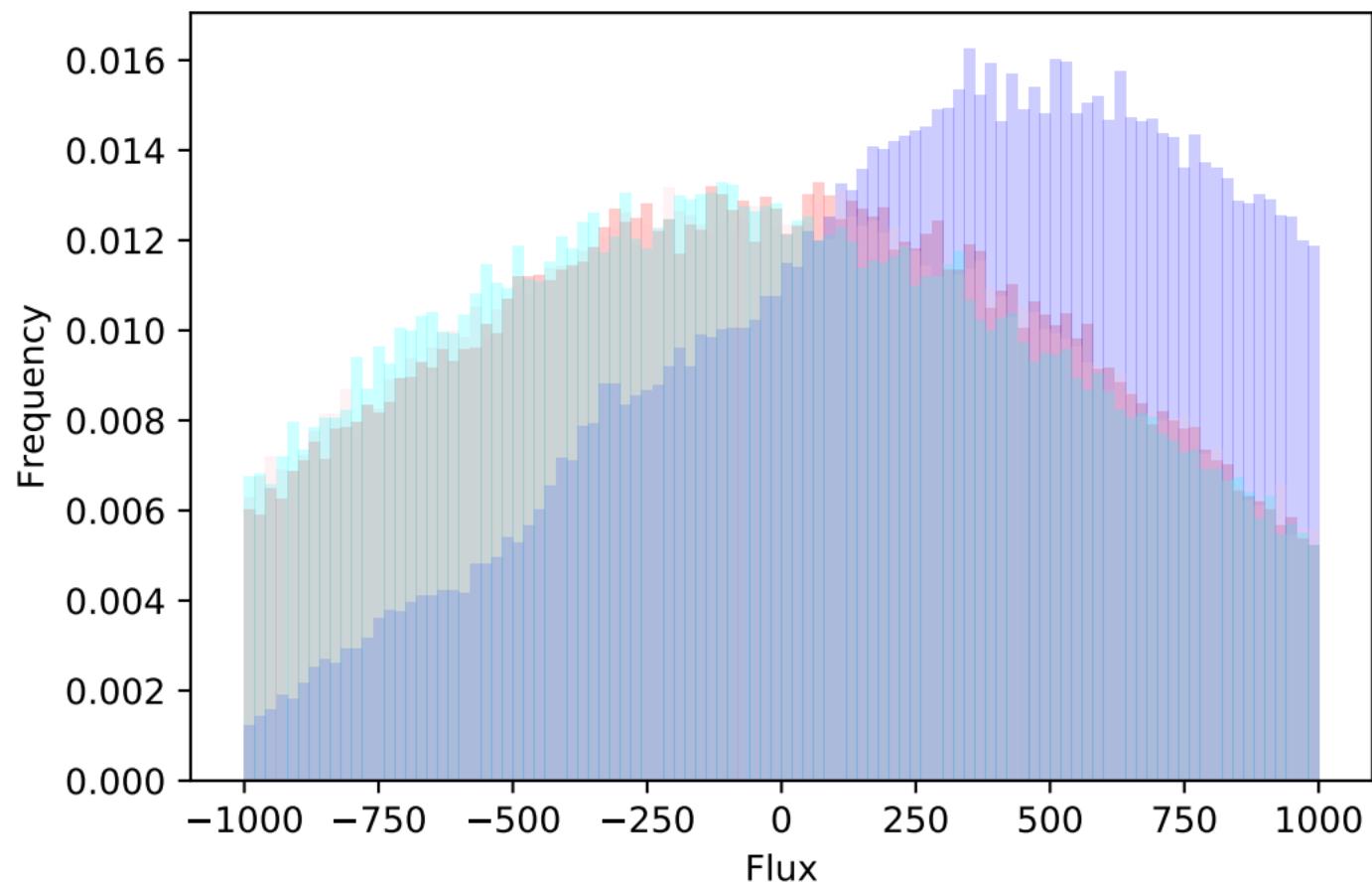
345 : KG_c + cACN_m <=> KG_m + cACN_c
[!-!]



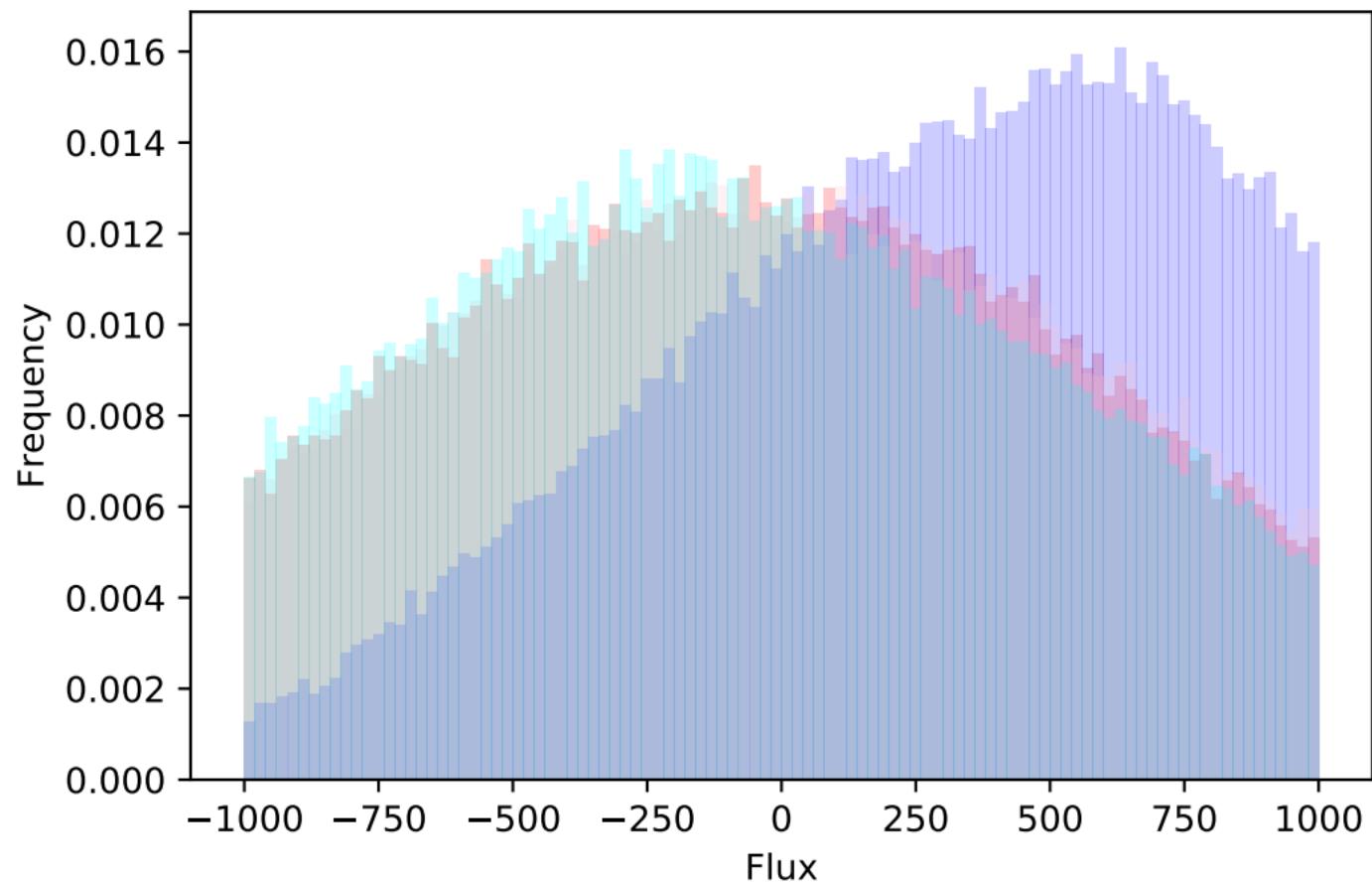
346 : Cit_m + Mal_c <=> Cit_c + Mal_m
['-']



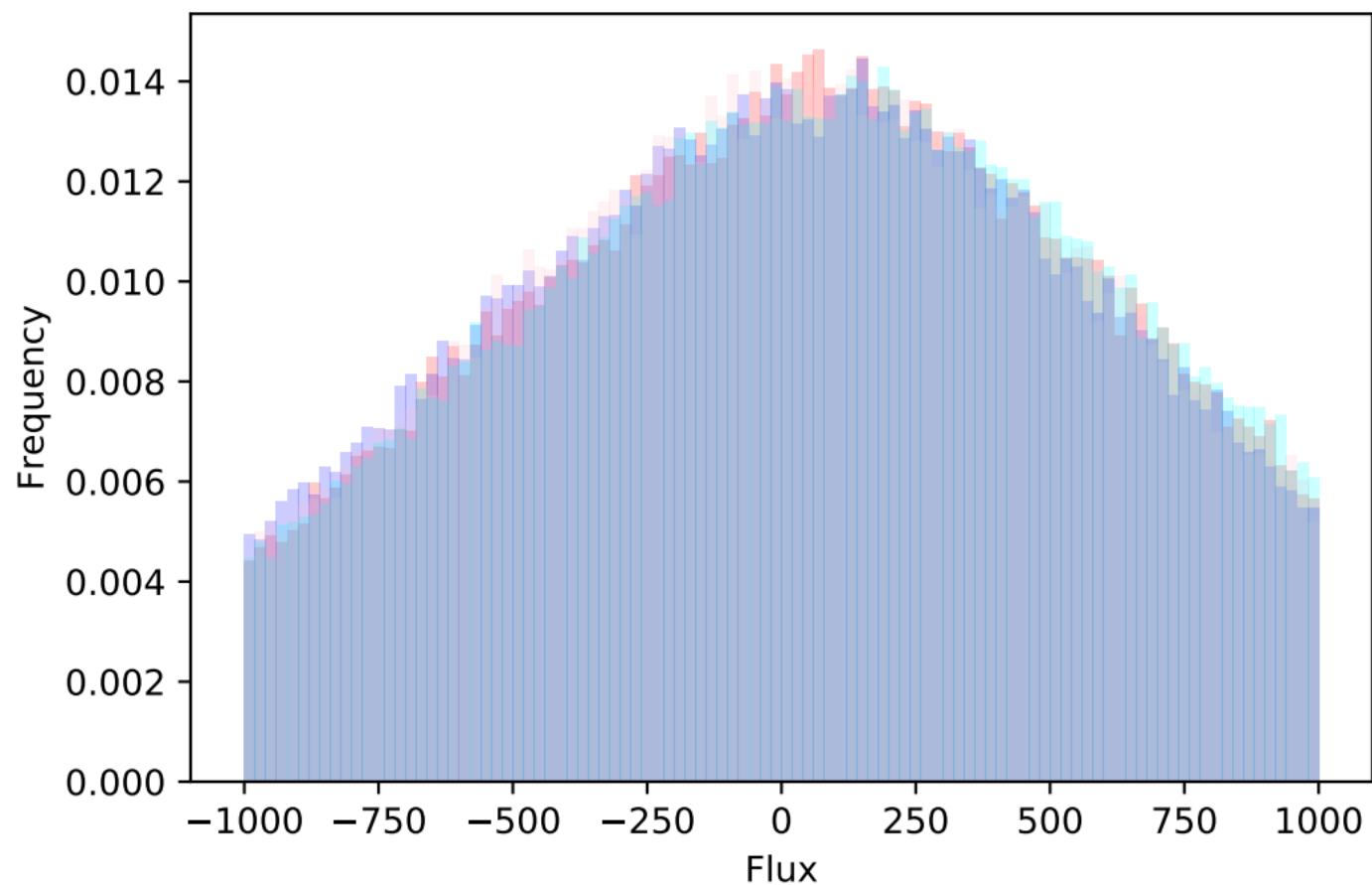
347 : Mal_c + iCit_m <=> Mal_m + iCit_c
[${}^{\circ}$]



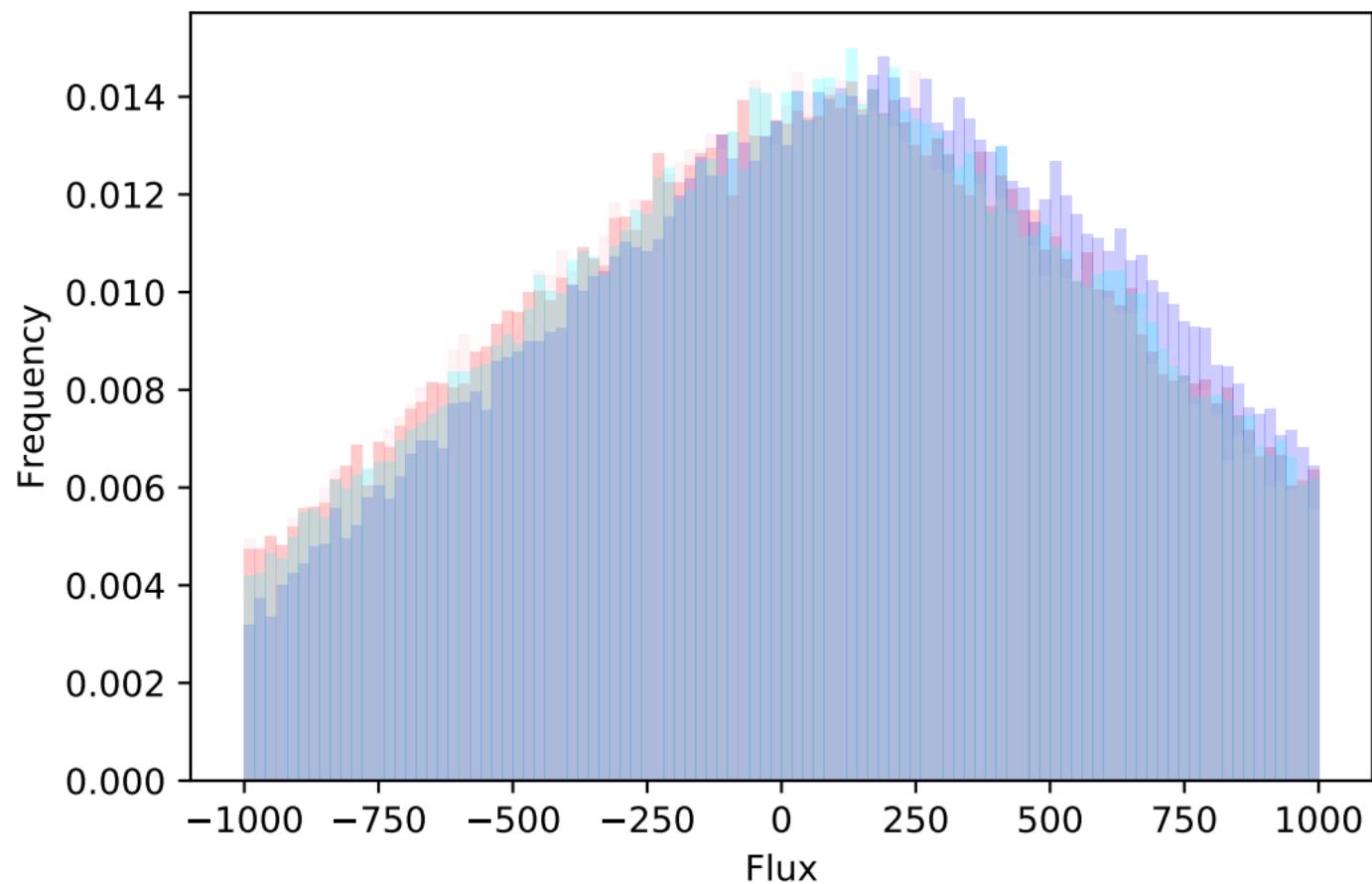
348 : Mal_c + cACN_m <=> Mal_m + cACN_c
['-']



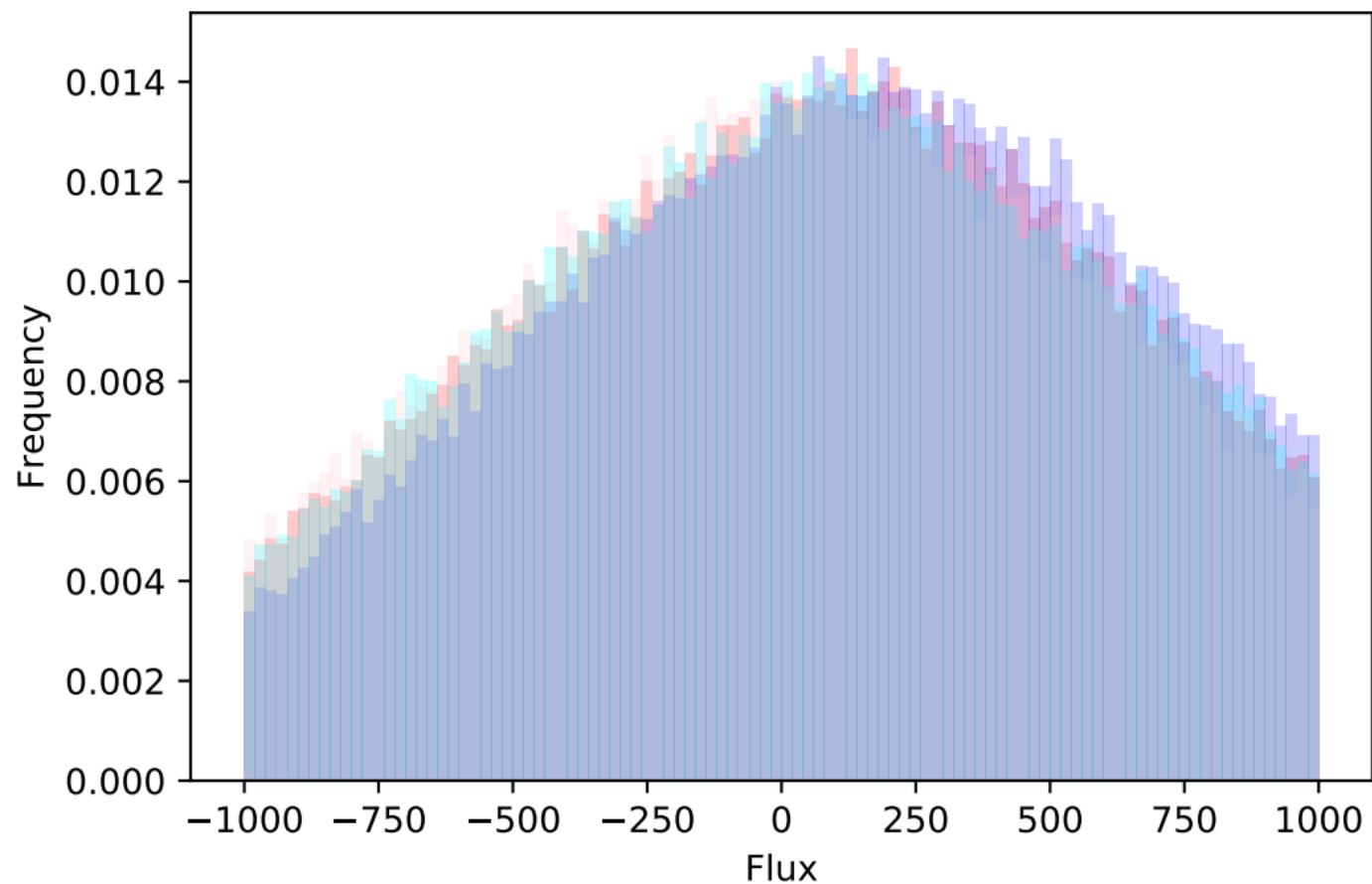
349 : Cit_m + OAA_c <=> Cit_c + OAA_m
['-']



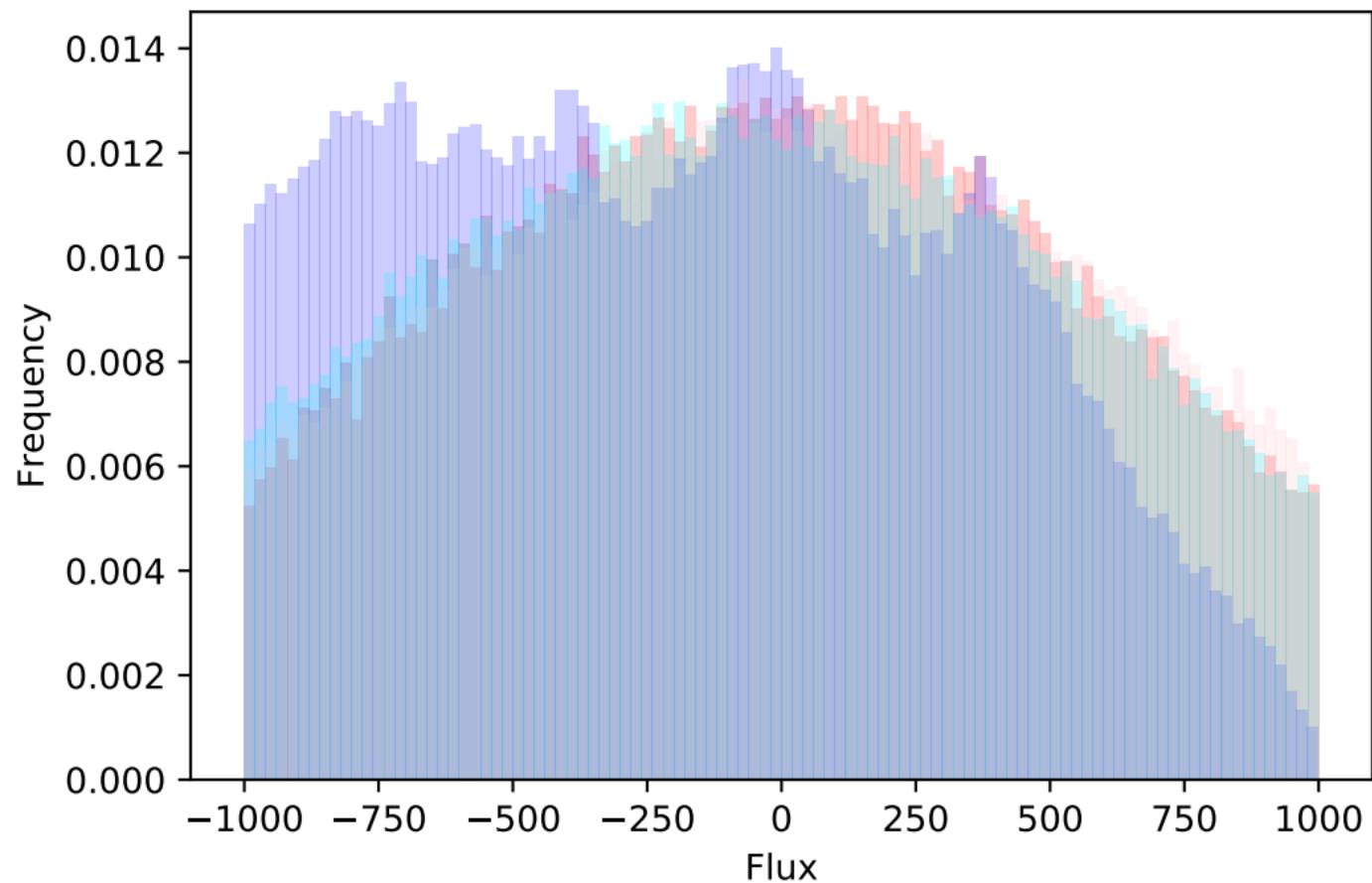
350 : OAA_c + iCit_m <=> OAA_m + iCit_c
['-']



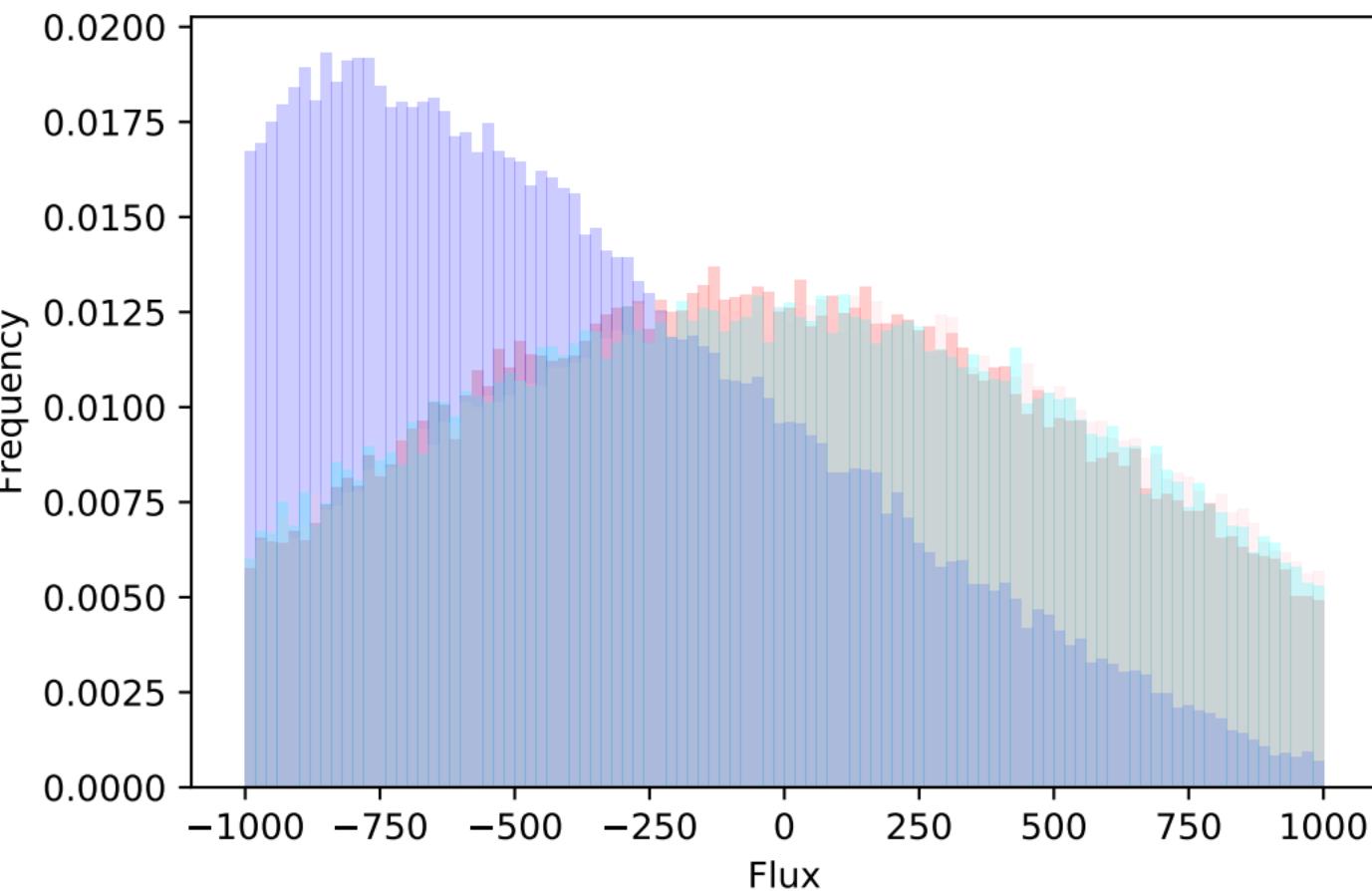
351 : OAA_c + cACN_m <=> OAA_m + cACN_c
[!-!]



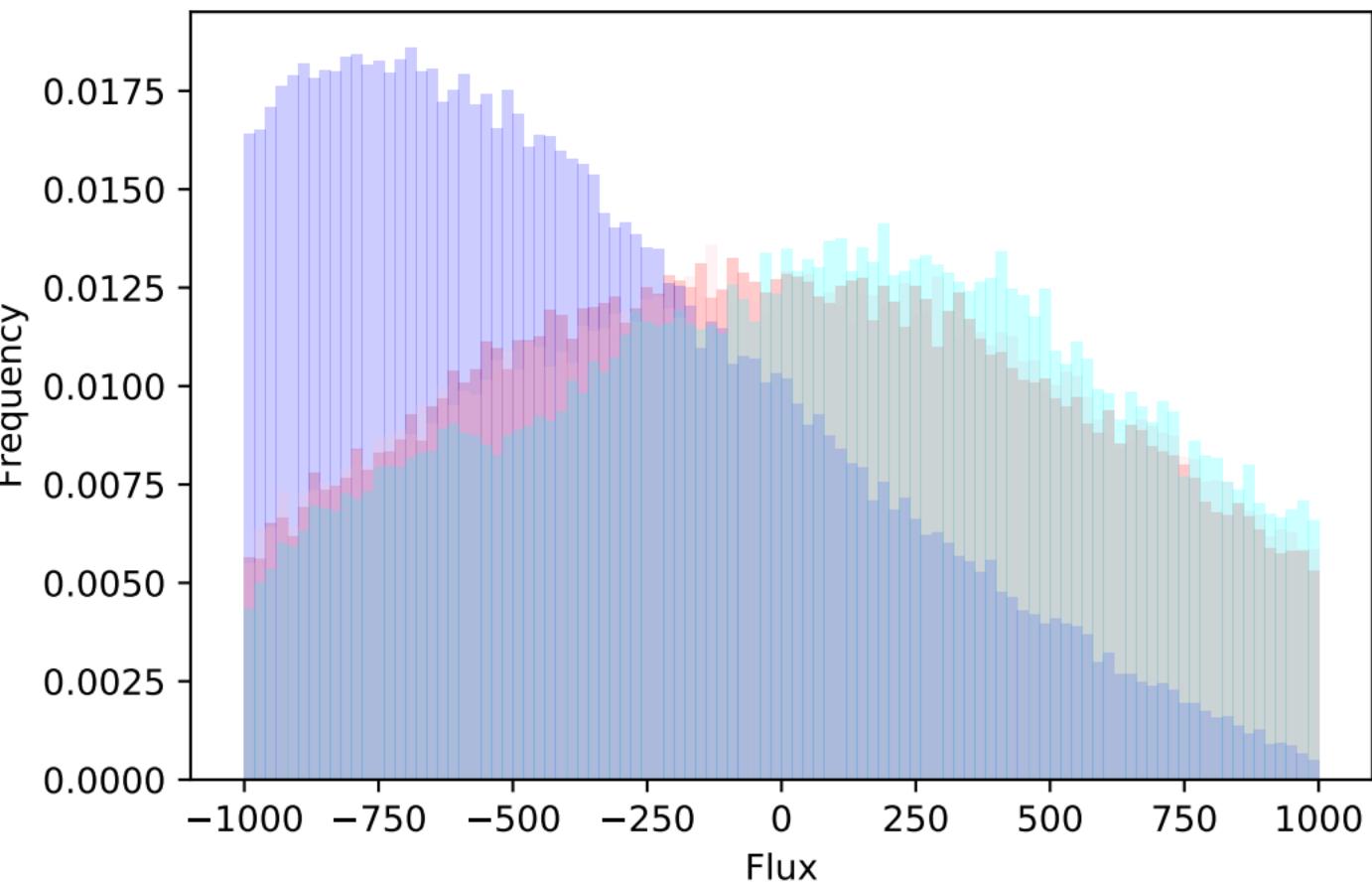
352 : Cit_m + SCA_c <=> Cit_c + SCA_m
[${}^{\circ}$]



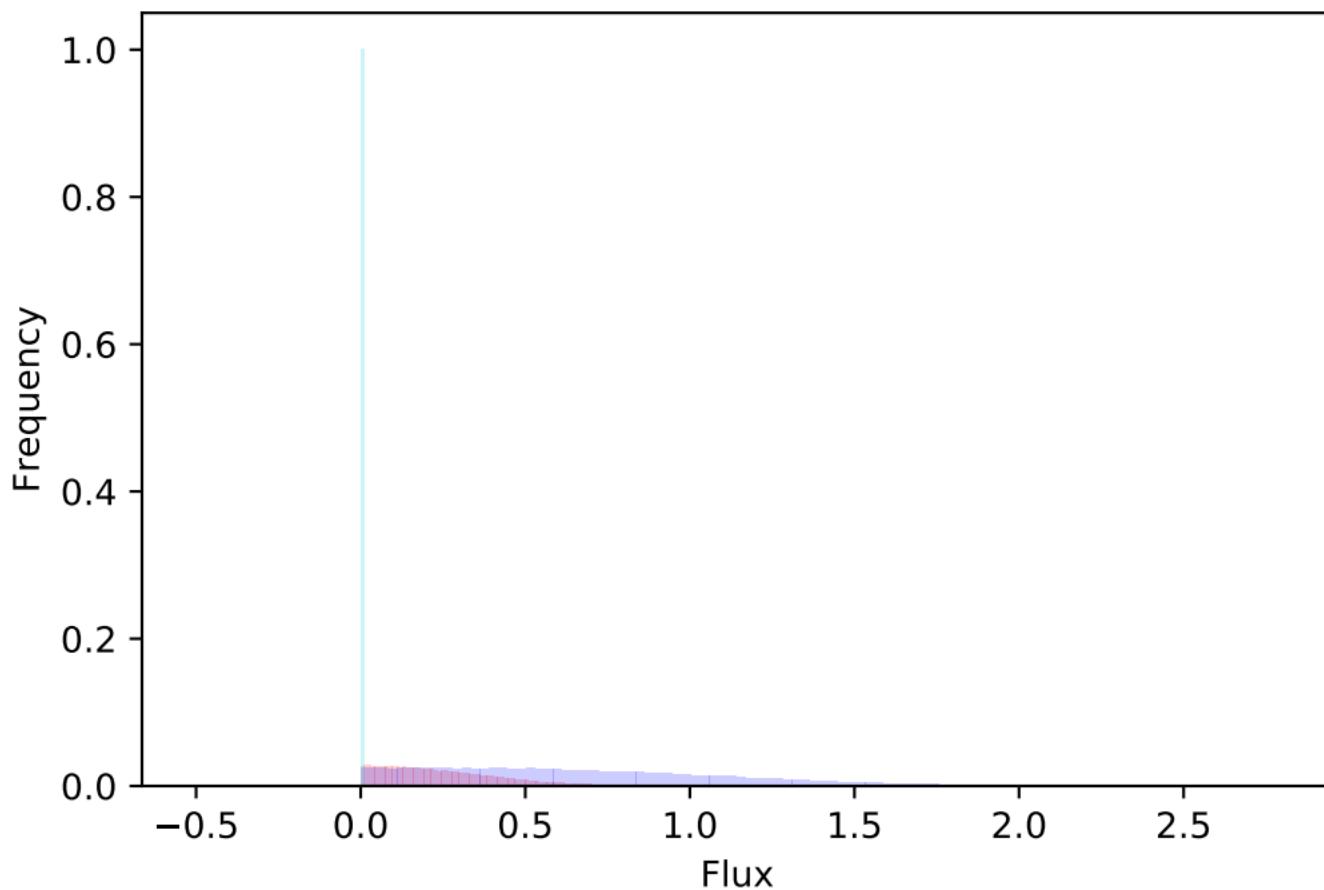
353 : SCA_c + iCit_m <=> SCA_m + iCit_c
[${}^{\circ}$]



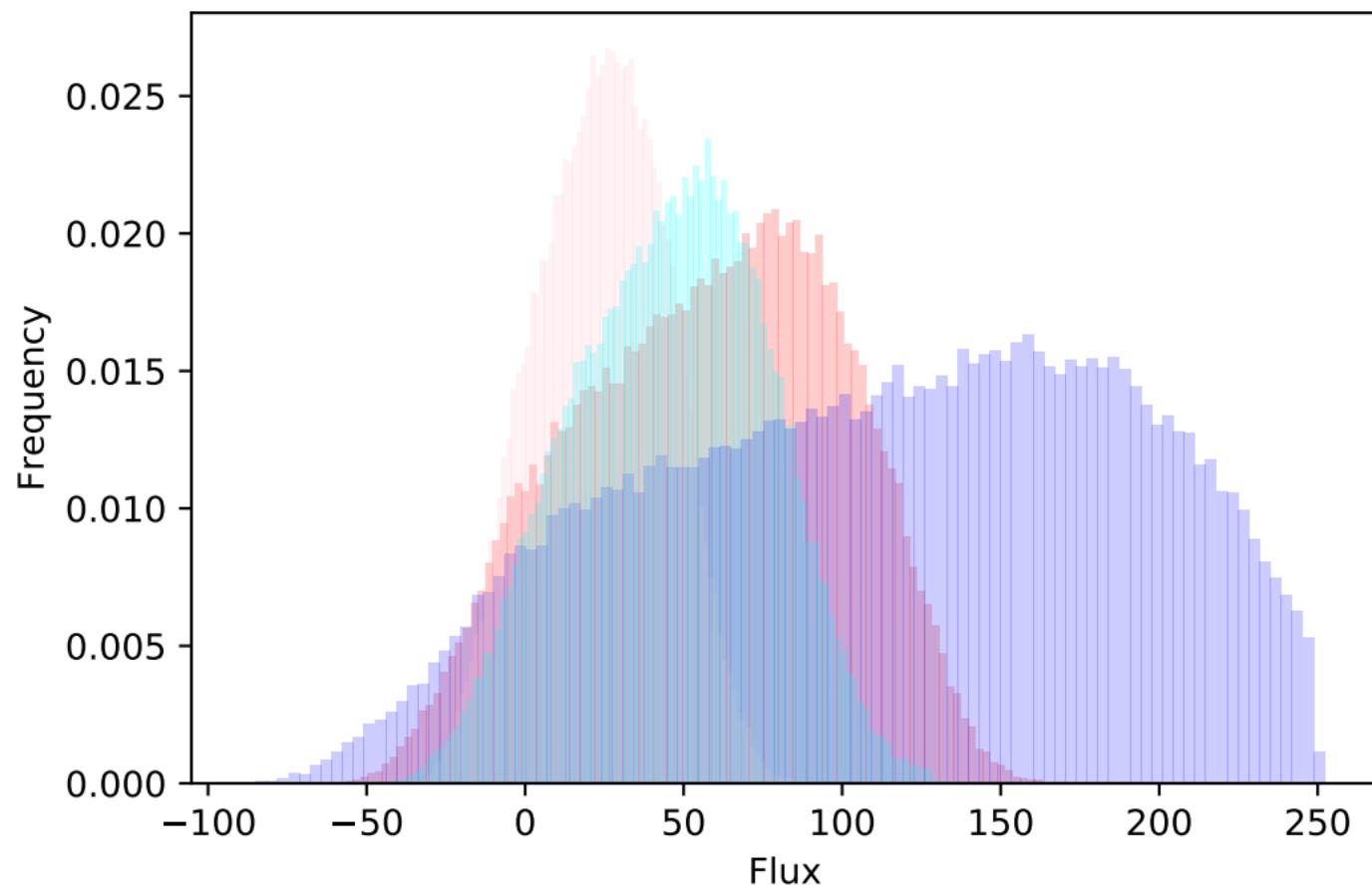
354 : SCA_c + cACN_m <=> SCA_m + cACN_c
[cm^{-2}]



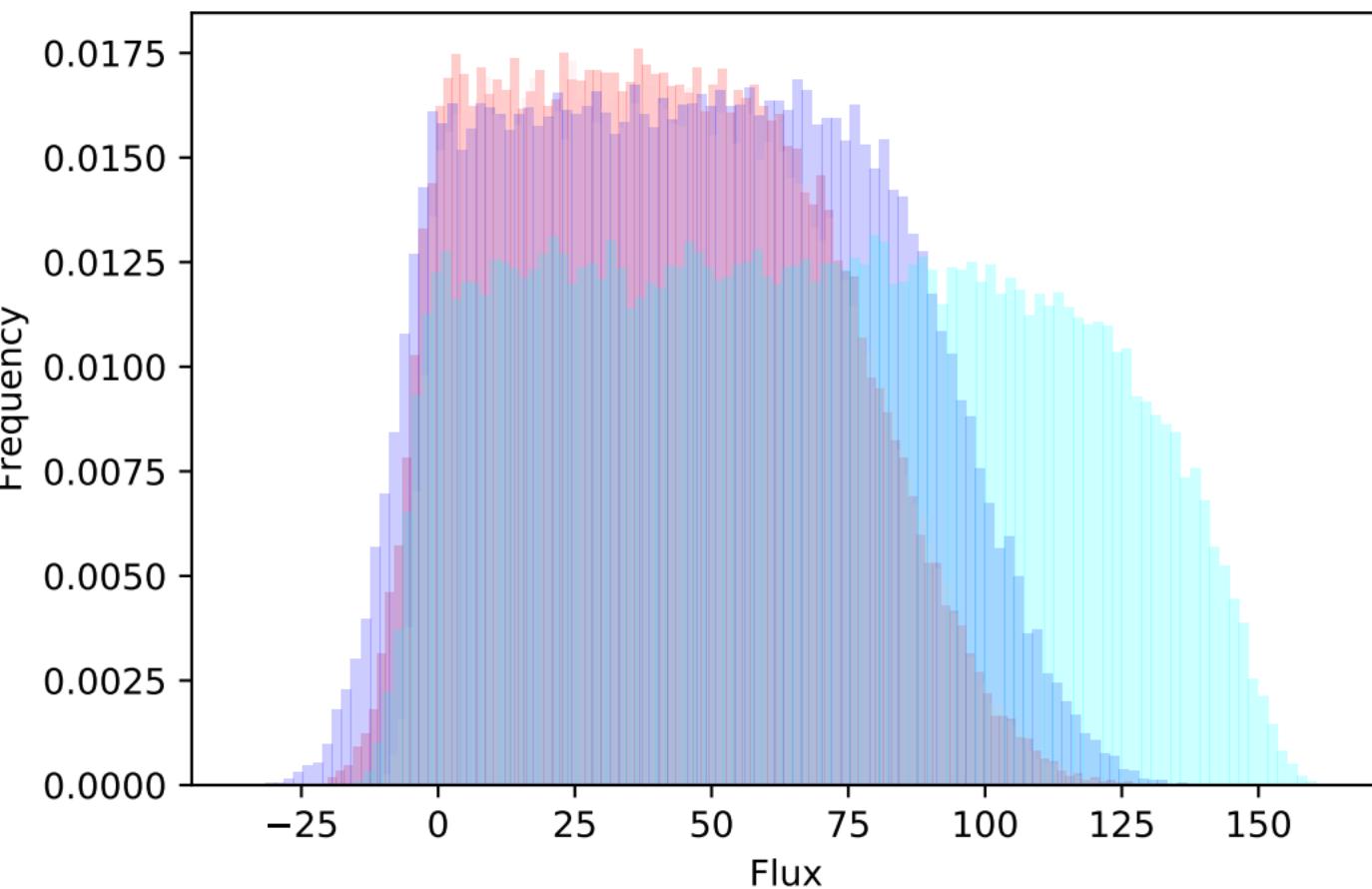
355 : Fum_m + SCA_c \rightarrow Fum_c + SCA_m
[-]



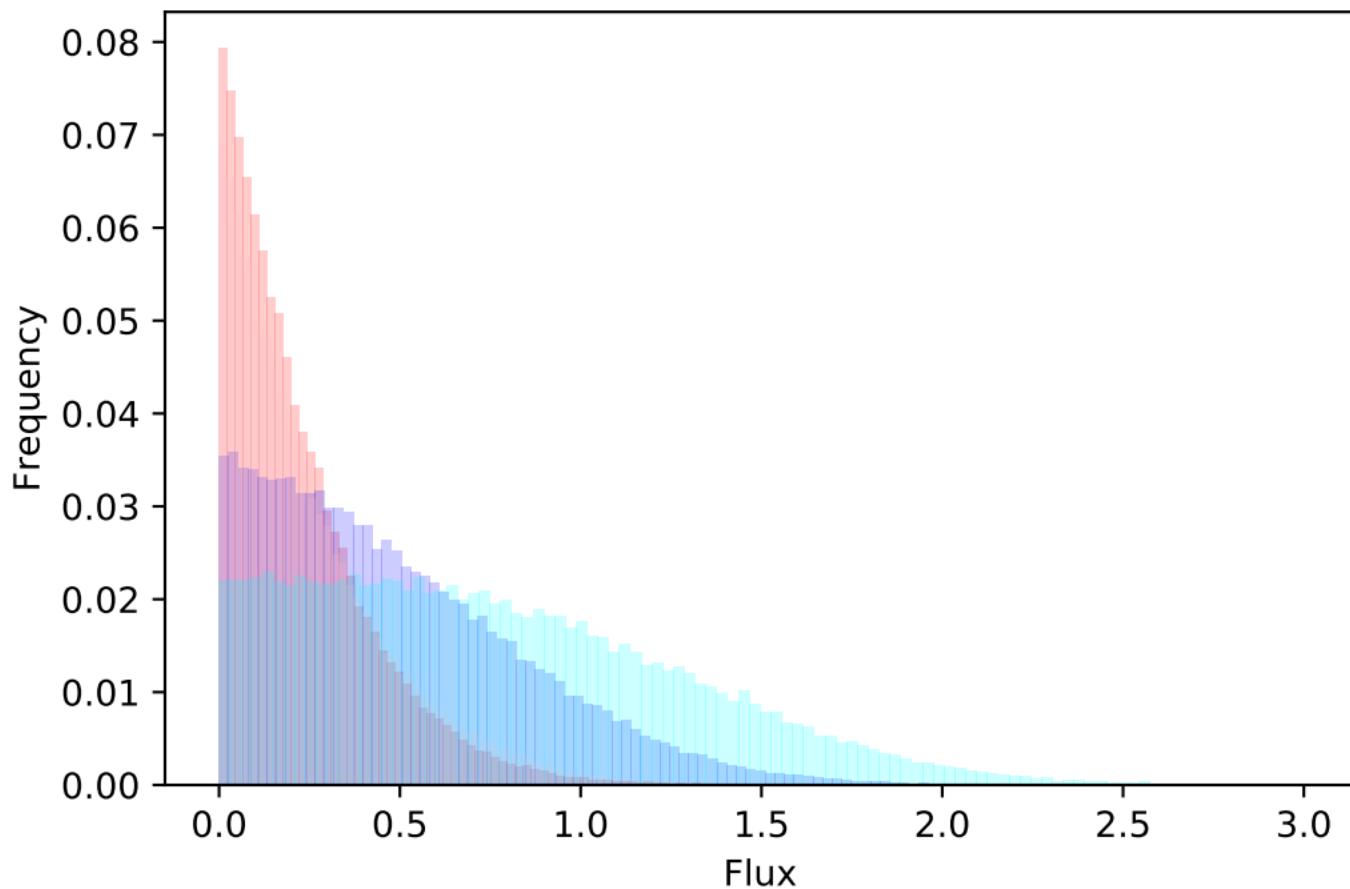
356 : Ala_c <=> Ala_m
['-']



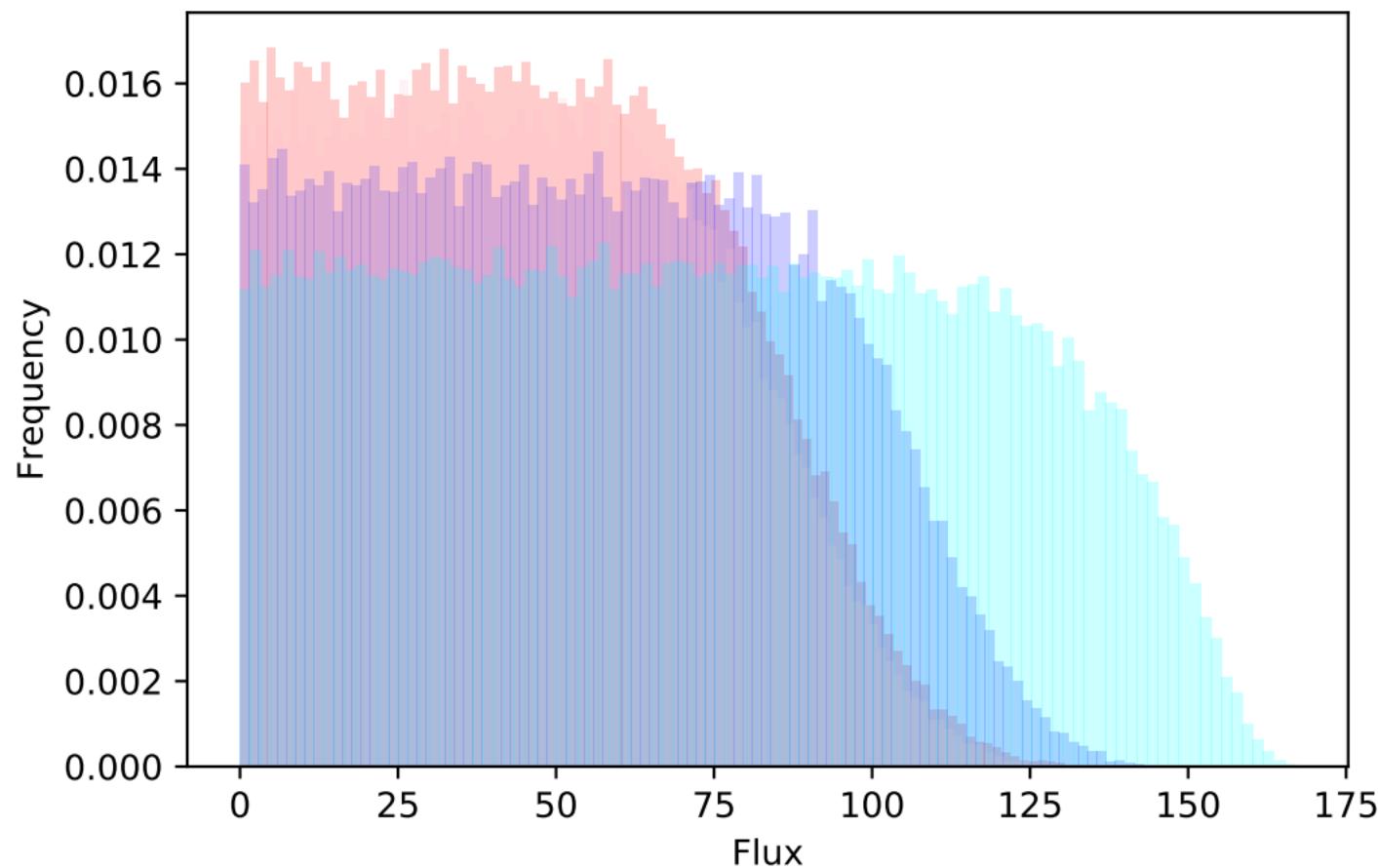
358 : Glu_c <=> Glu_m
['-']



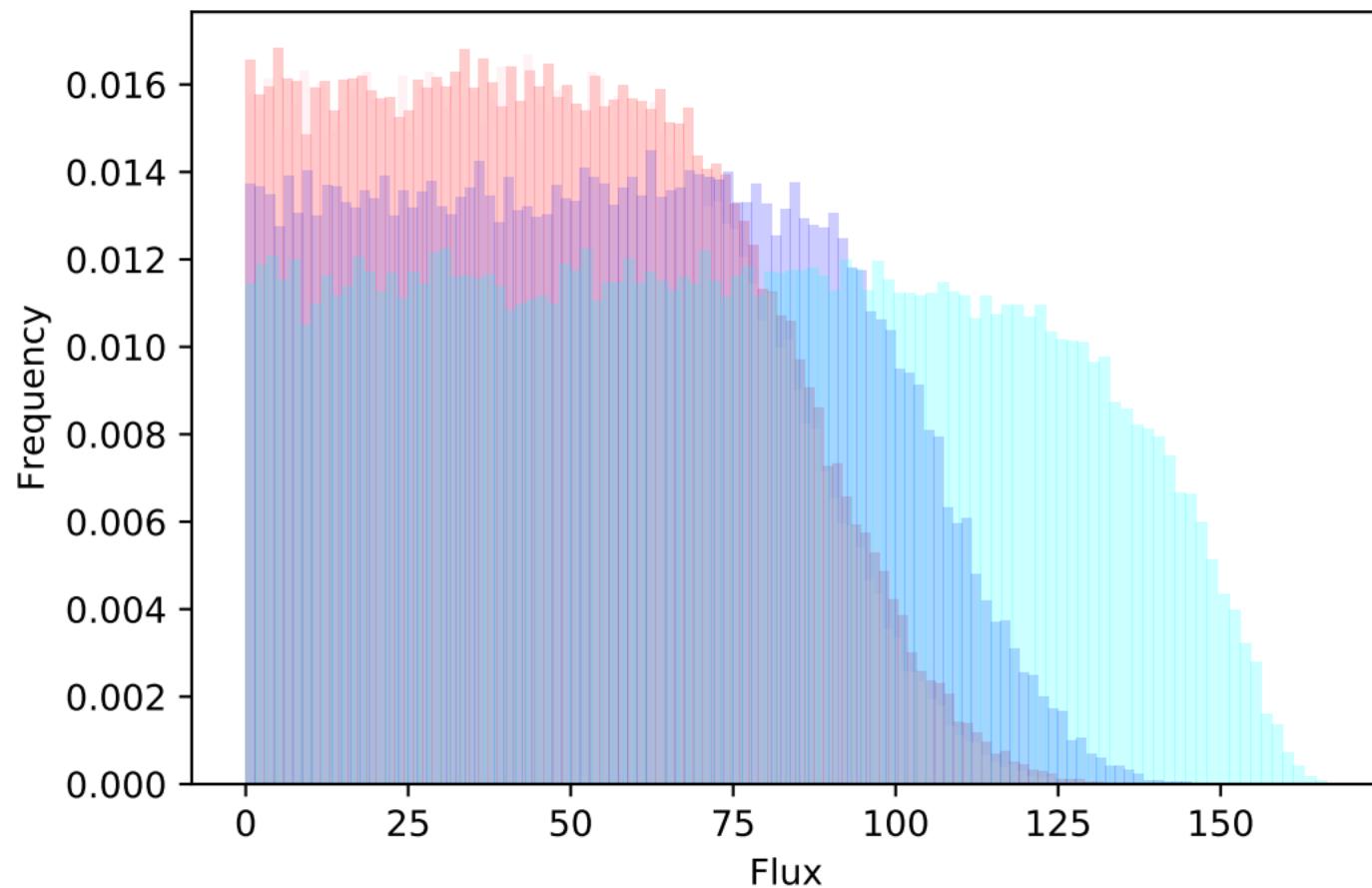
360 : GABA_c <=> GABA_m
[!-!]



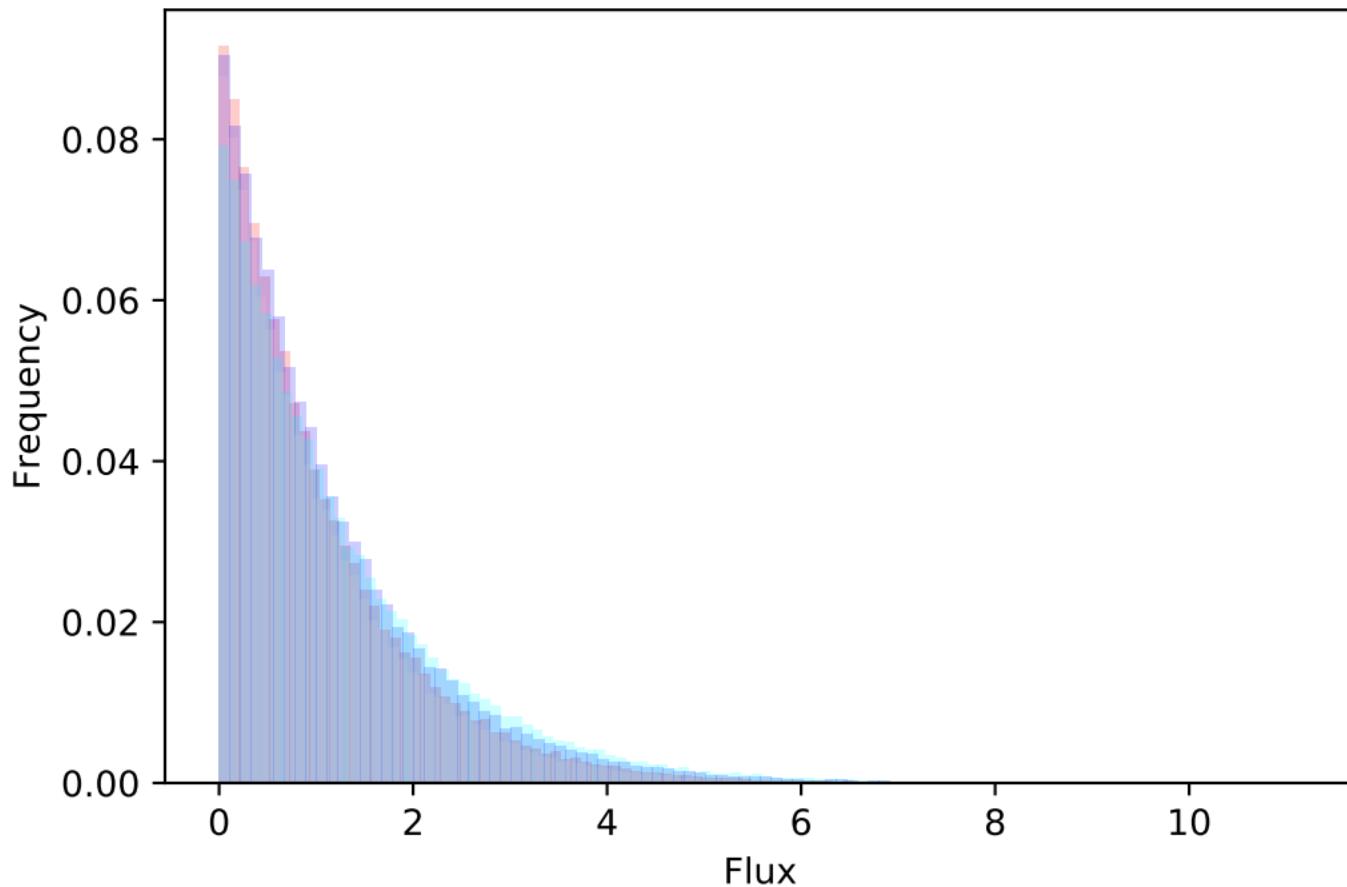
363 : Pro_c --> Pro_m
[-]



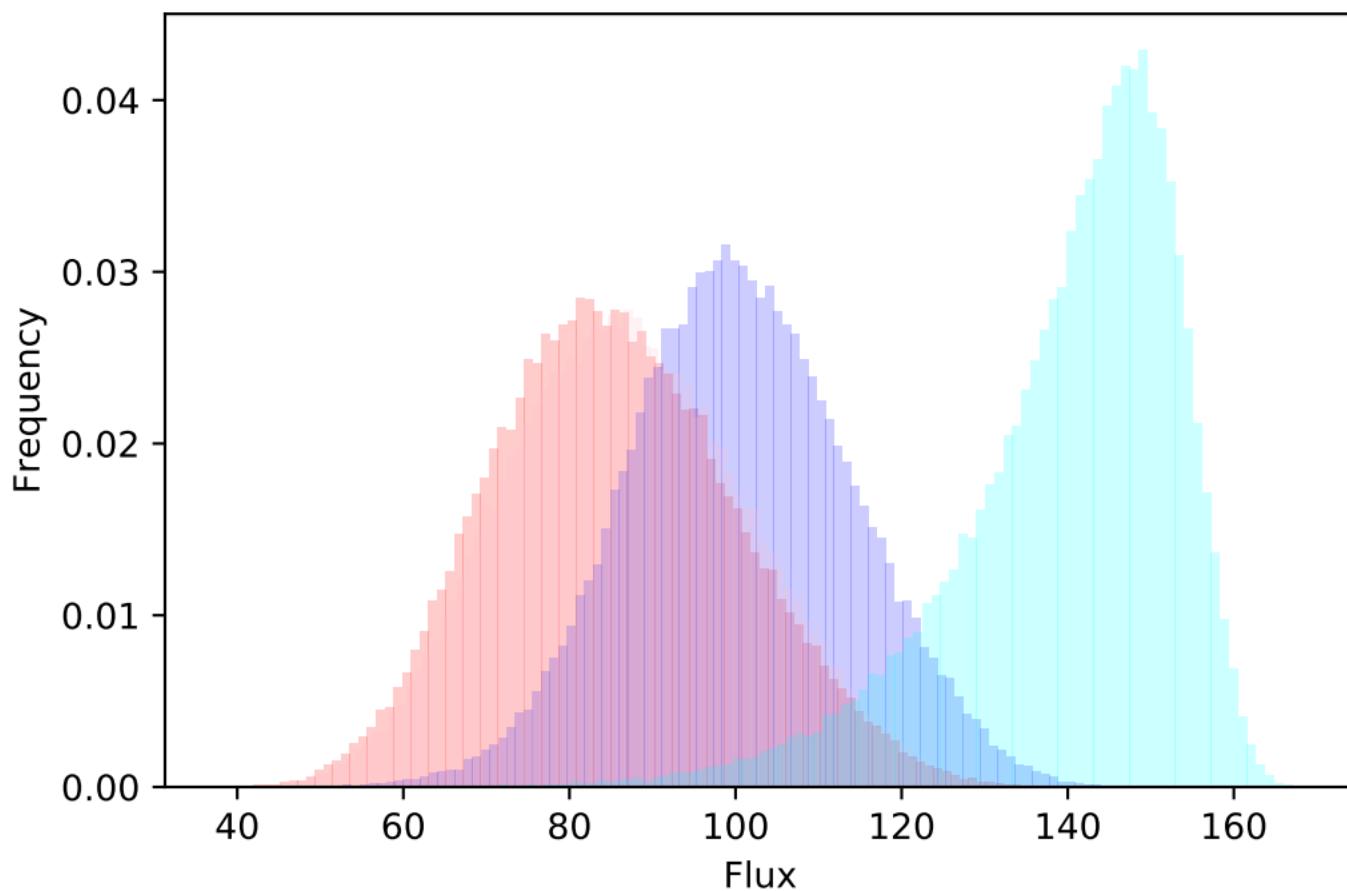
364 : Glu_m + Pro_c \rightarrow Glu_c + Pro_m
[-]

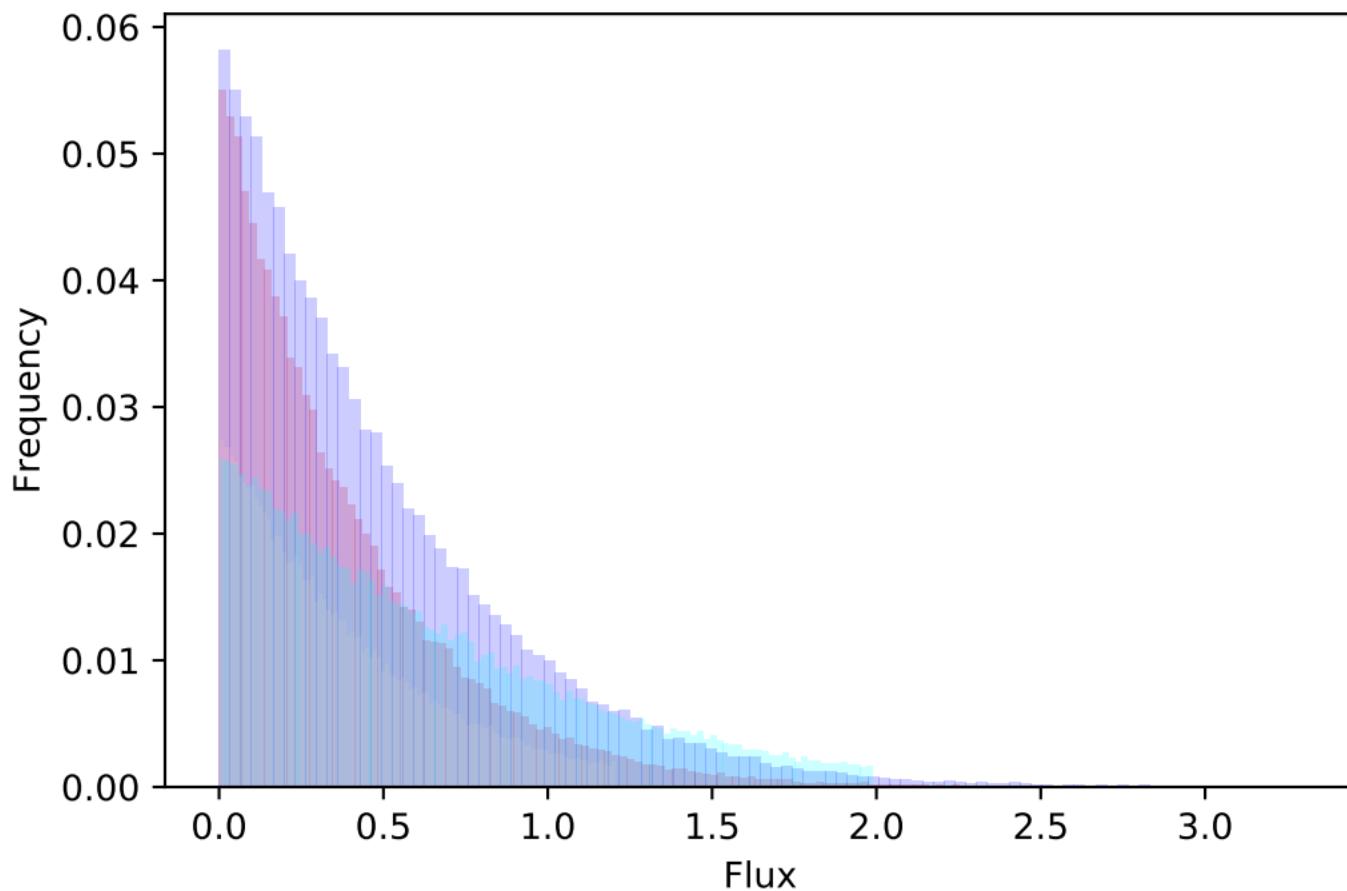
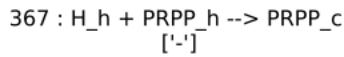


365 : P5C_h --> P5C_c
[-]

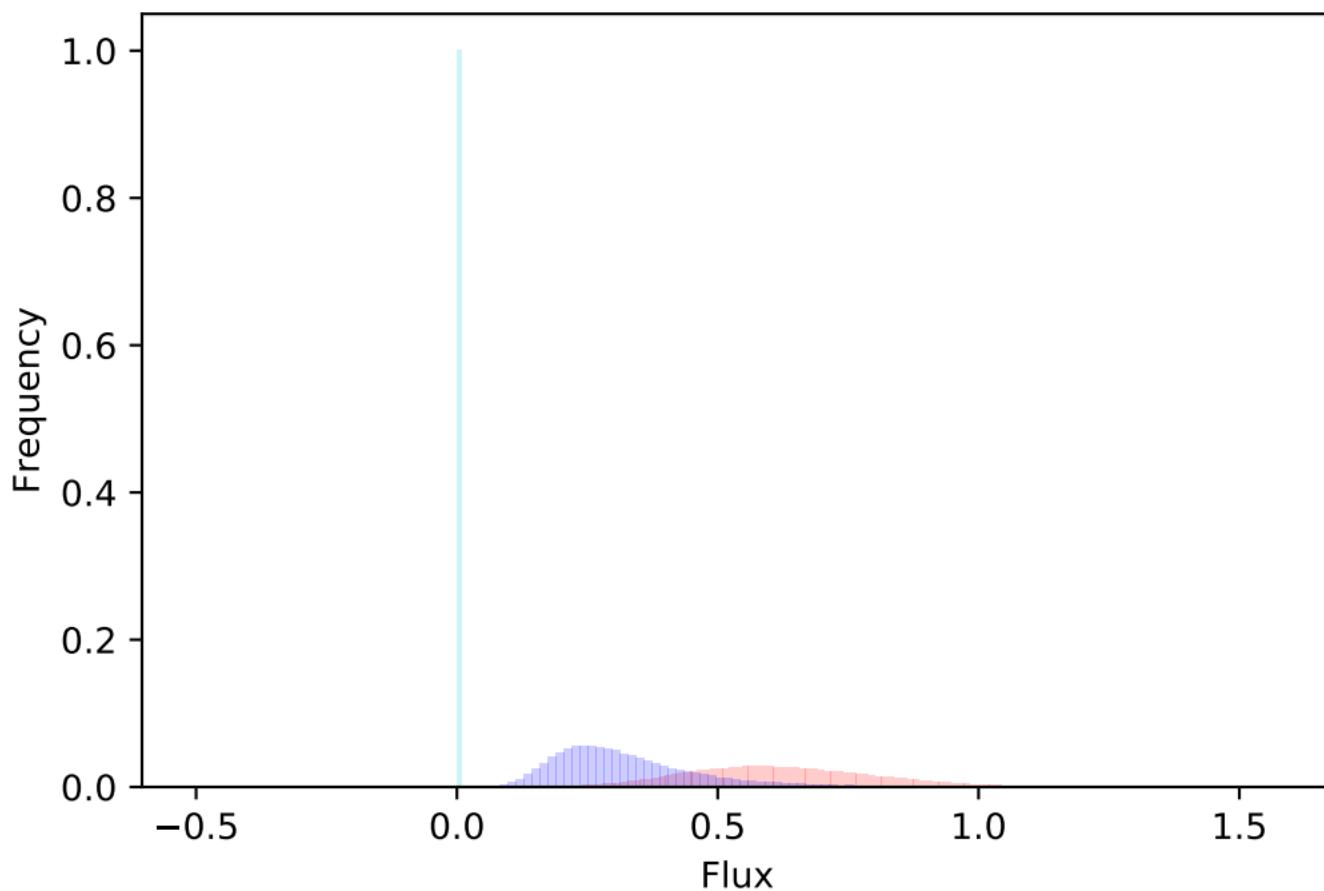


366 : P5C_m --> P5C_c
[-]

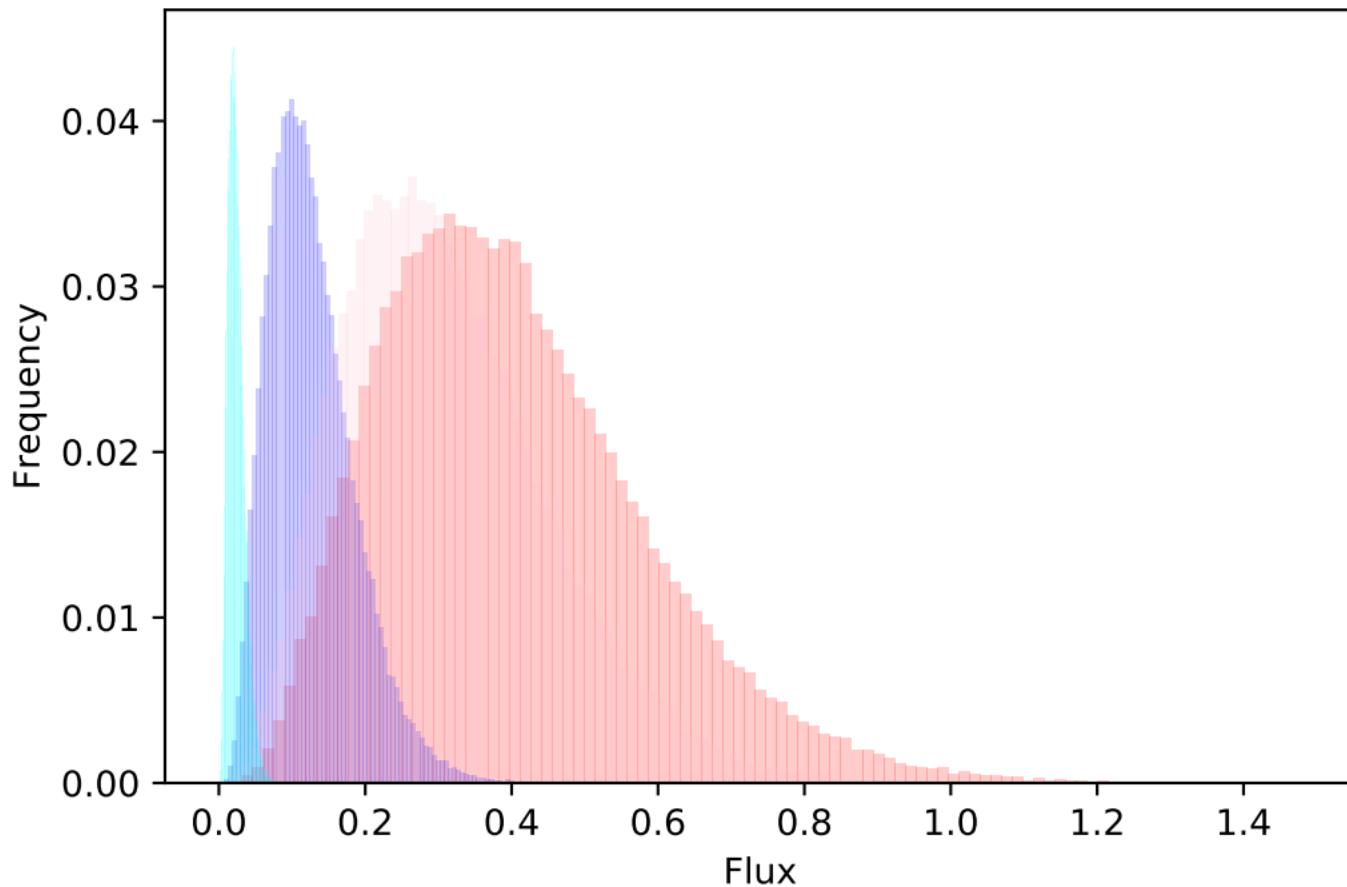




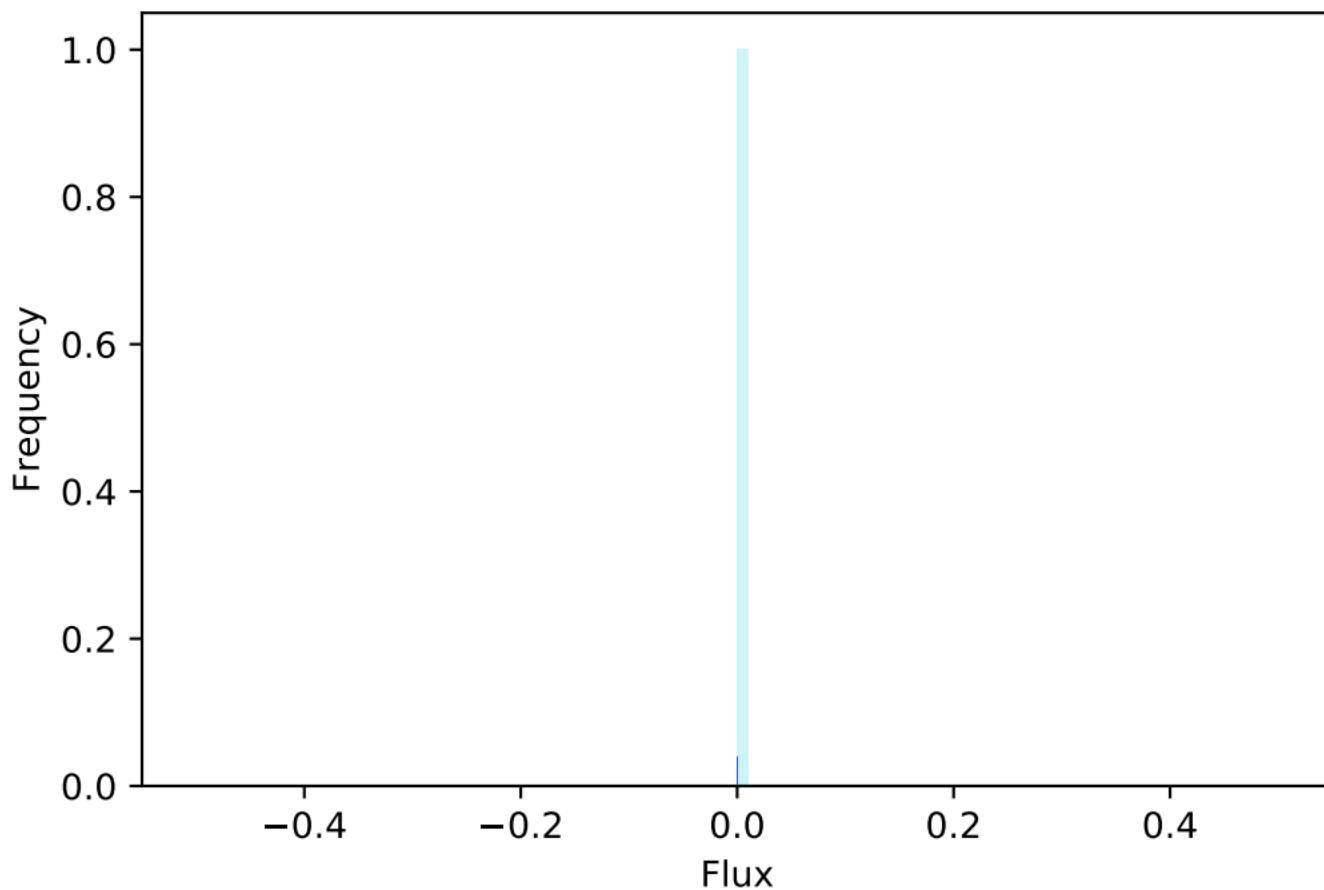
368 : Fum_h --> Fum_c
[-]



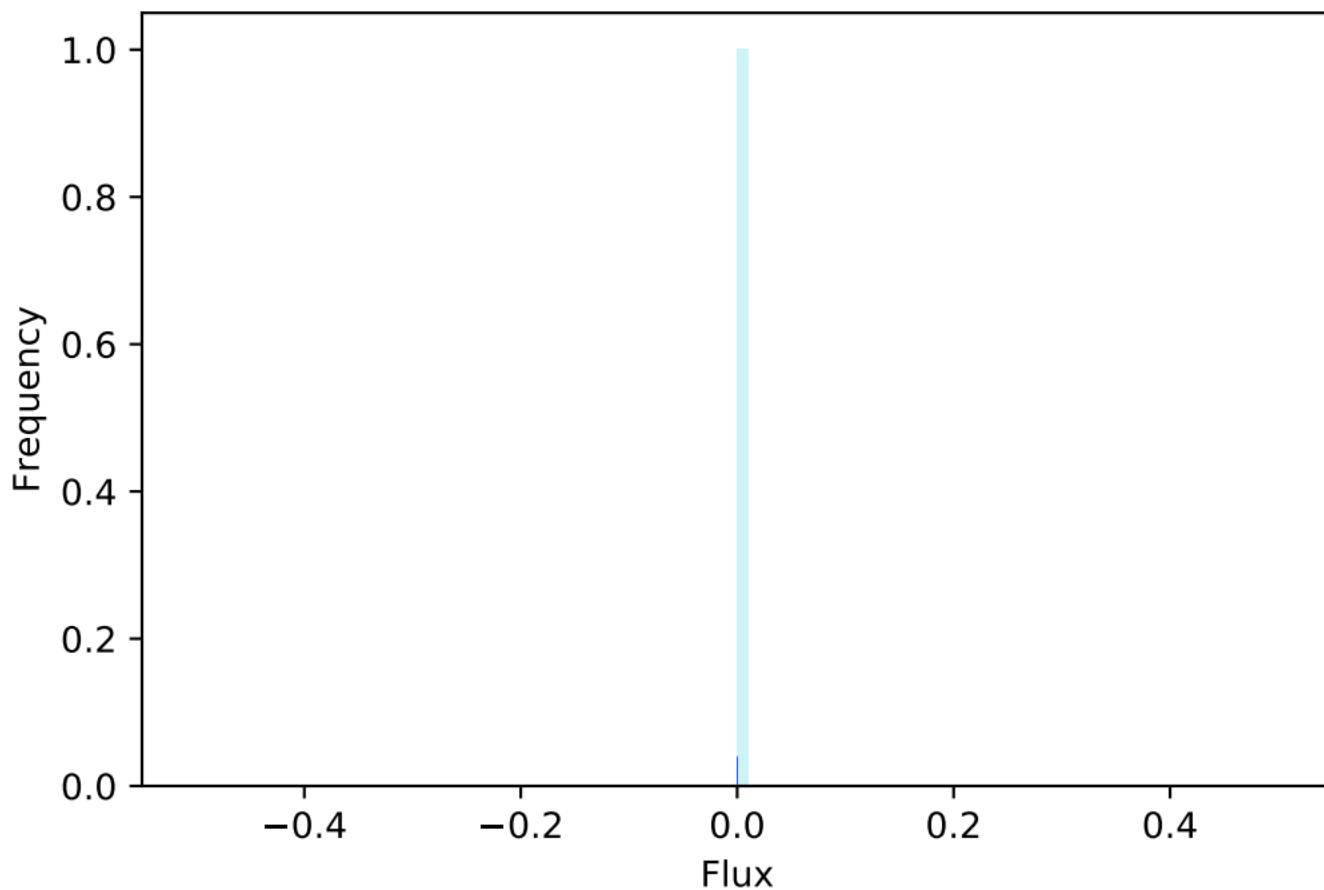
369 : H_DASH_Cys_h --> H_DASH_Cys_c
[!-]



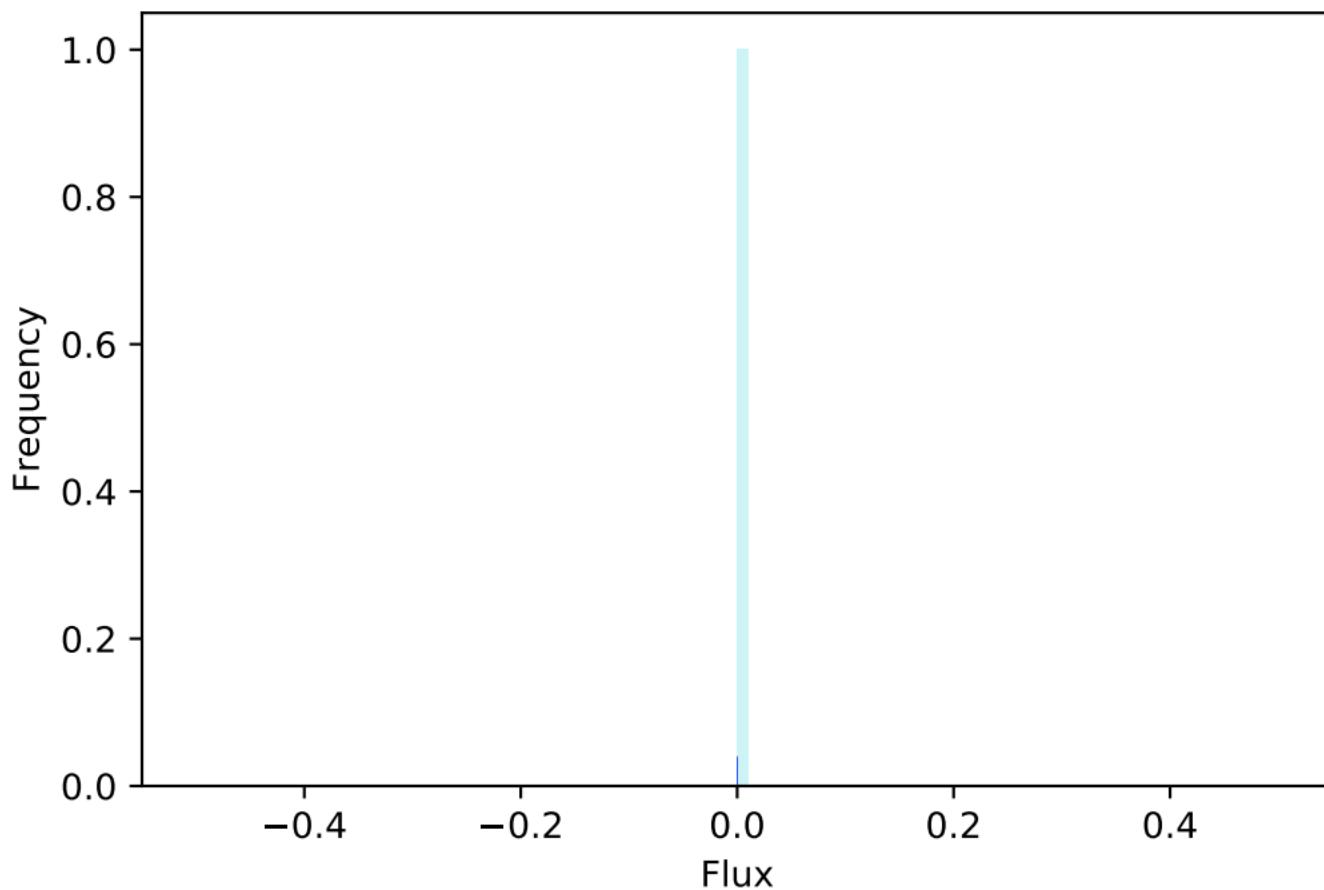
370 : orO_m --> orO_c
[-]



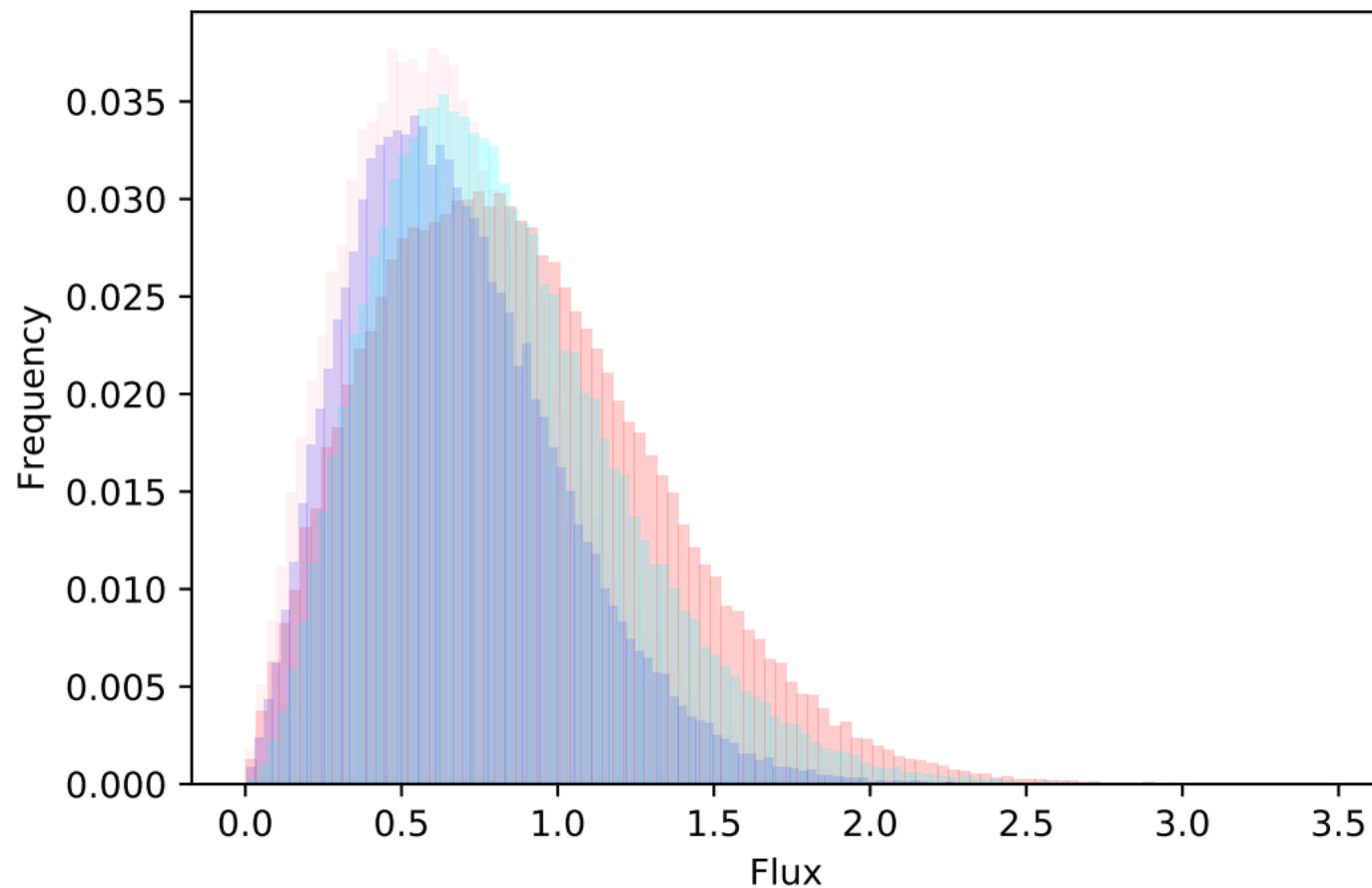
371 : DHO_h --> DHO_c
[-]



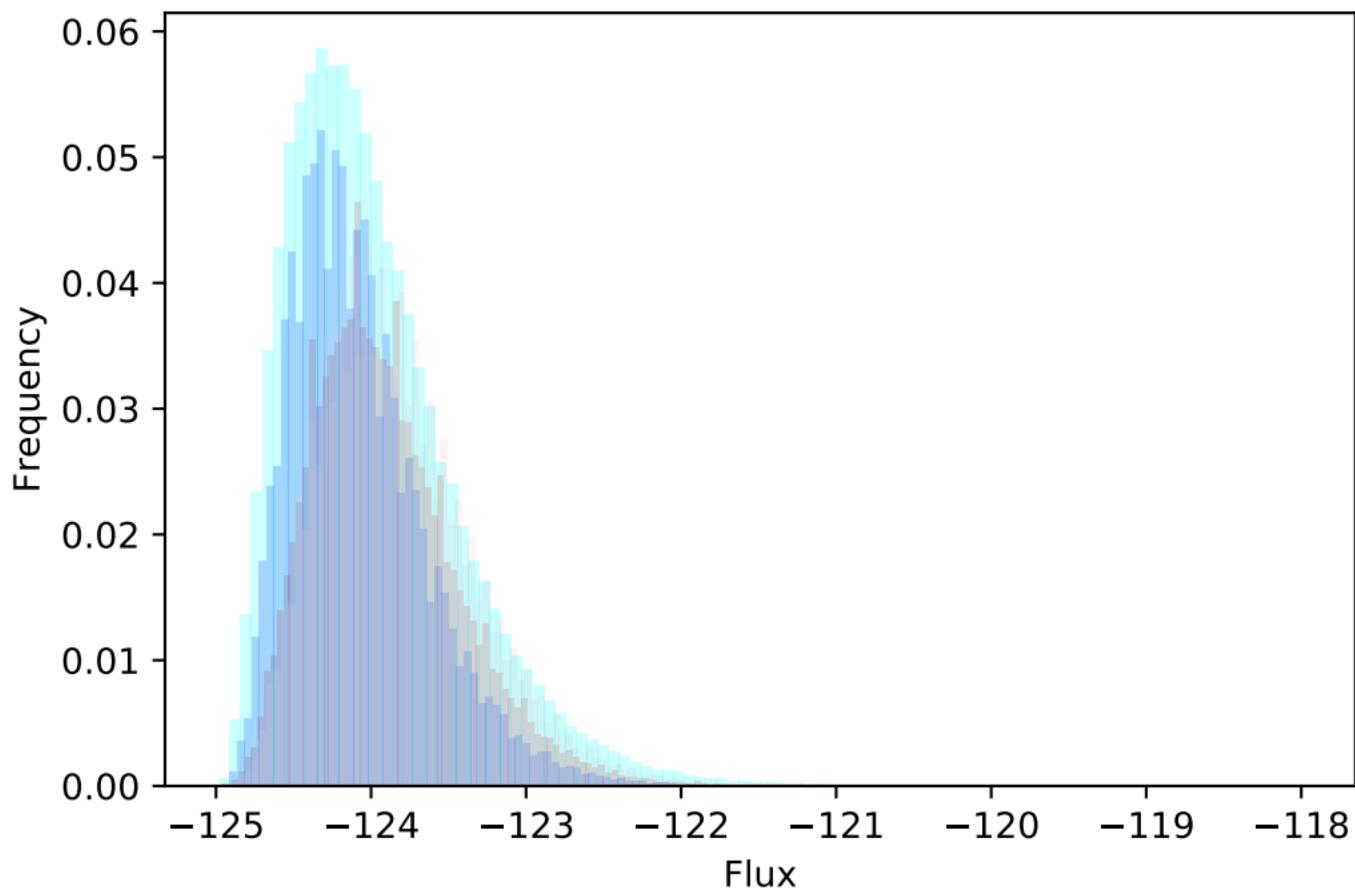
372 : DHO_c --> DHO_m
[-]



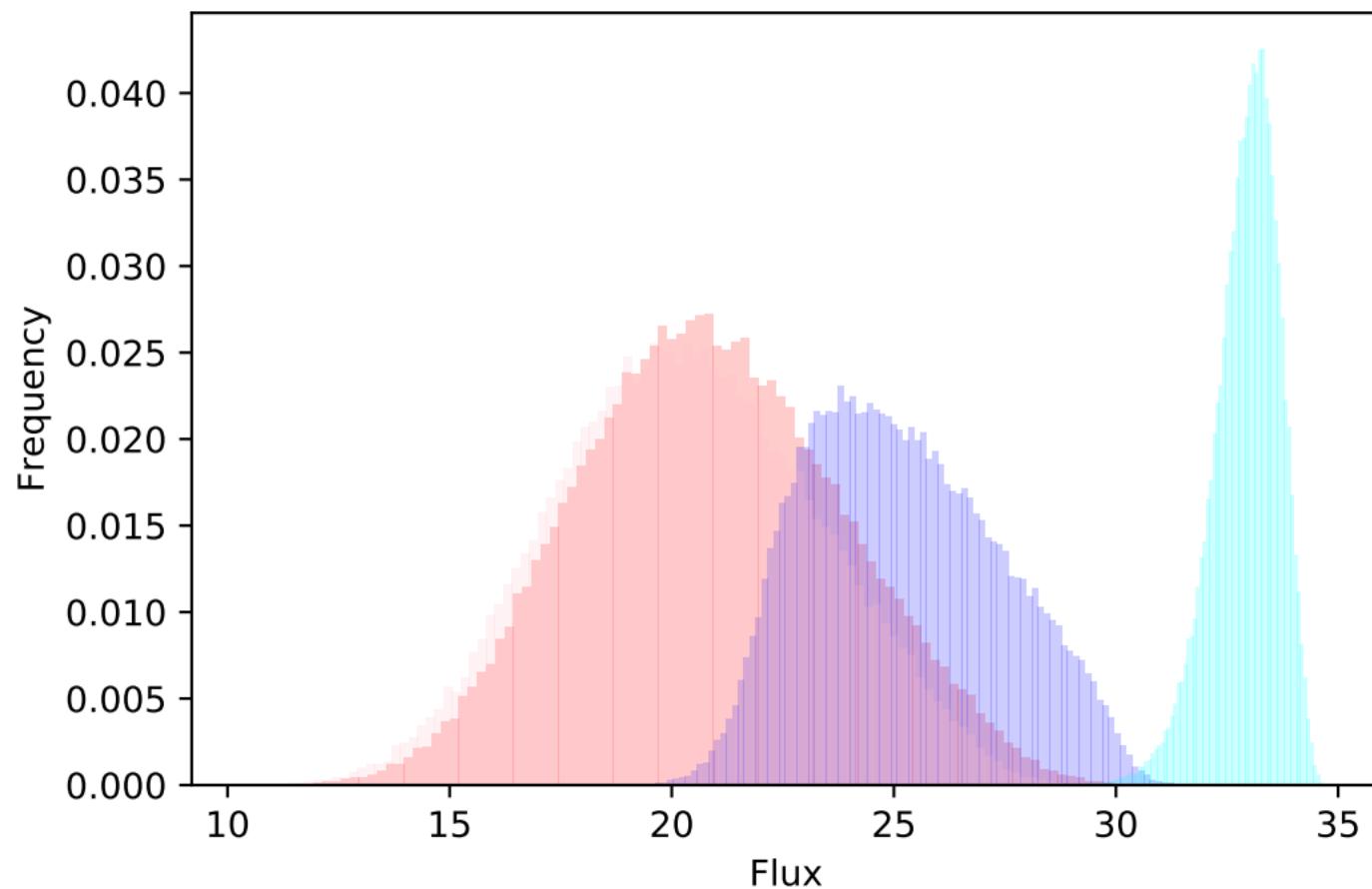
373 : Gly_c + Ser_m --> Gly_m + Ser_c
['-']



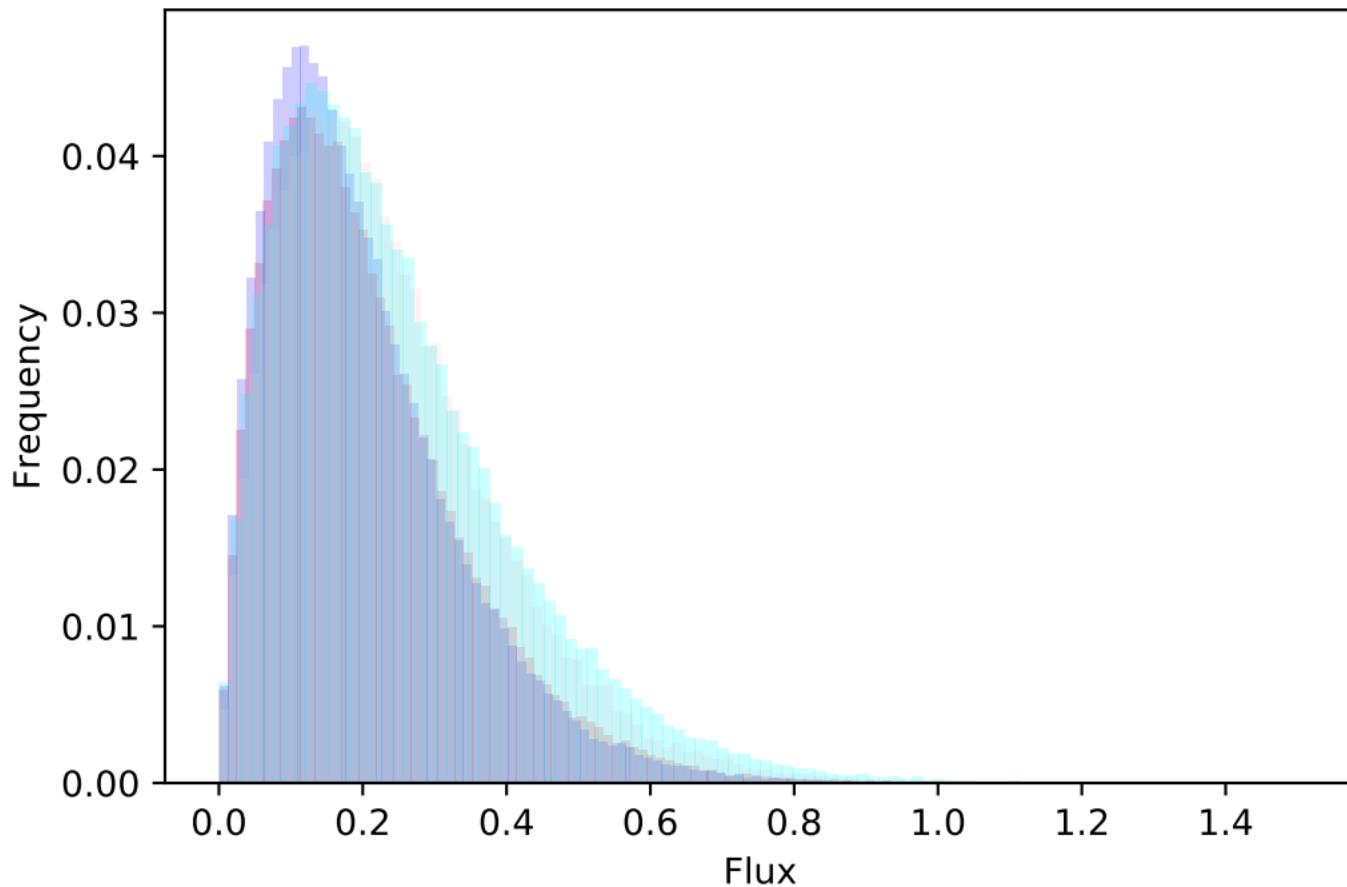
374 : O2_c <=> O2_h
['-']



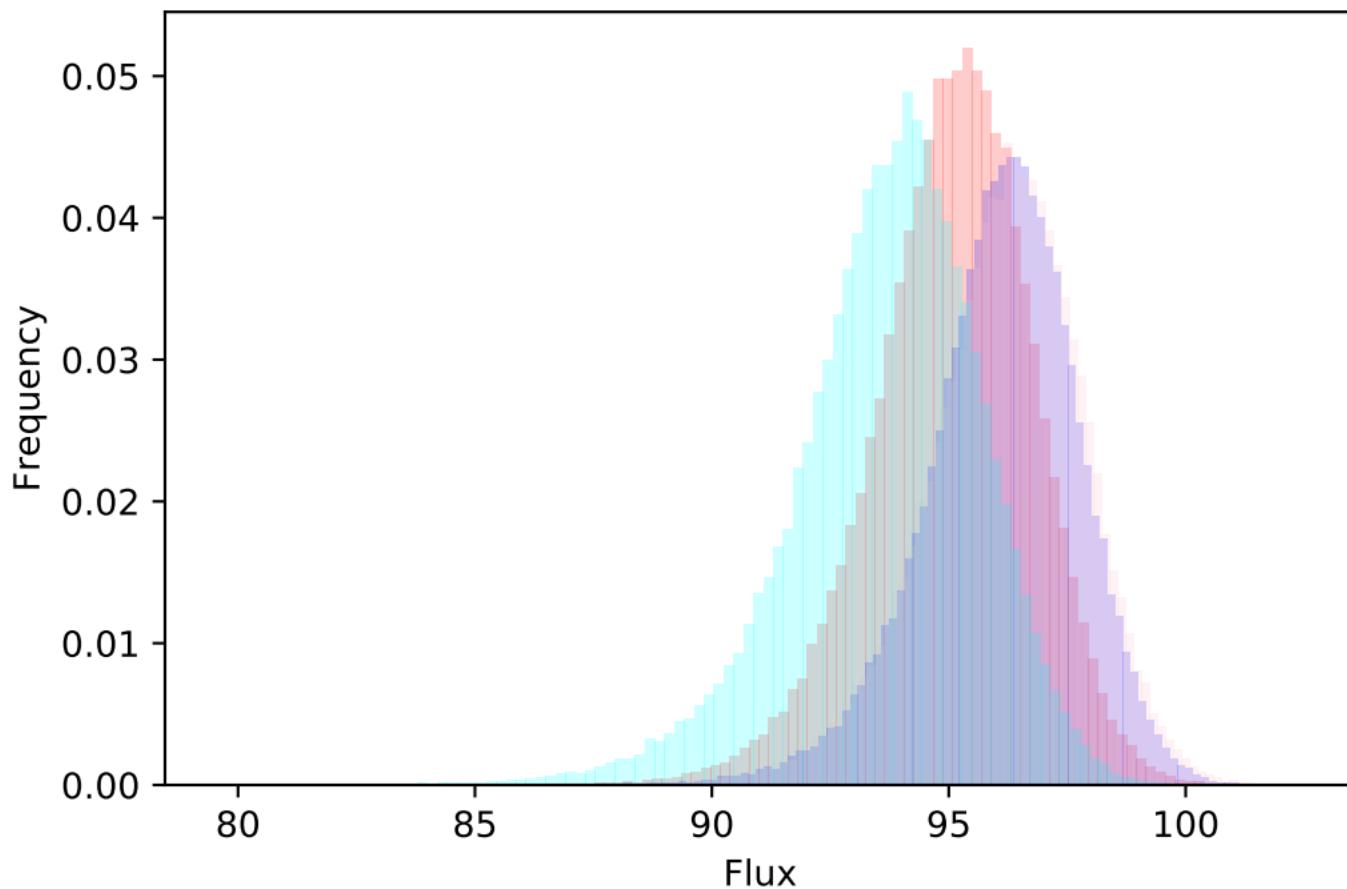
375 : O2_c <=> O2_m
[!-!]



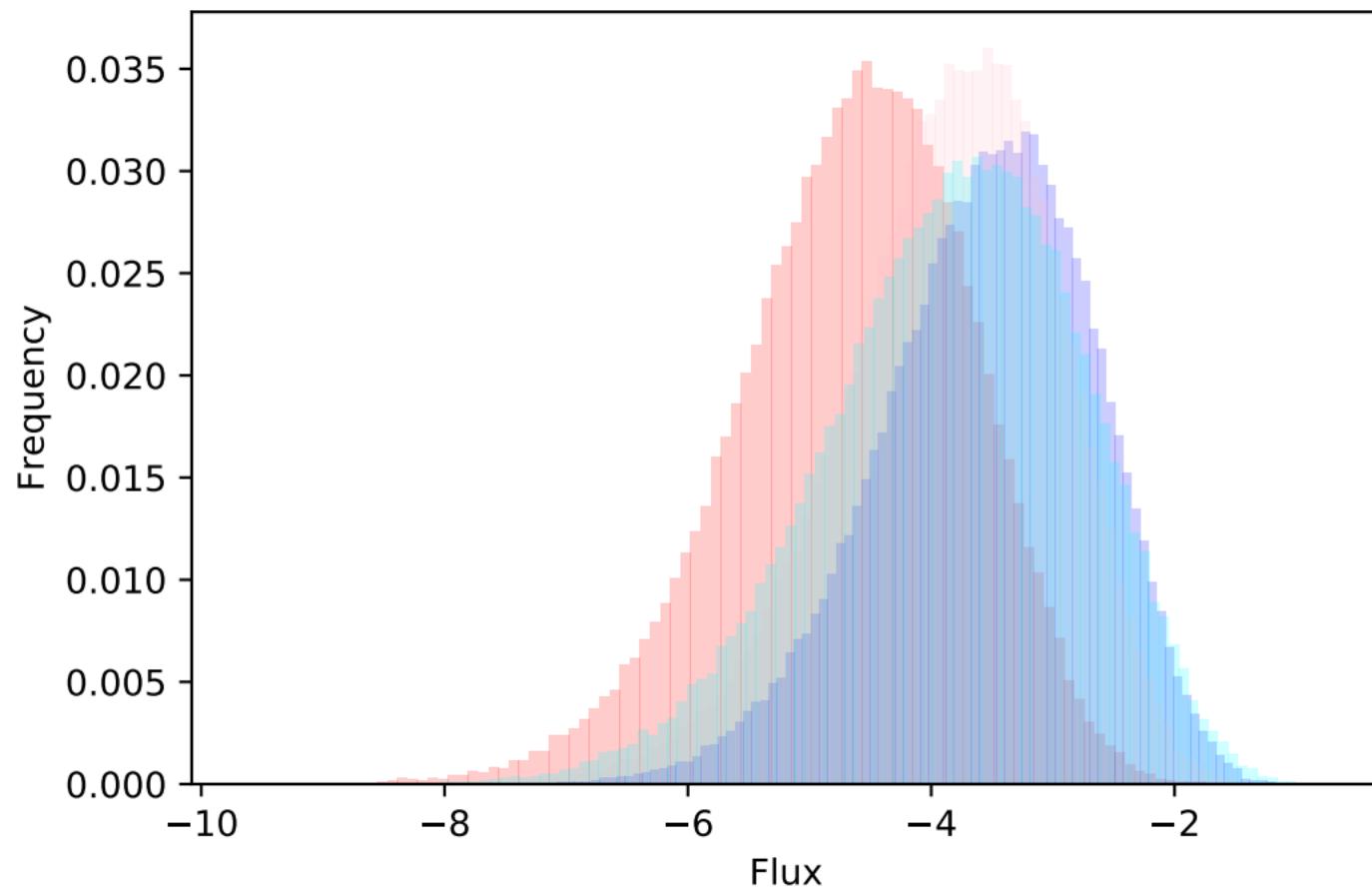
376 : O2_c <=> O2_p
[!-!]



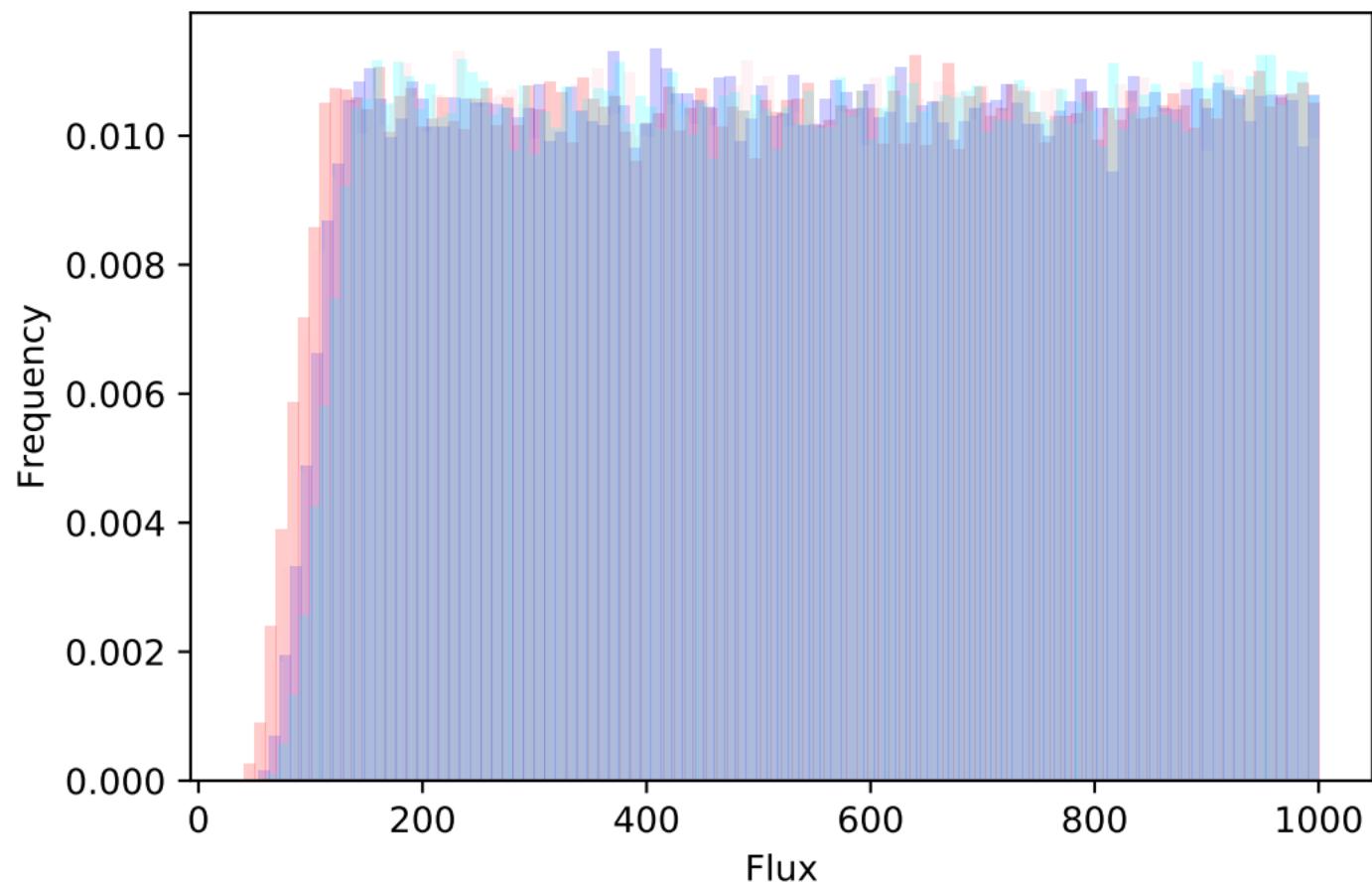
377 : CO2_c <=> CO2_h
['-']



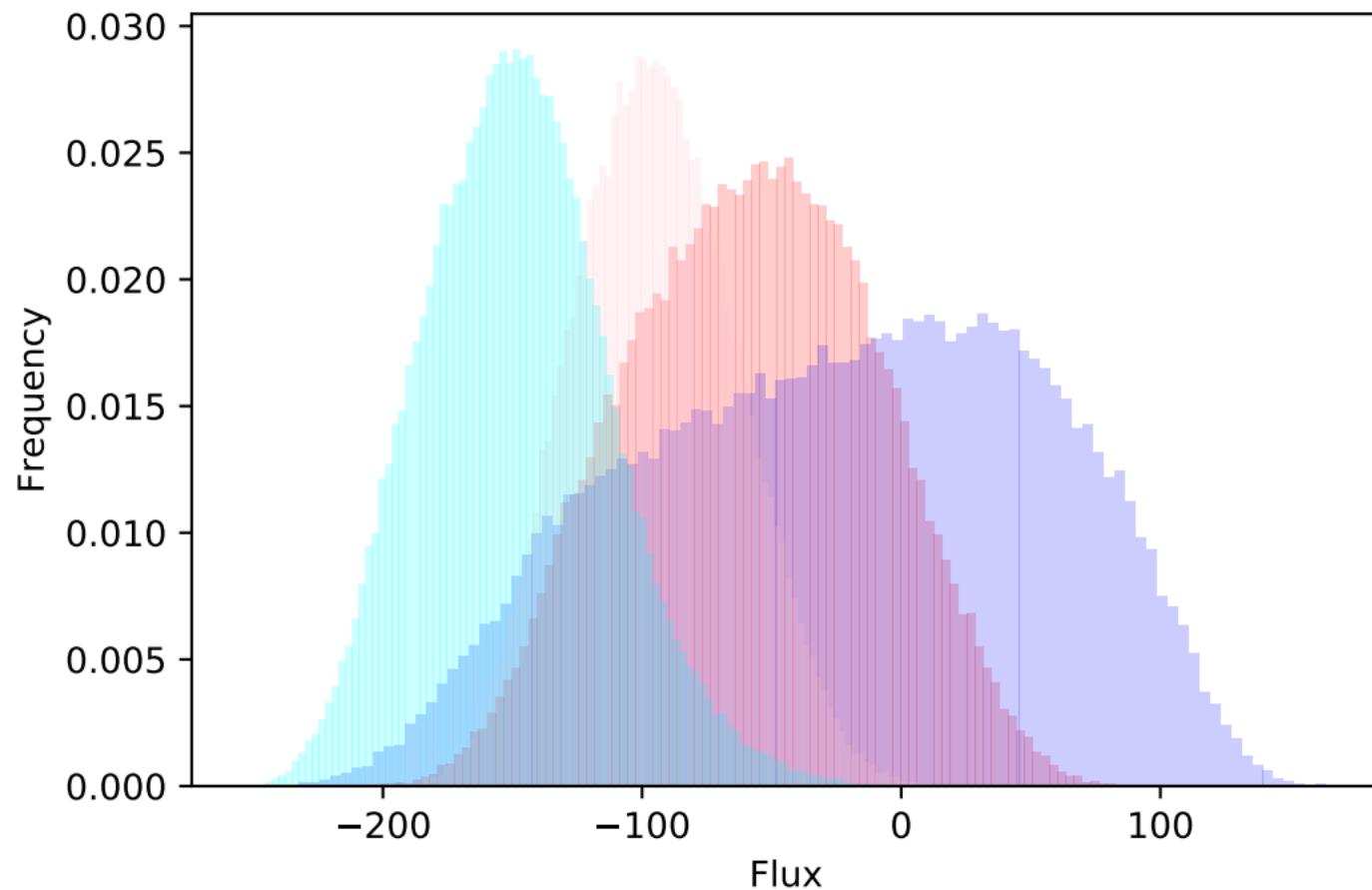
378 : CO2_c <=> CO2_m
[!-!]



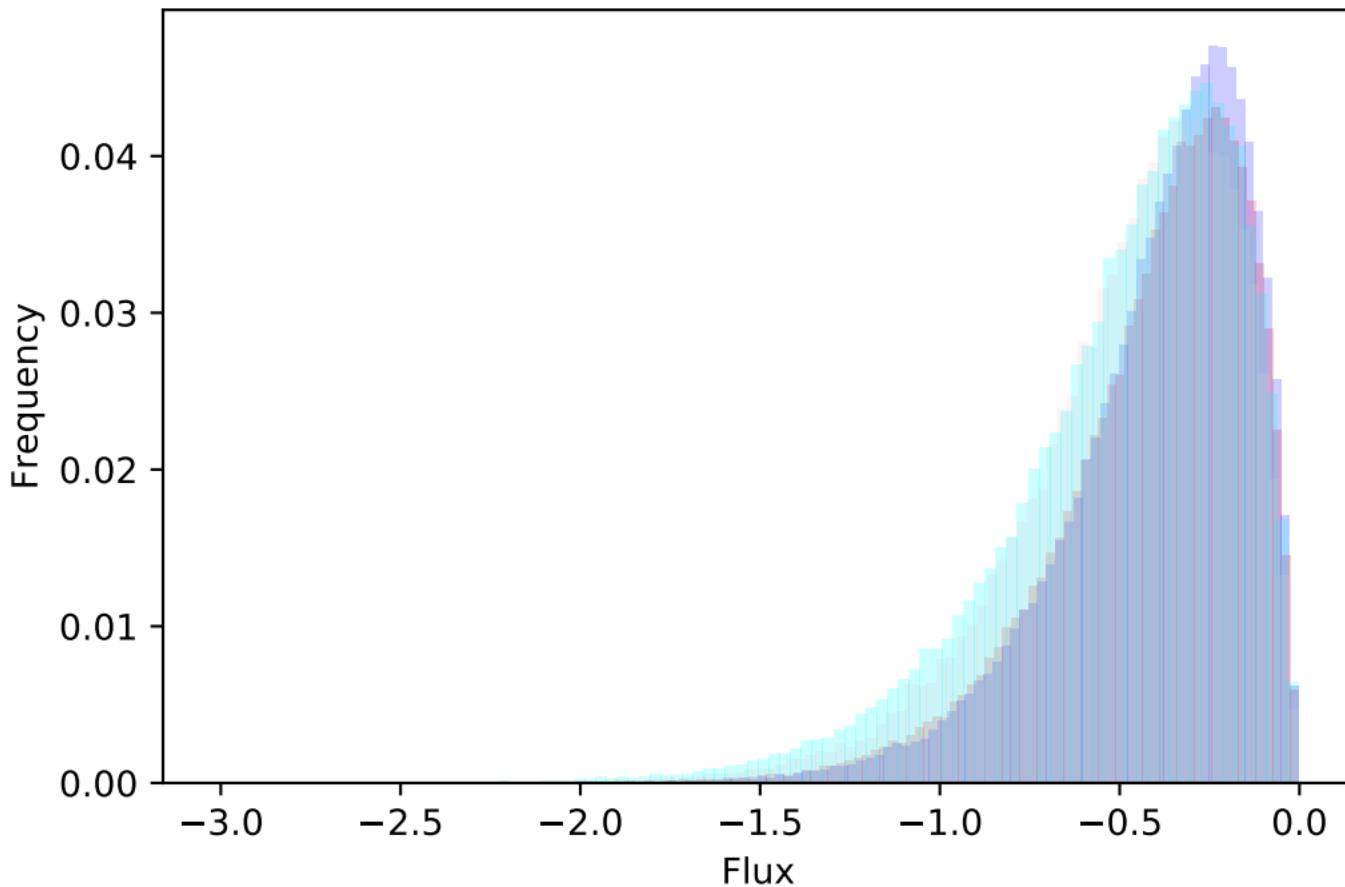
379 : H₂O_c <=> H₂O_h
[-]



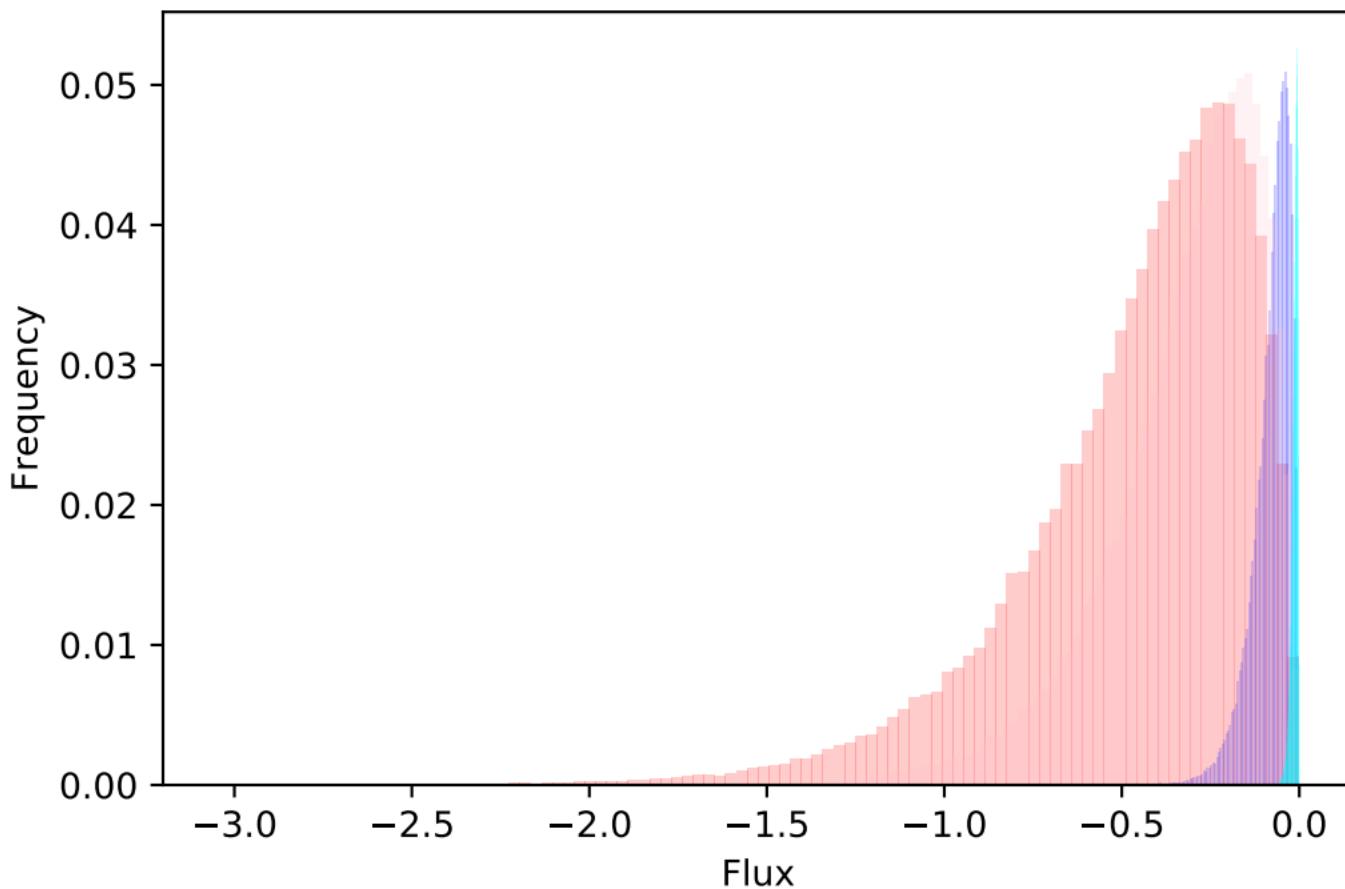
380 : H₂O_c <=> H₂O_m
[-]



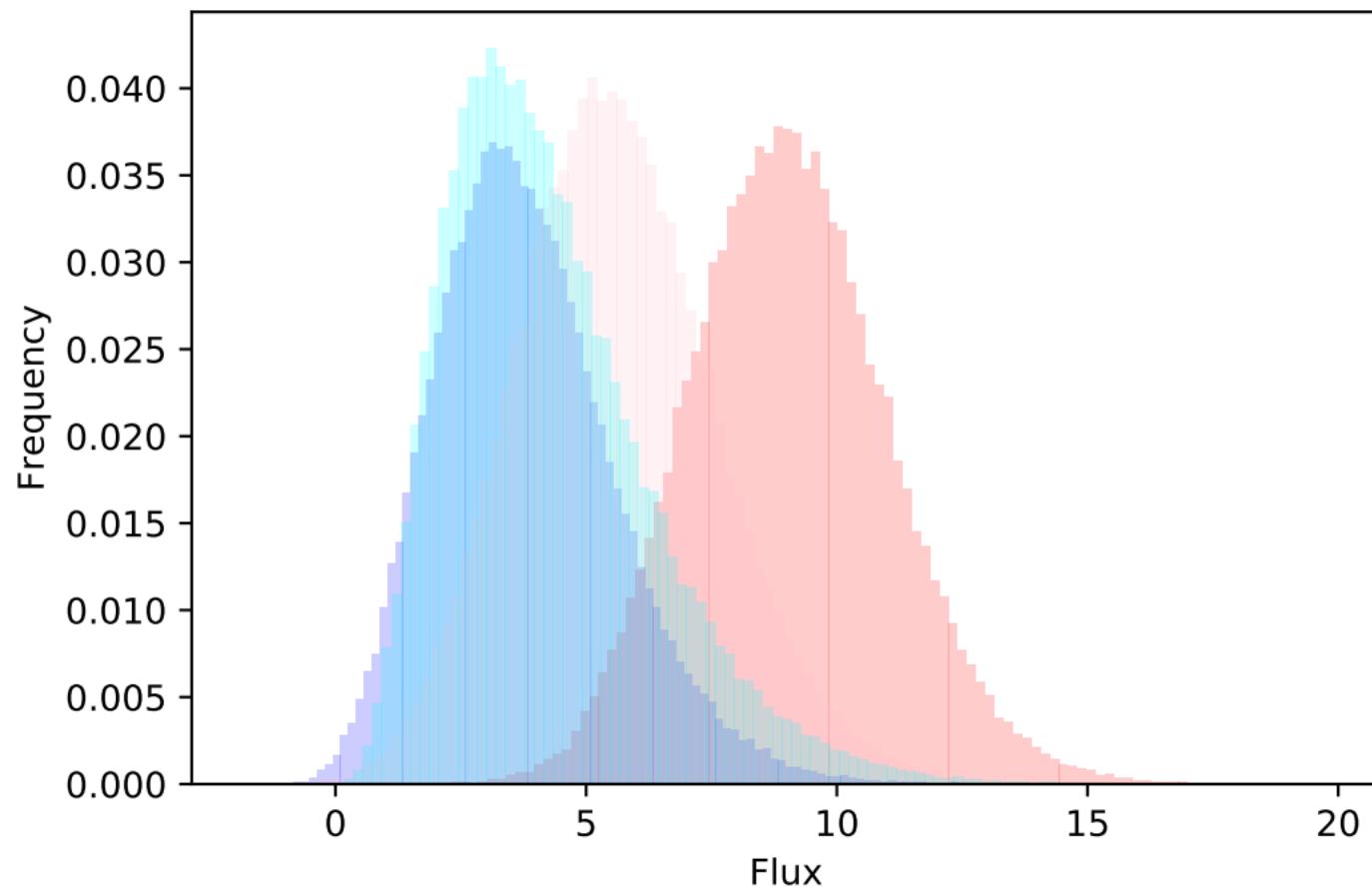
381 : H2O_c <=> H2O_p
[!-!]



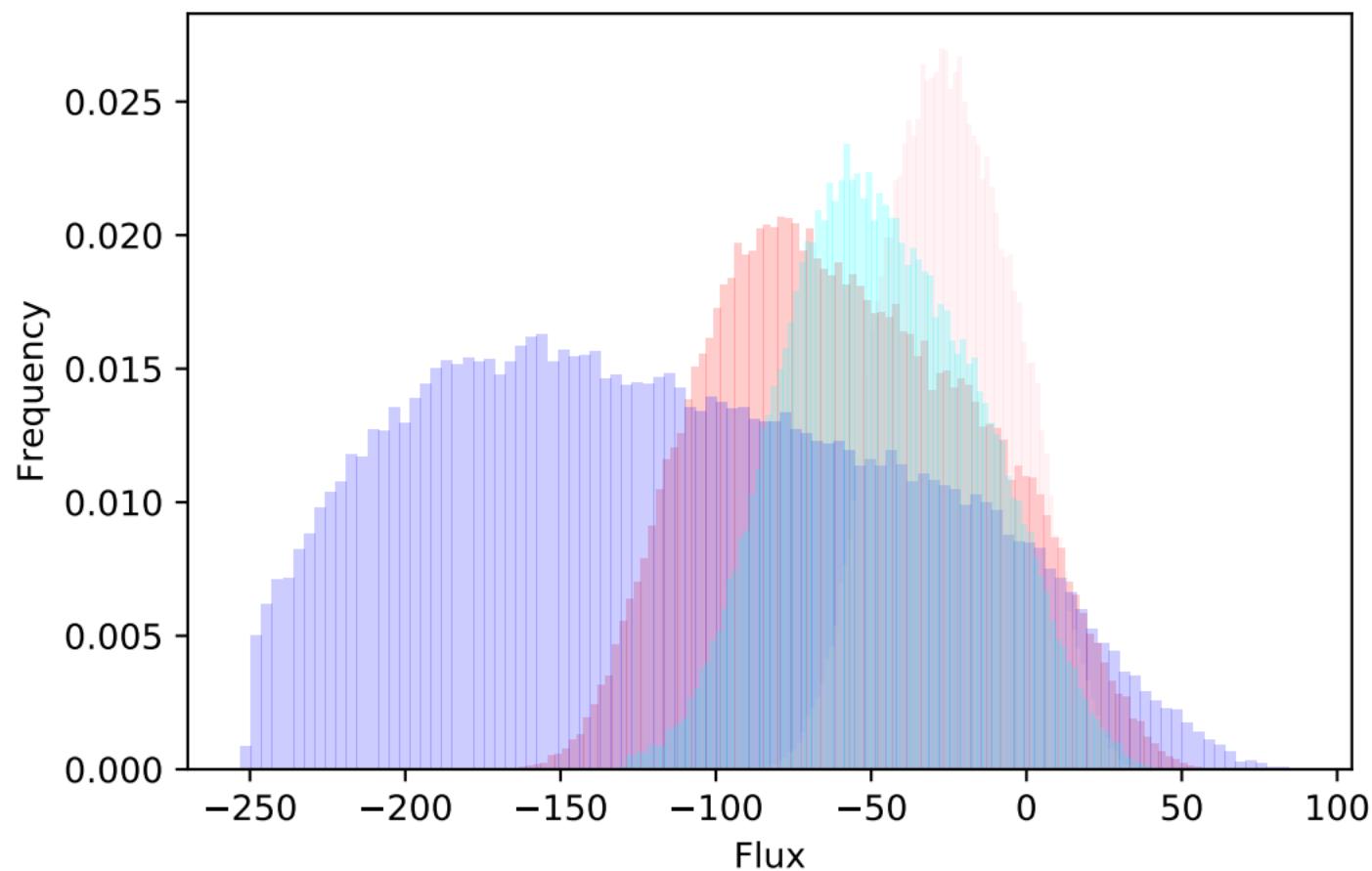
382 : H_c <=> H_p
[-]



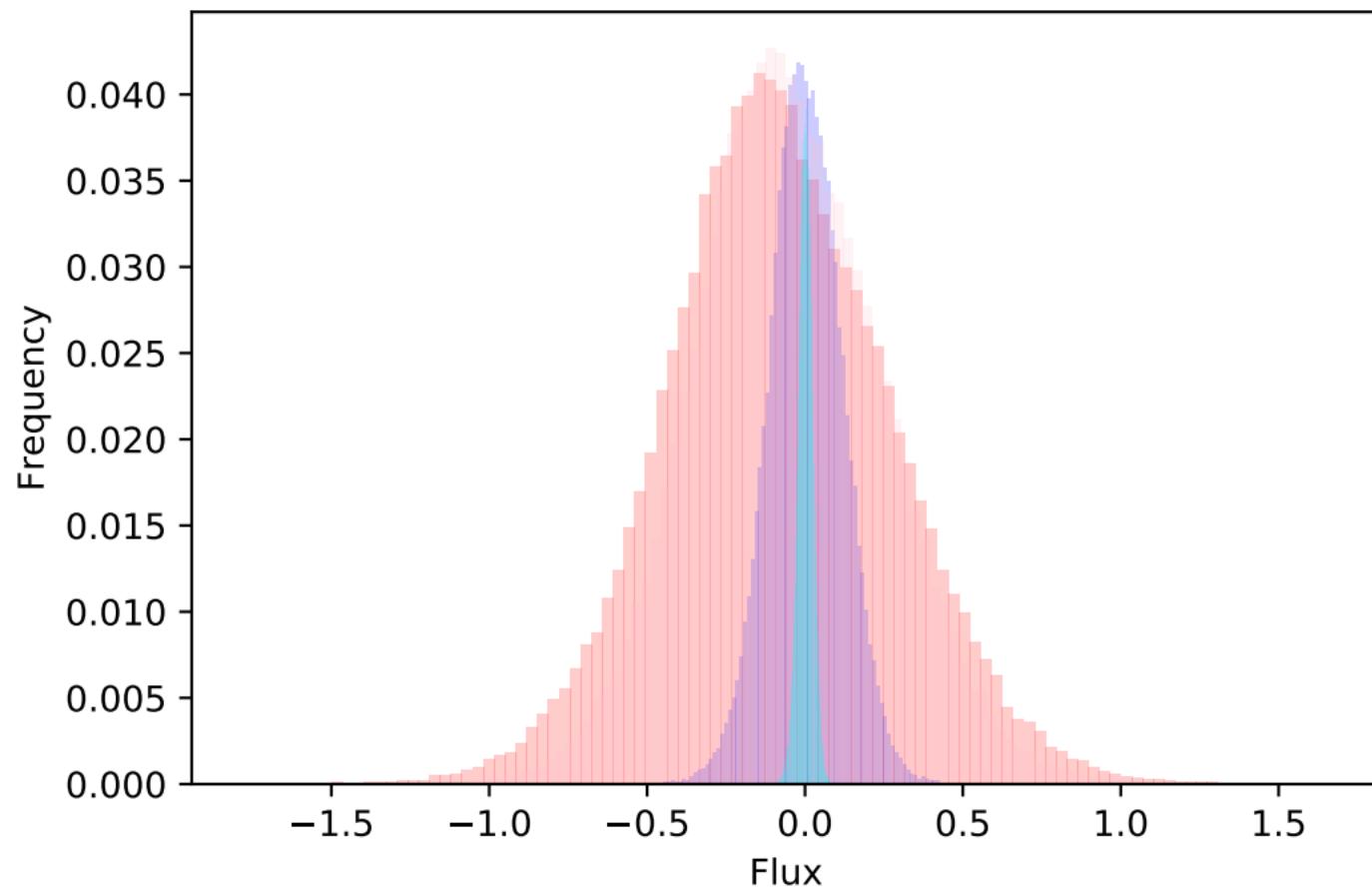
383 : NH4_c <=> NH4_h
['-']



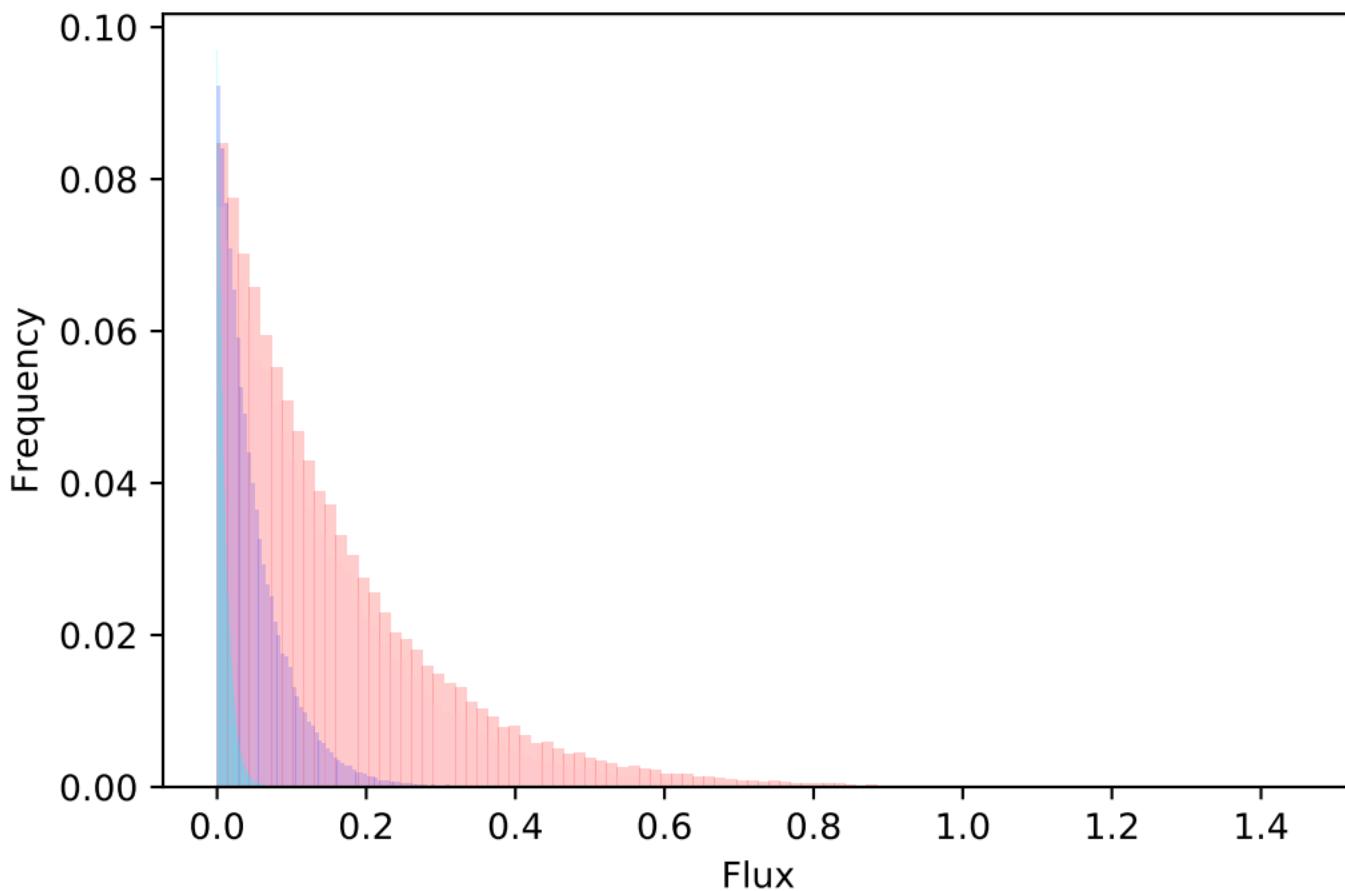
384 : NH4_c <=> NH4_m
['-']



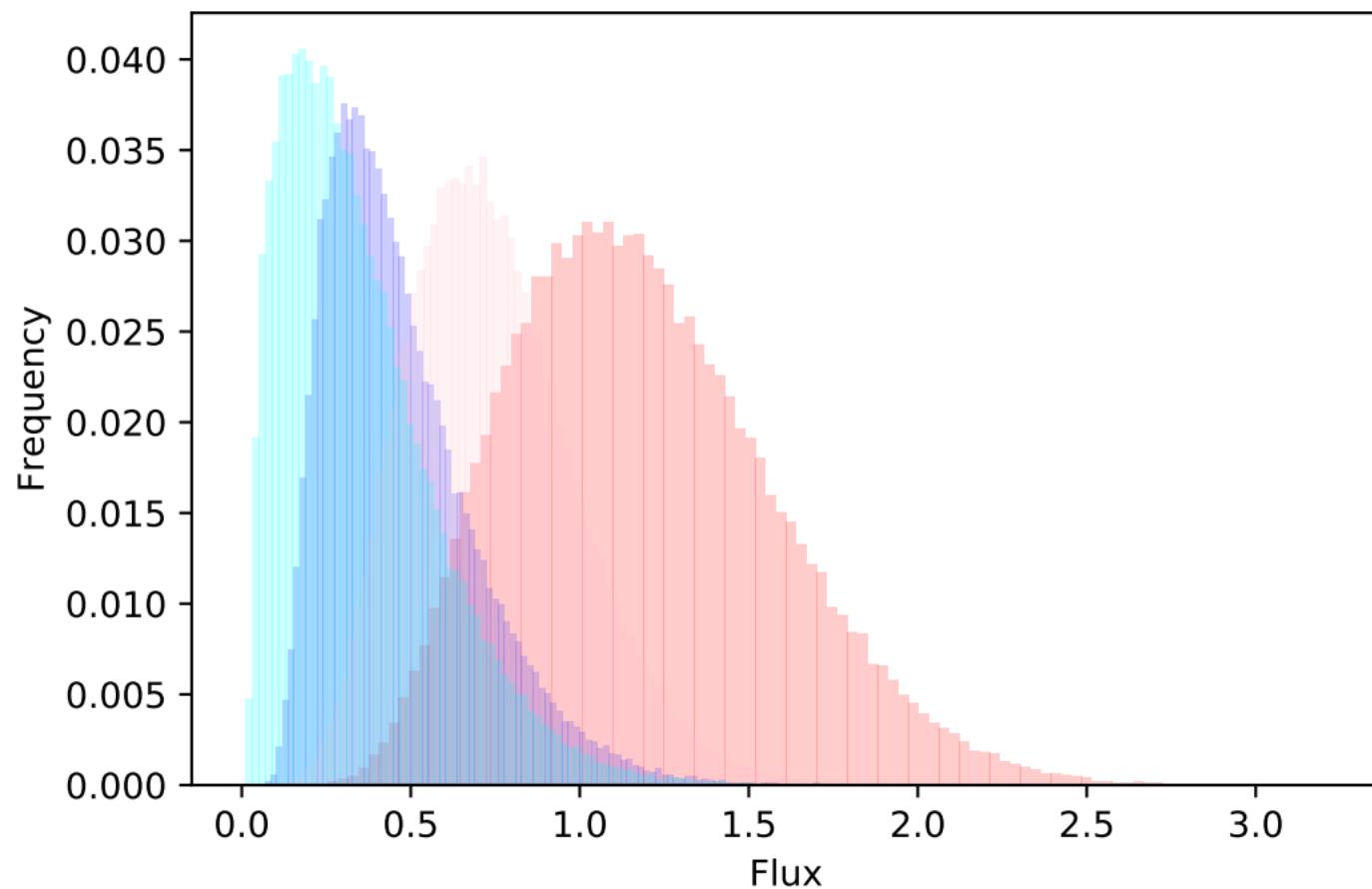
385 : H2S_c <=> H2S_h
['-']



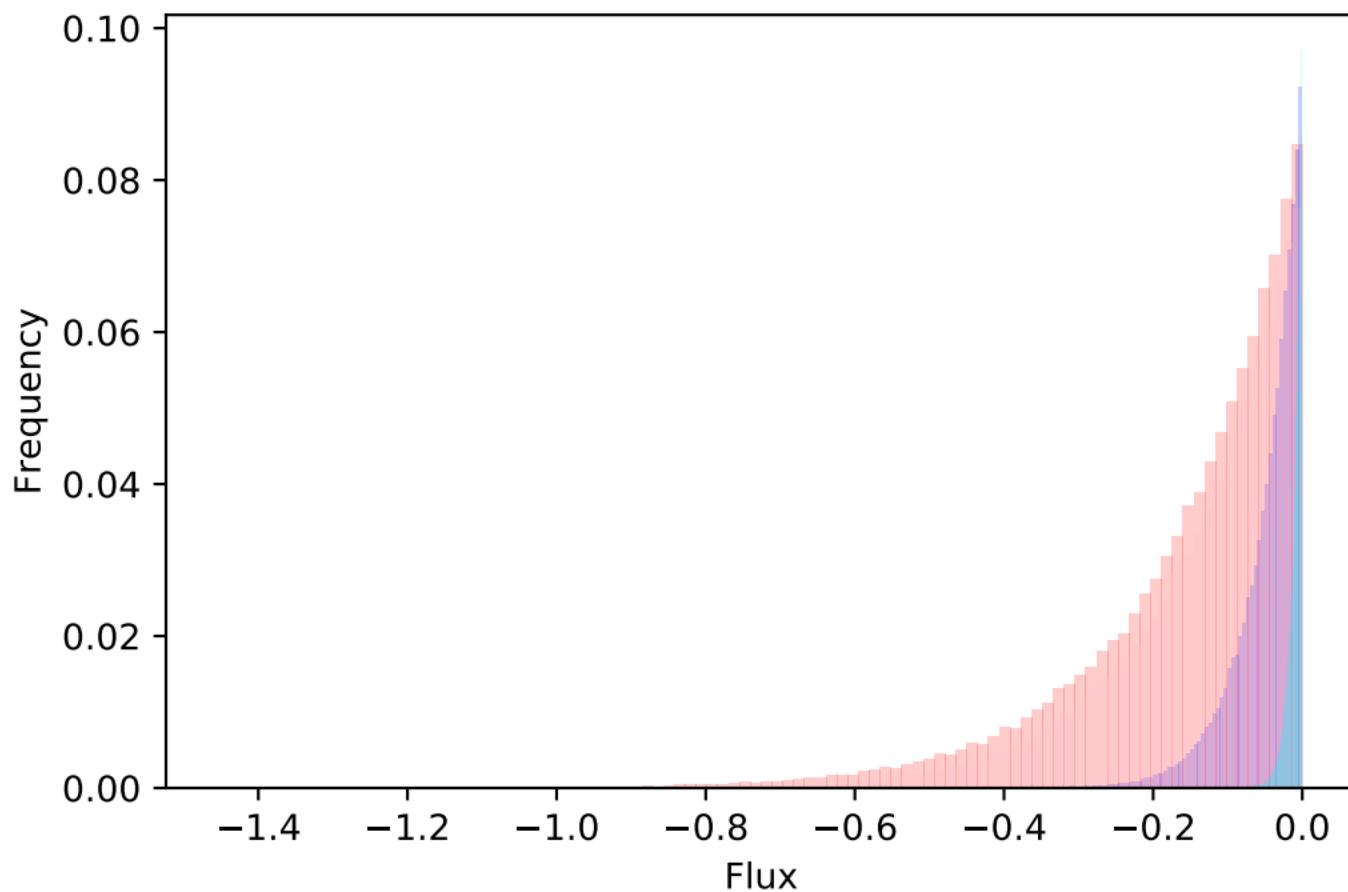
386 : H2S_c <=> H2S_m
[!-!]



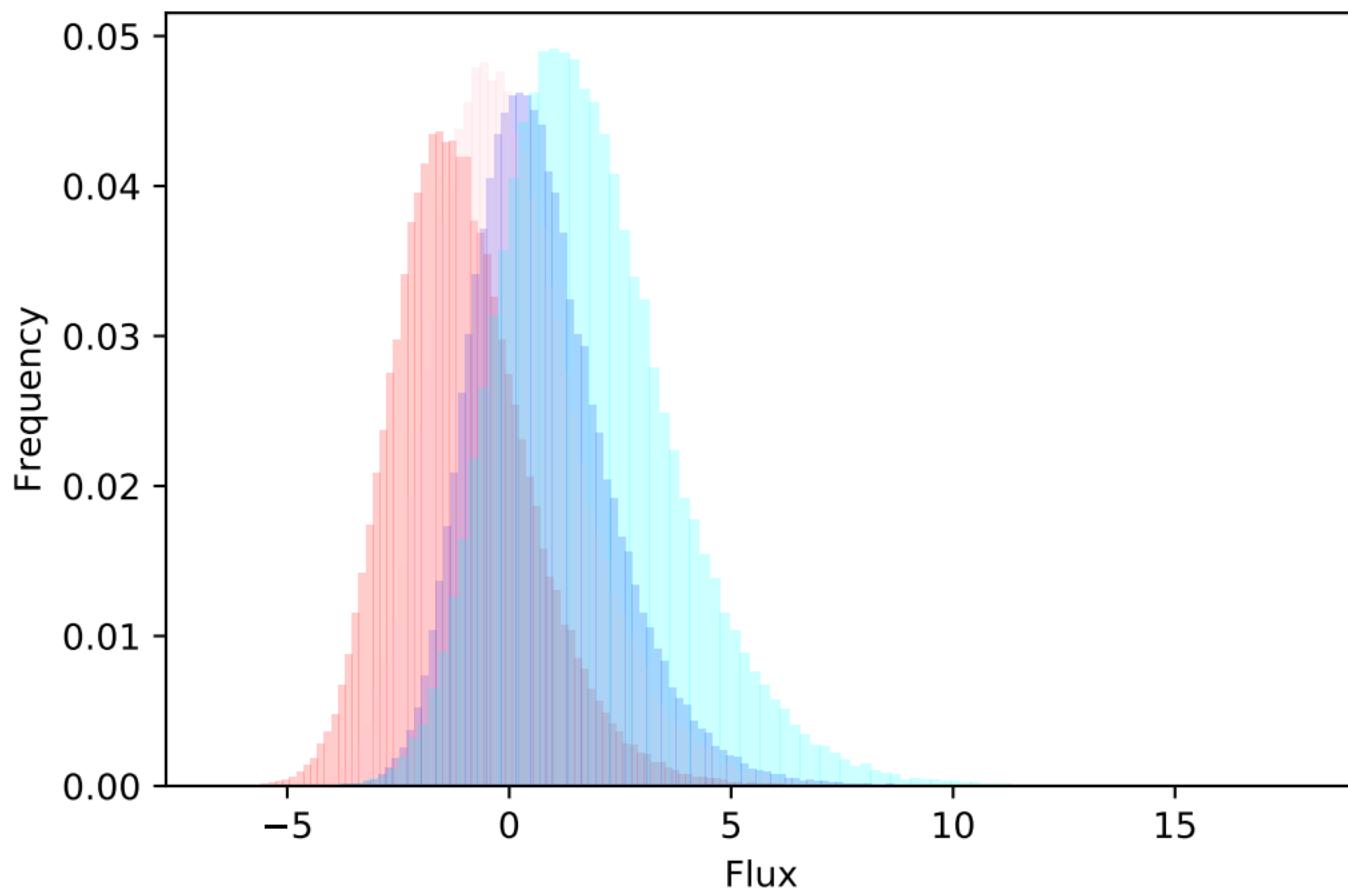
387 : AC_c <=> AC_h
[*'*-]



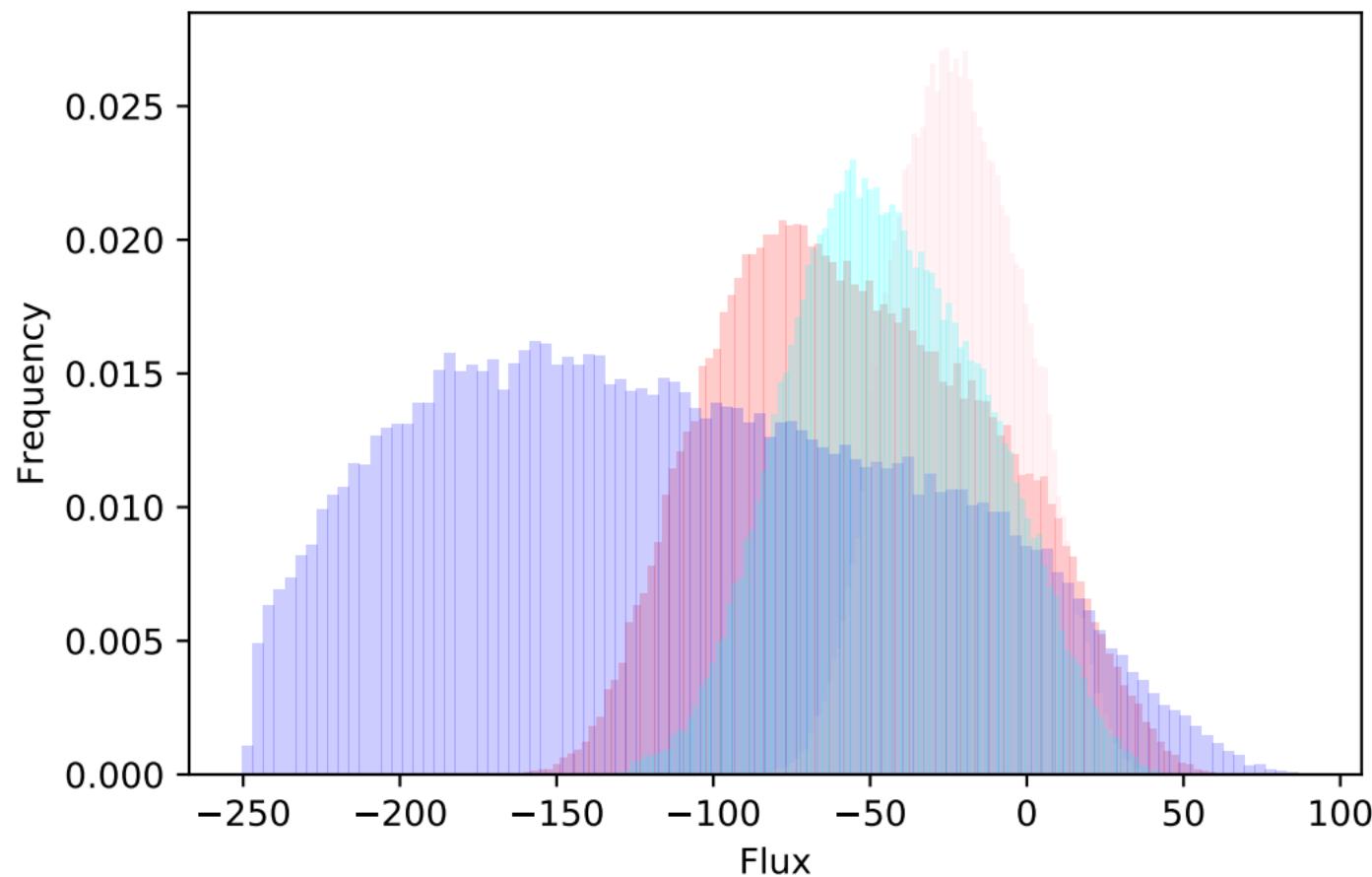
388 : AC_c <=> AC_m
[!-!]



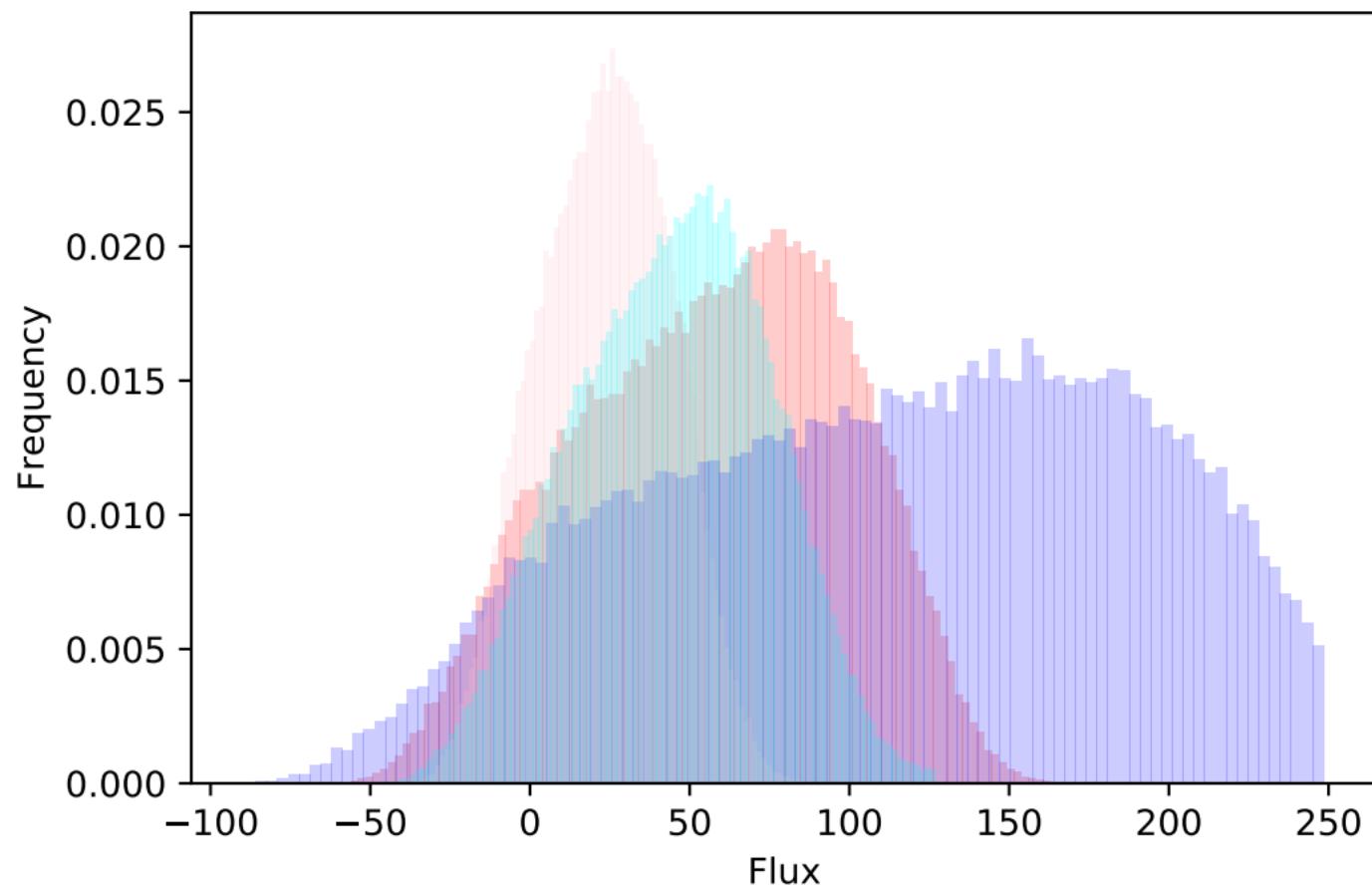
389 : Pyr_c <=> Pyr_h
['-']



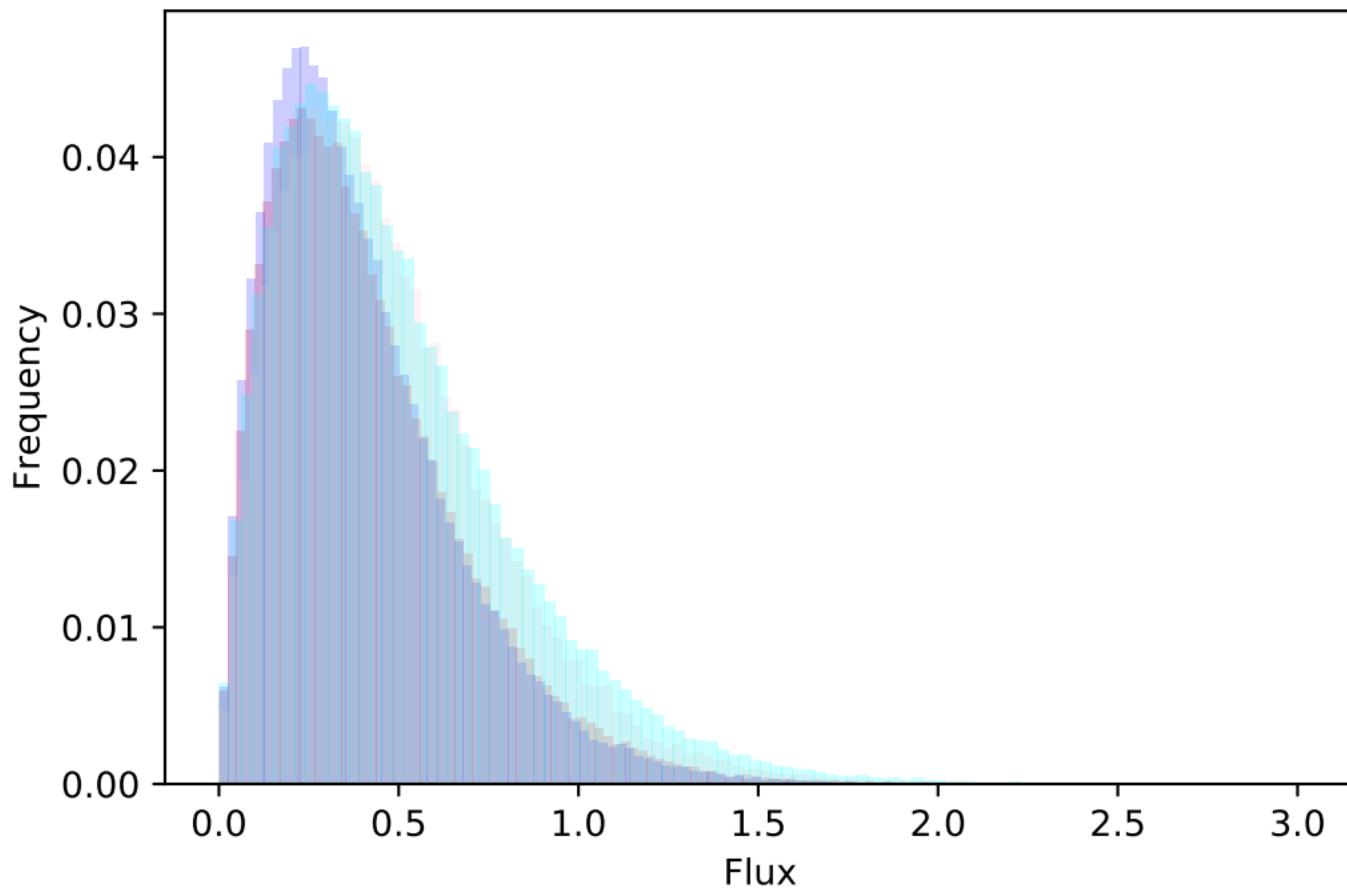
390 : Pyr_c <=> Pyr_m
[!-!]



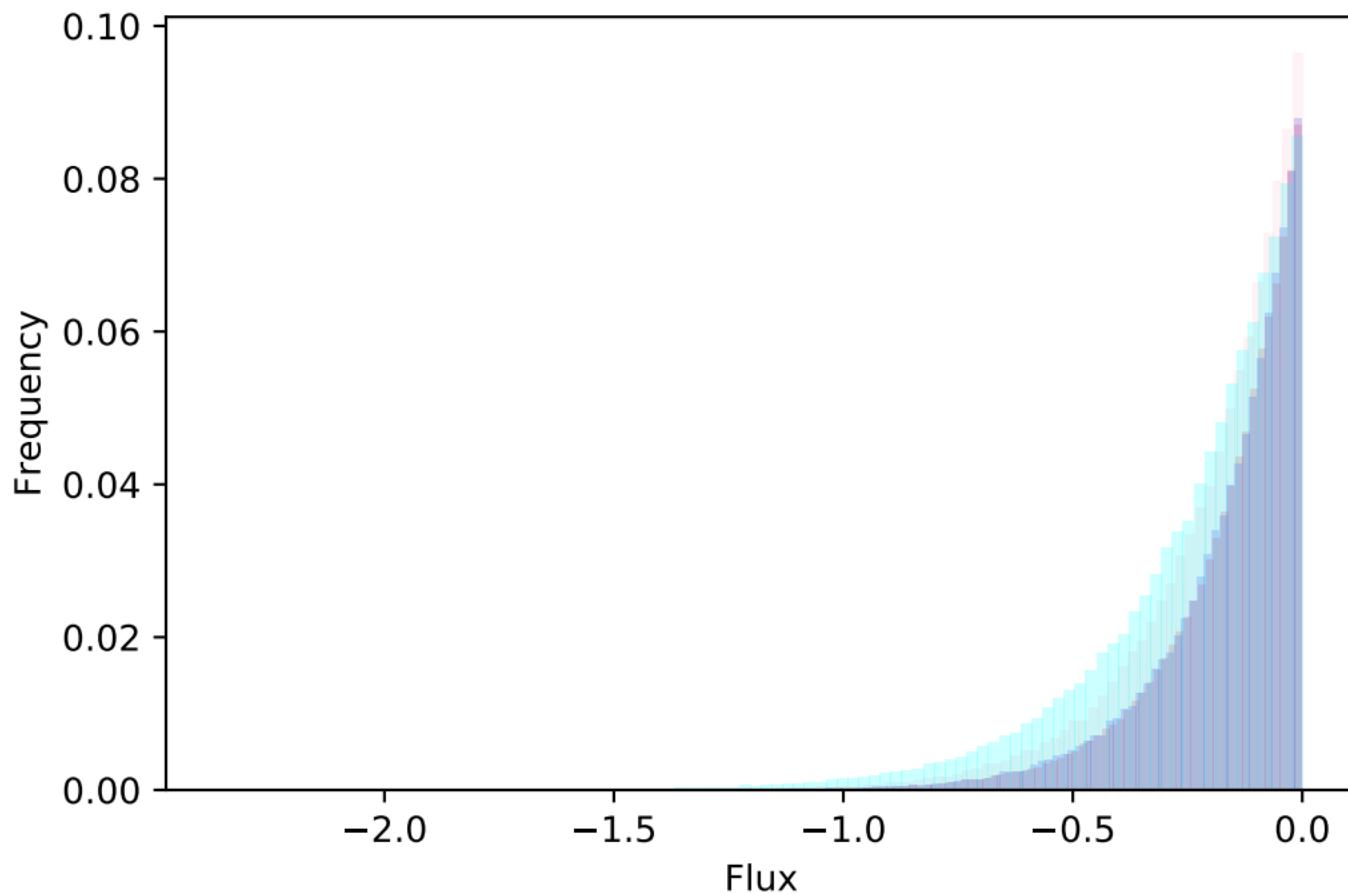
391 : Pyr_c <=> Pyr_p
['-']



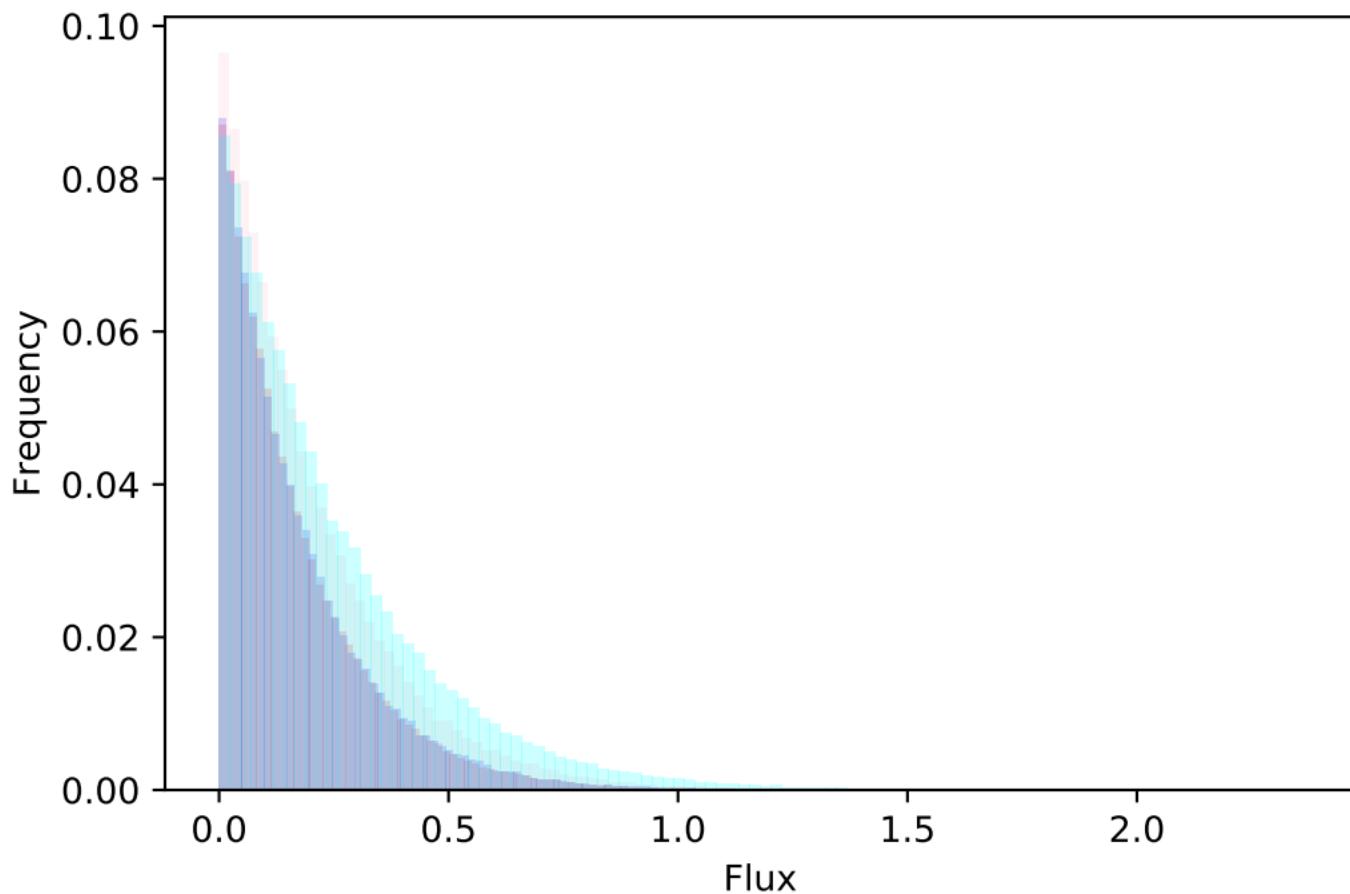
392 : GCA_c <=> GCA_p
[!-!]



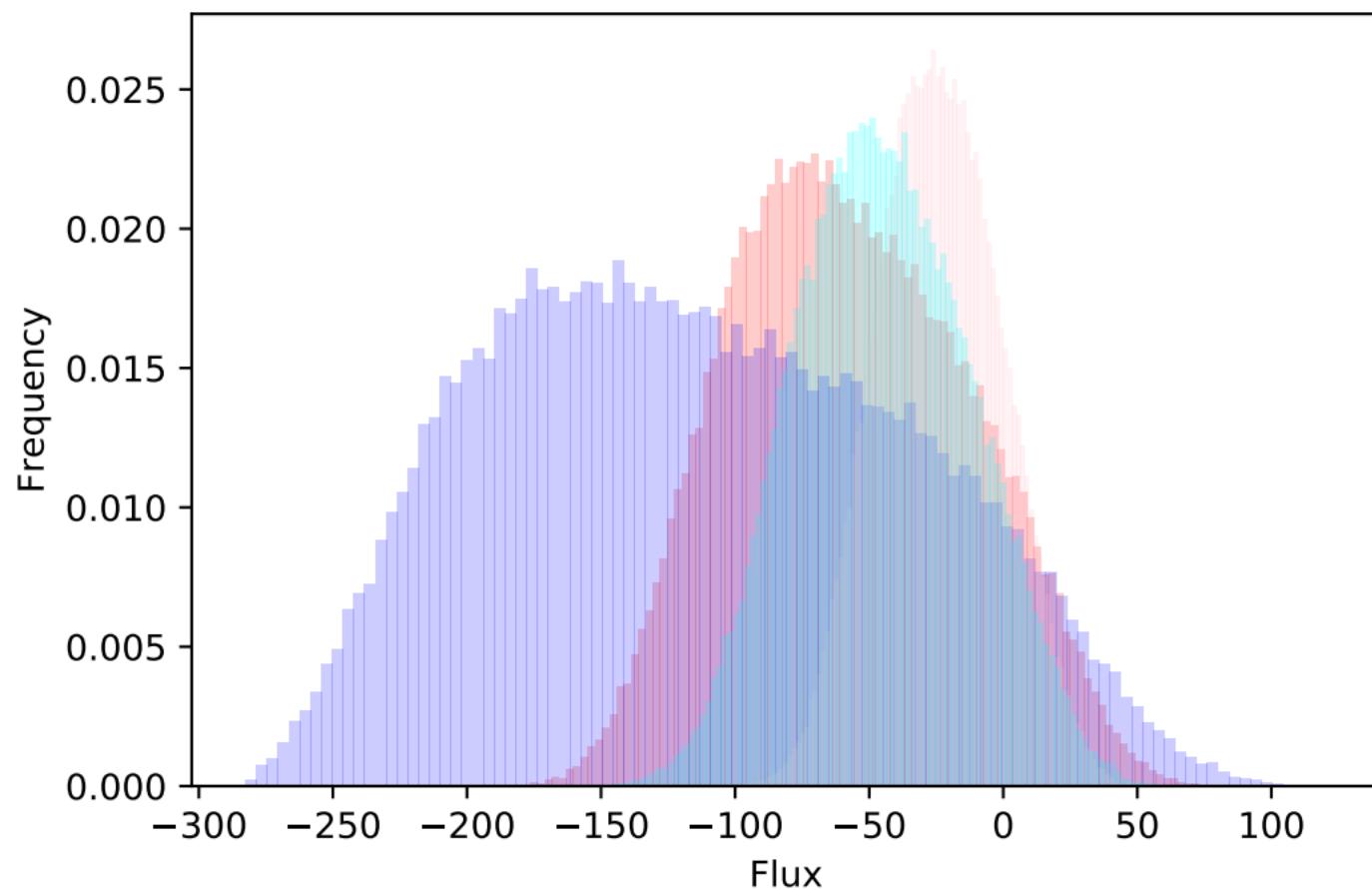
393 : GCEA_c <=> GCEA_p
[!-!]



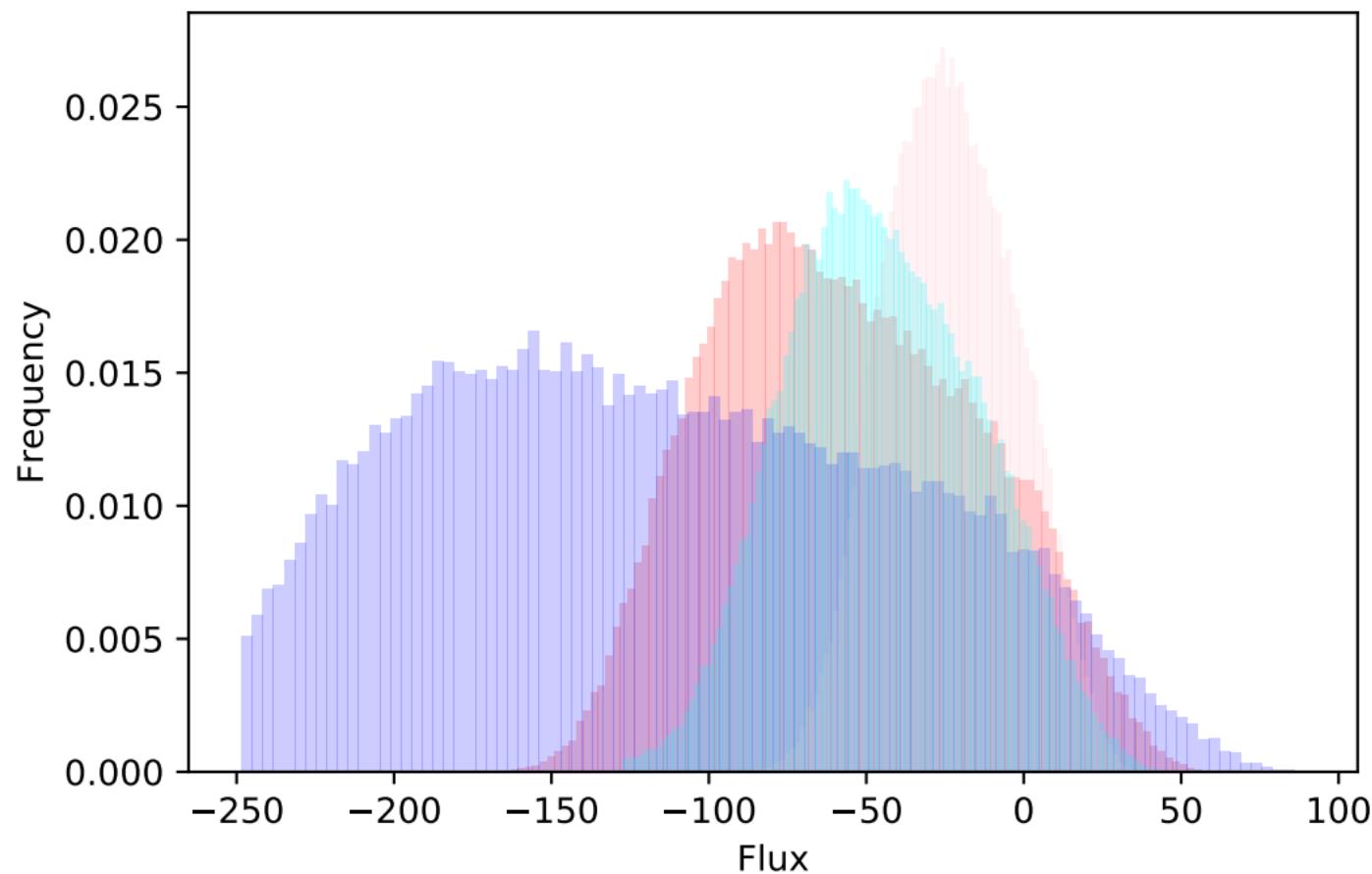
394 : Mal_c <=> Mal_p
[!-!]



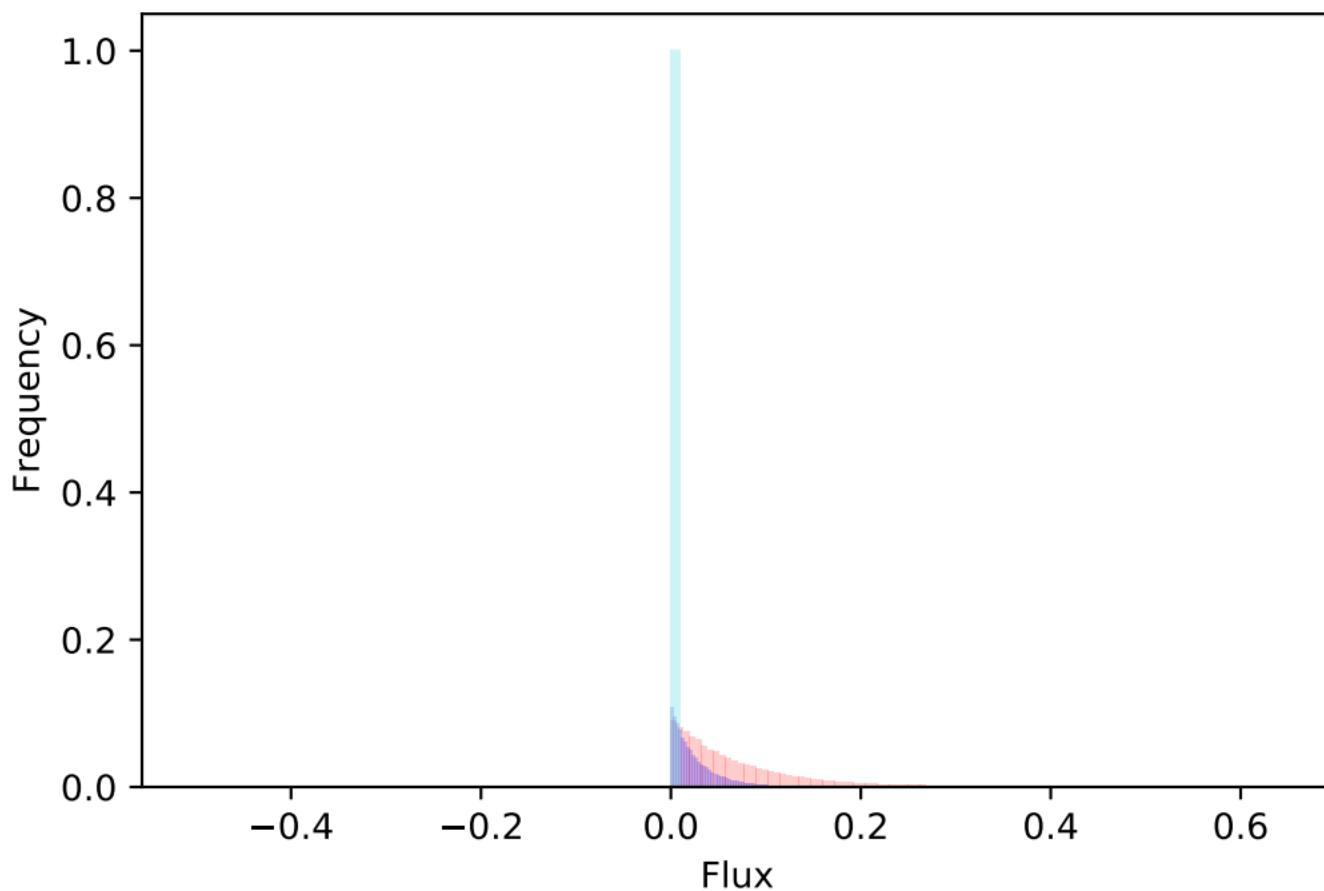
396 : KG_c <=> KG_p
[!-!]



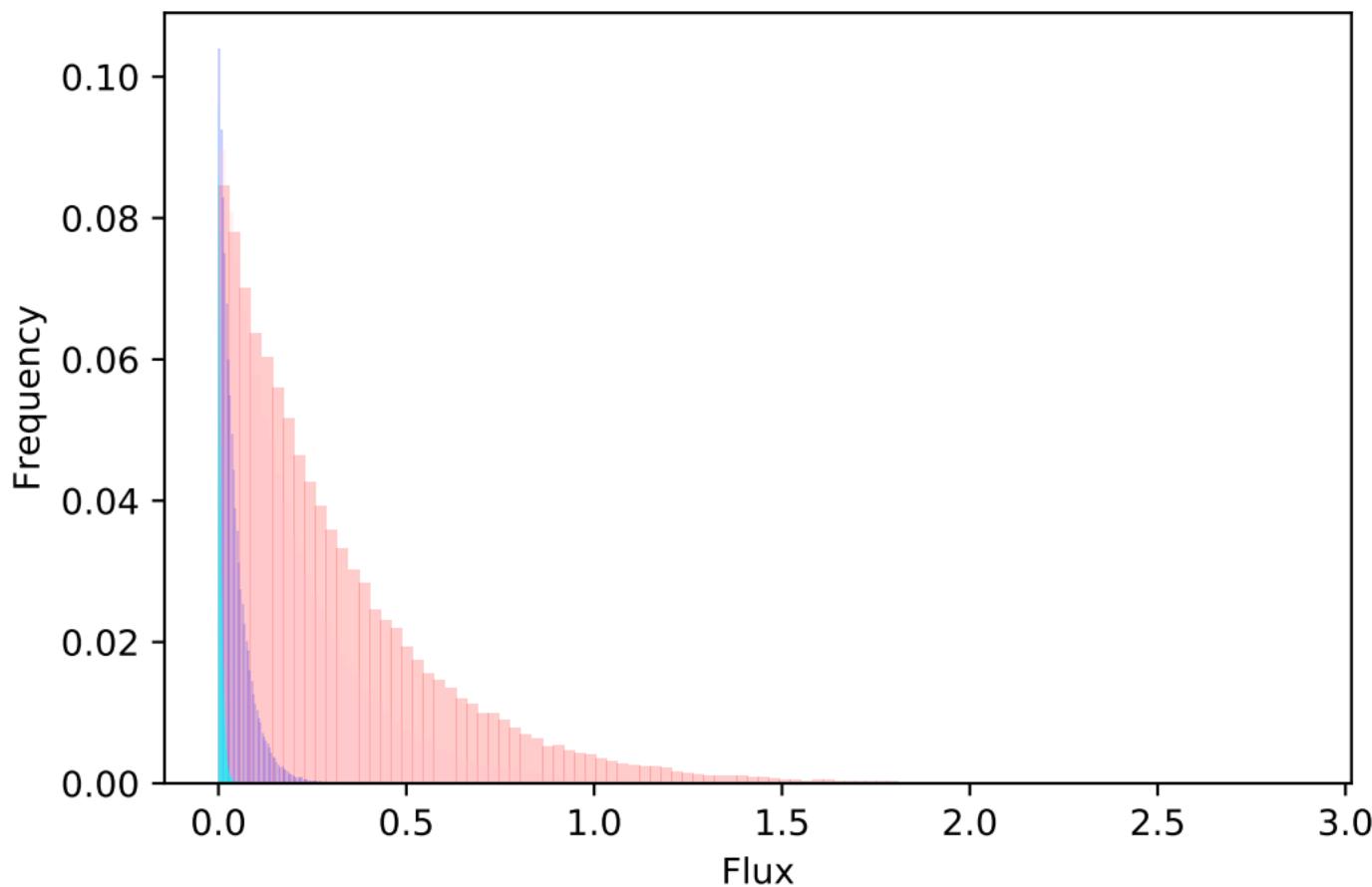
397 : Ala_c <=> Ala_p
['-']



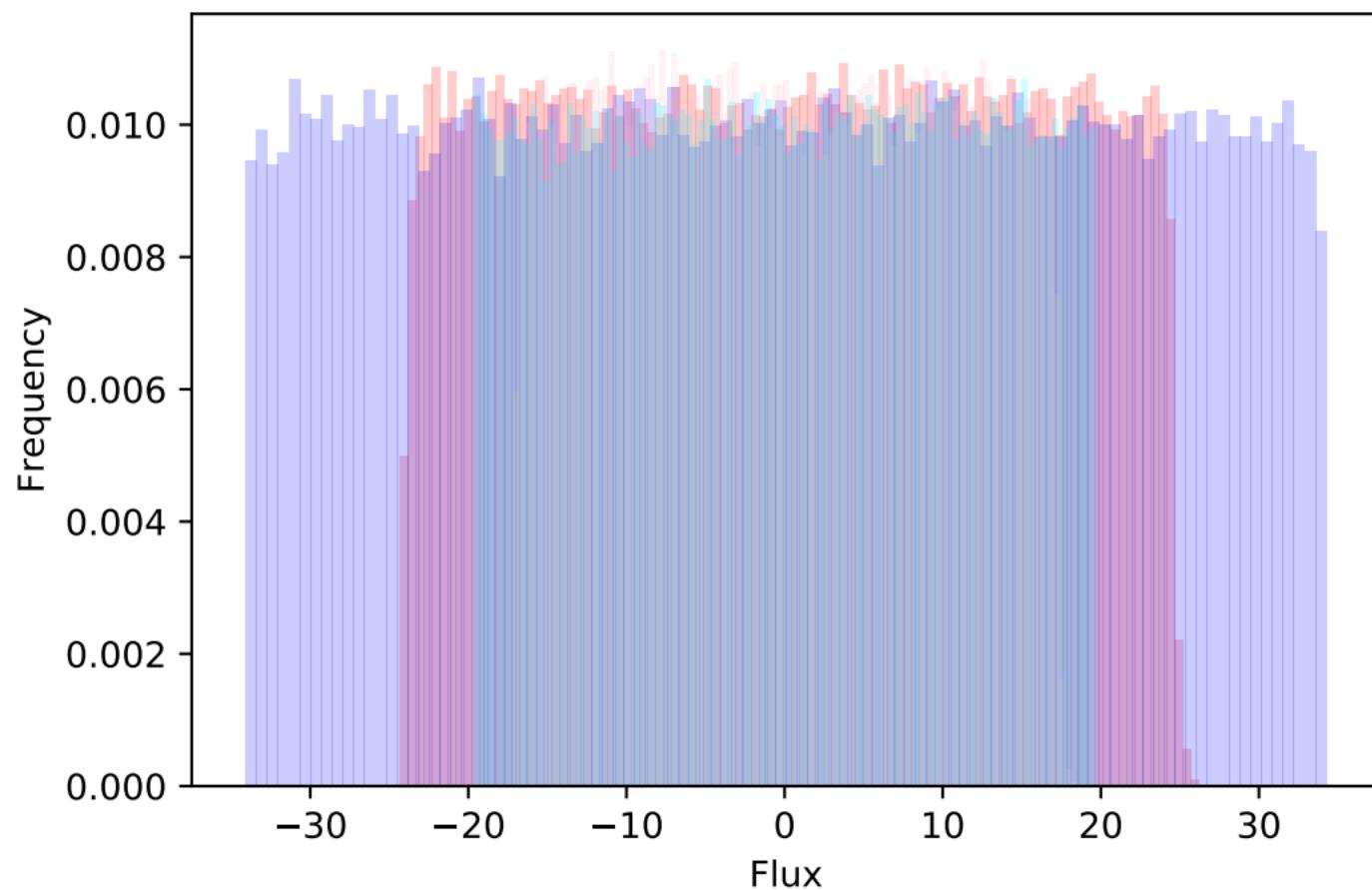
398 : Arg_c <=> Arg_p
[!-!]



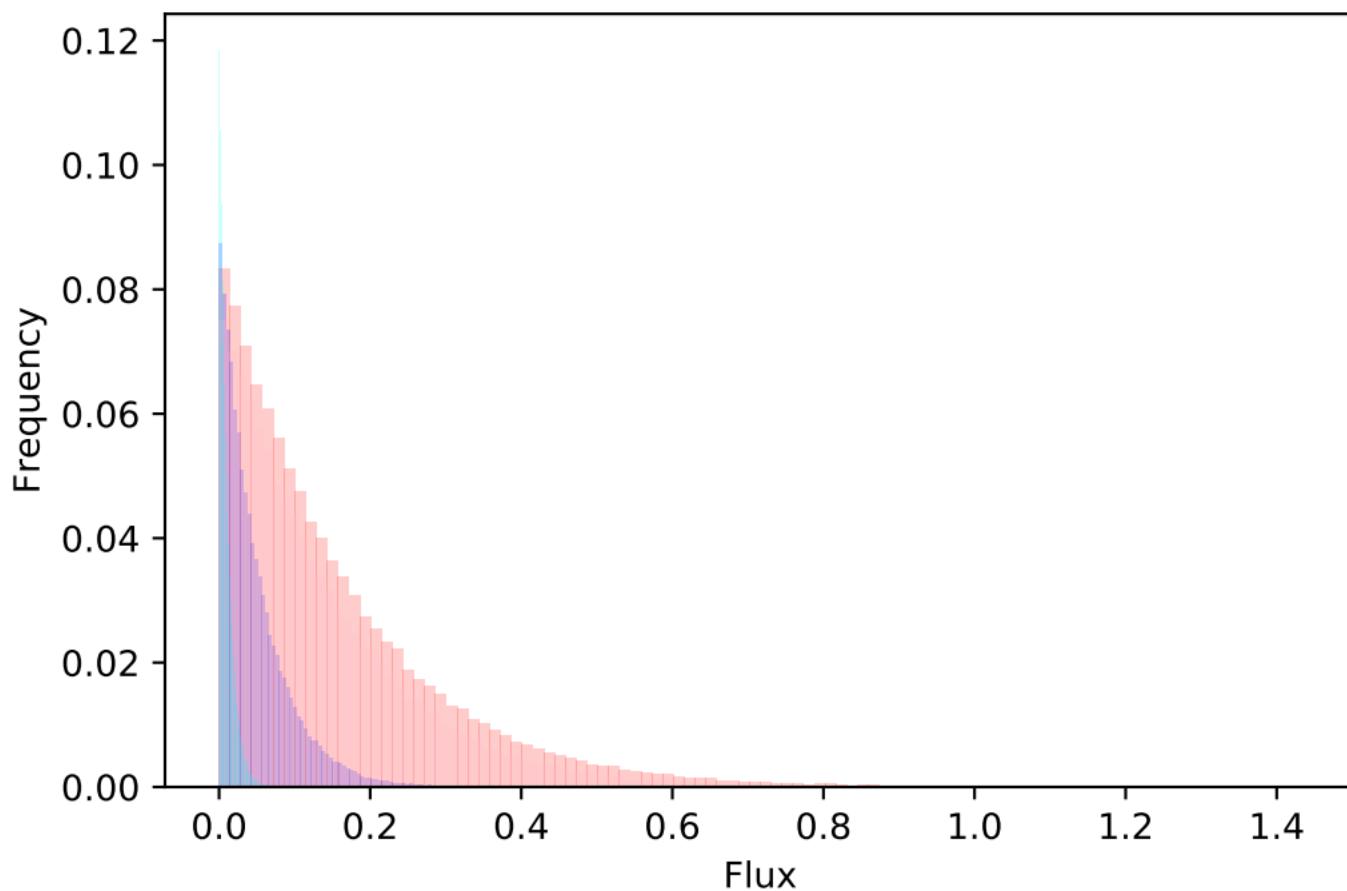
399 : Asn_c <=> Asn_p + H_p
['-']



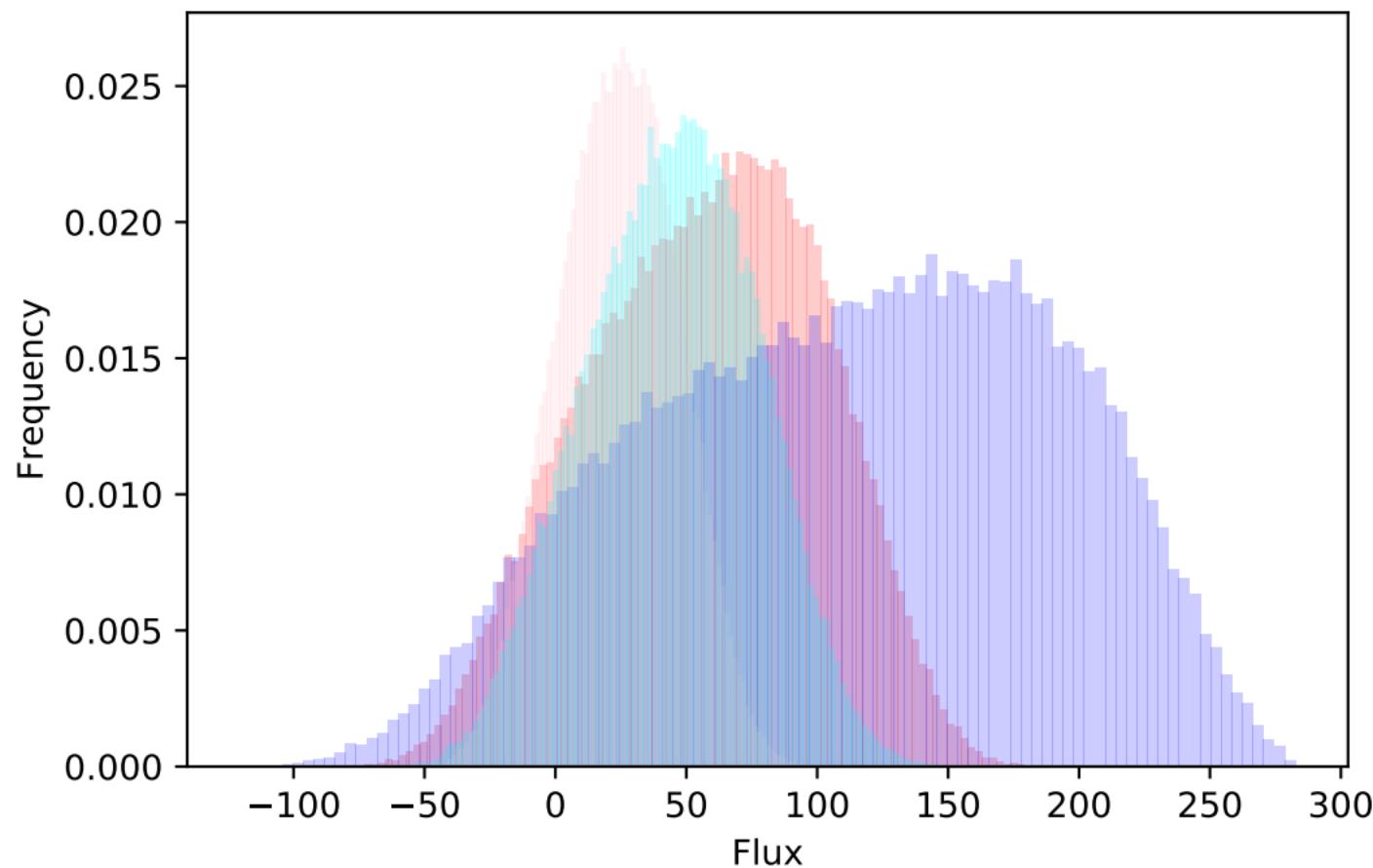
400 : Asp_c <=> Asp_p
['-']



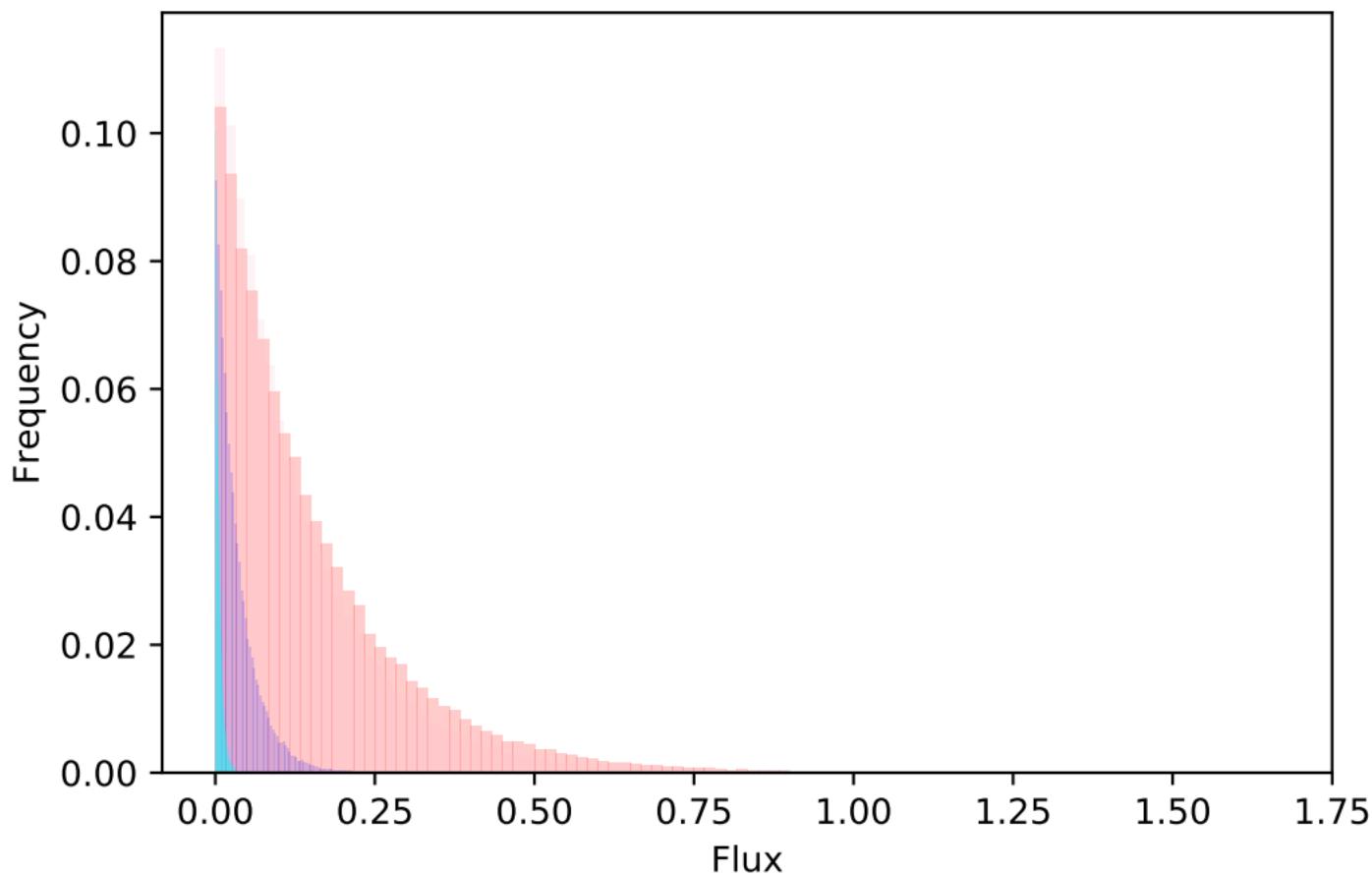
401 : Cys_c <=> Cys_p
[!-]



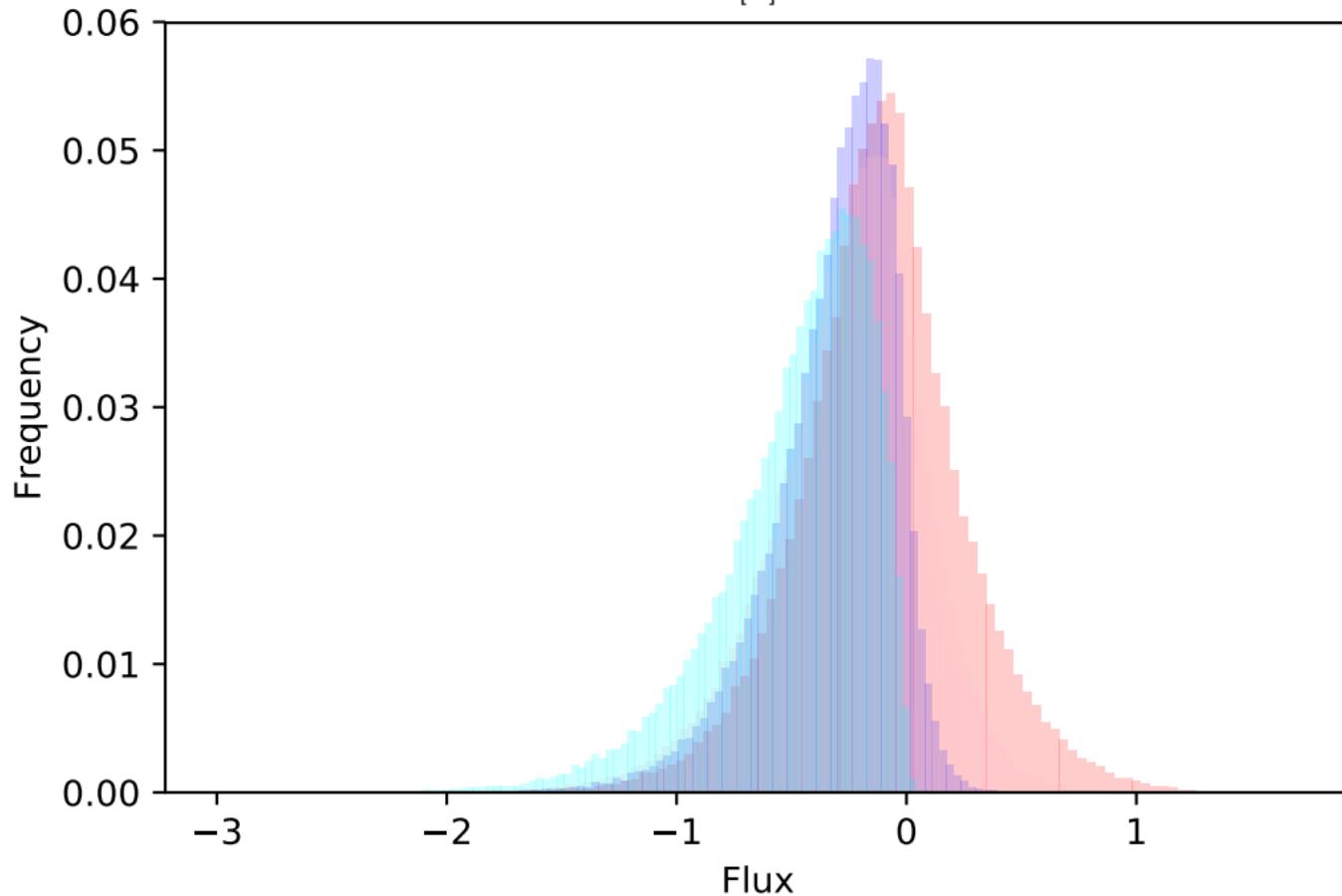
402 : Glu_c <=> Glu_p
['-']



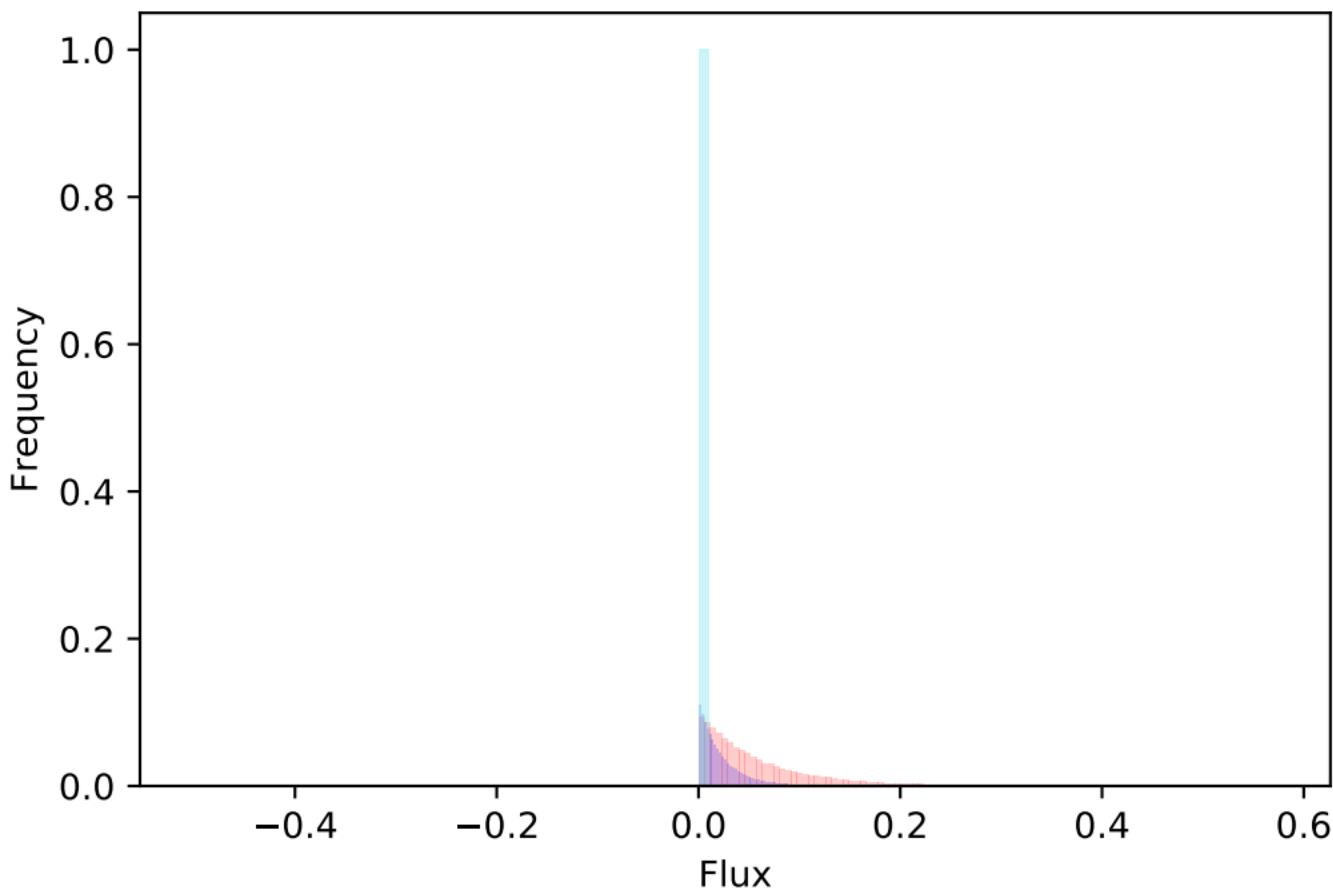
403 : Gln_c <=> Gln_p + H_p
['-']



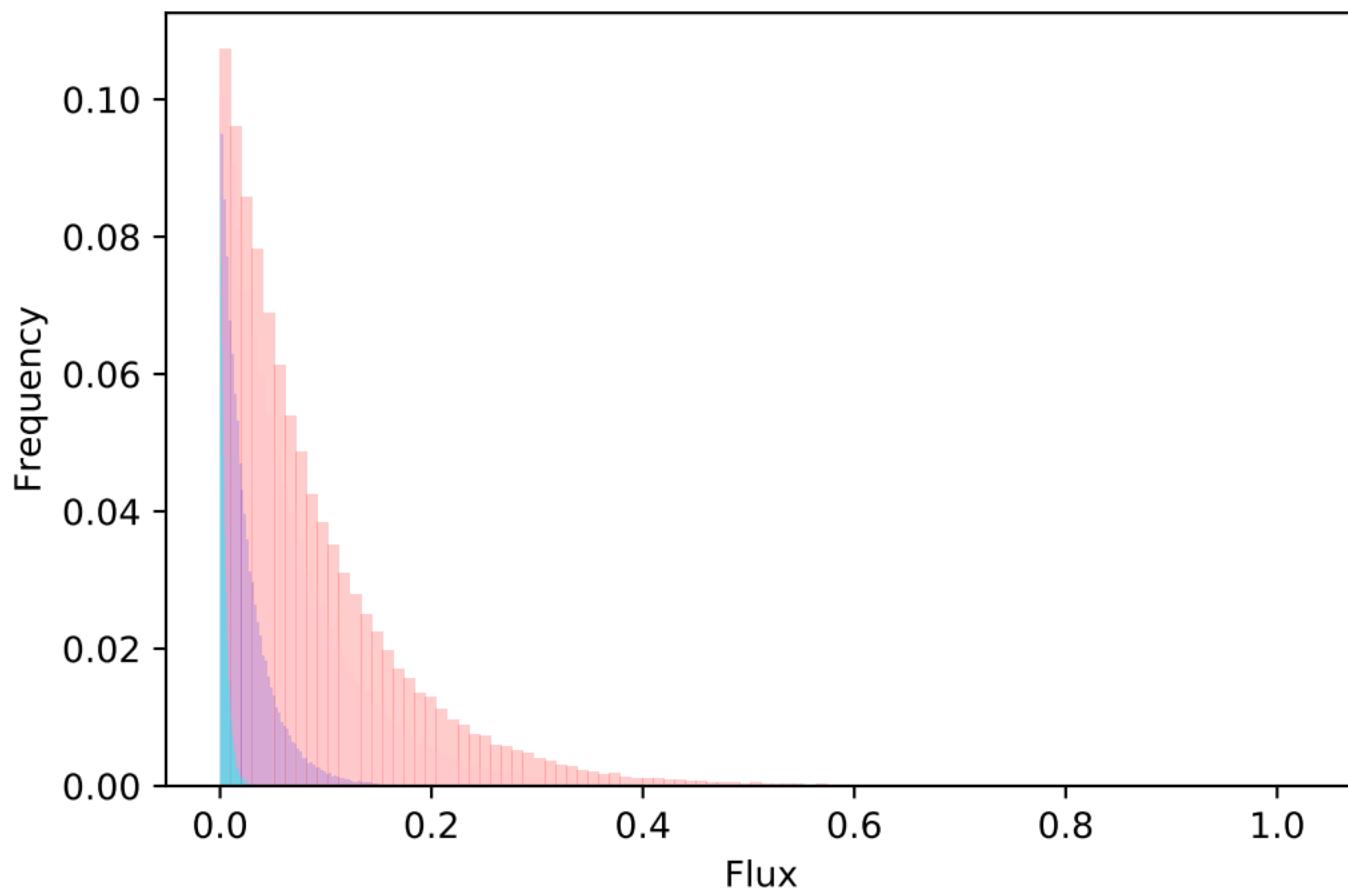
404 : Gly_c <=> Gly_p
['-']



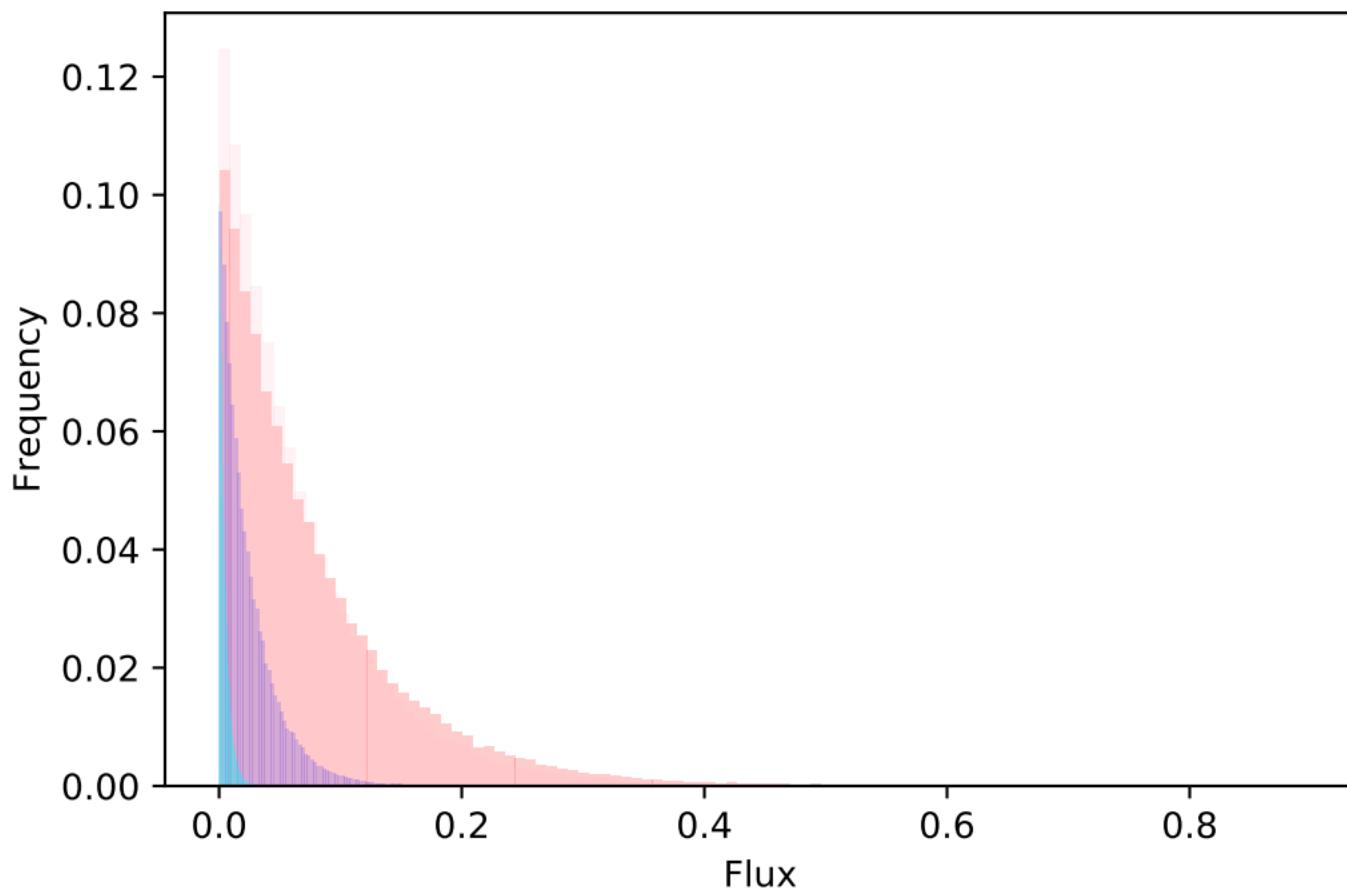
405 : His_c <=> His_p
['-']



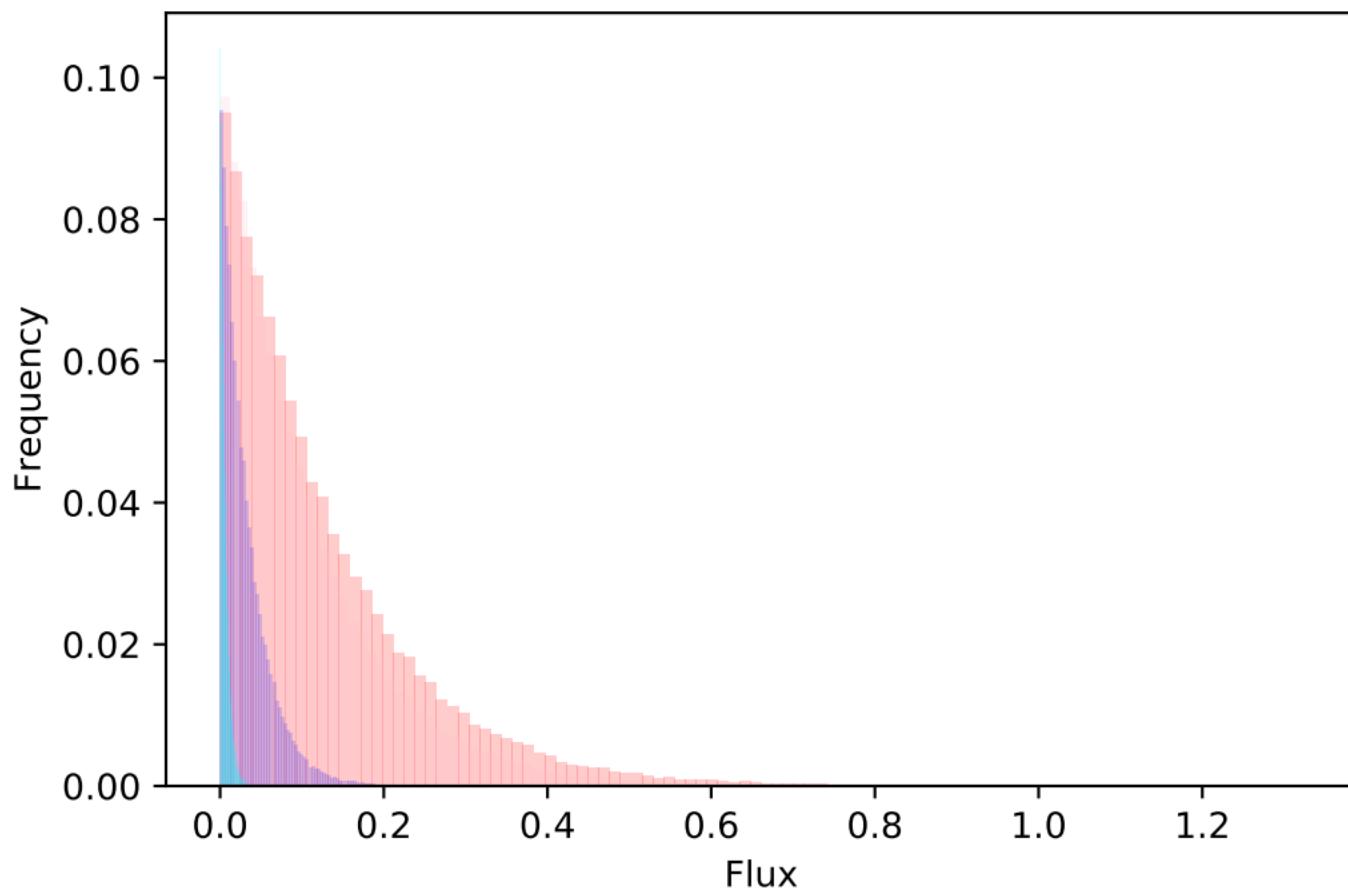
406 : lle_c <=> lle_p
[!-!]



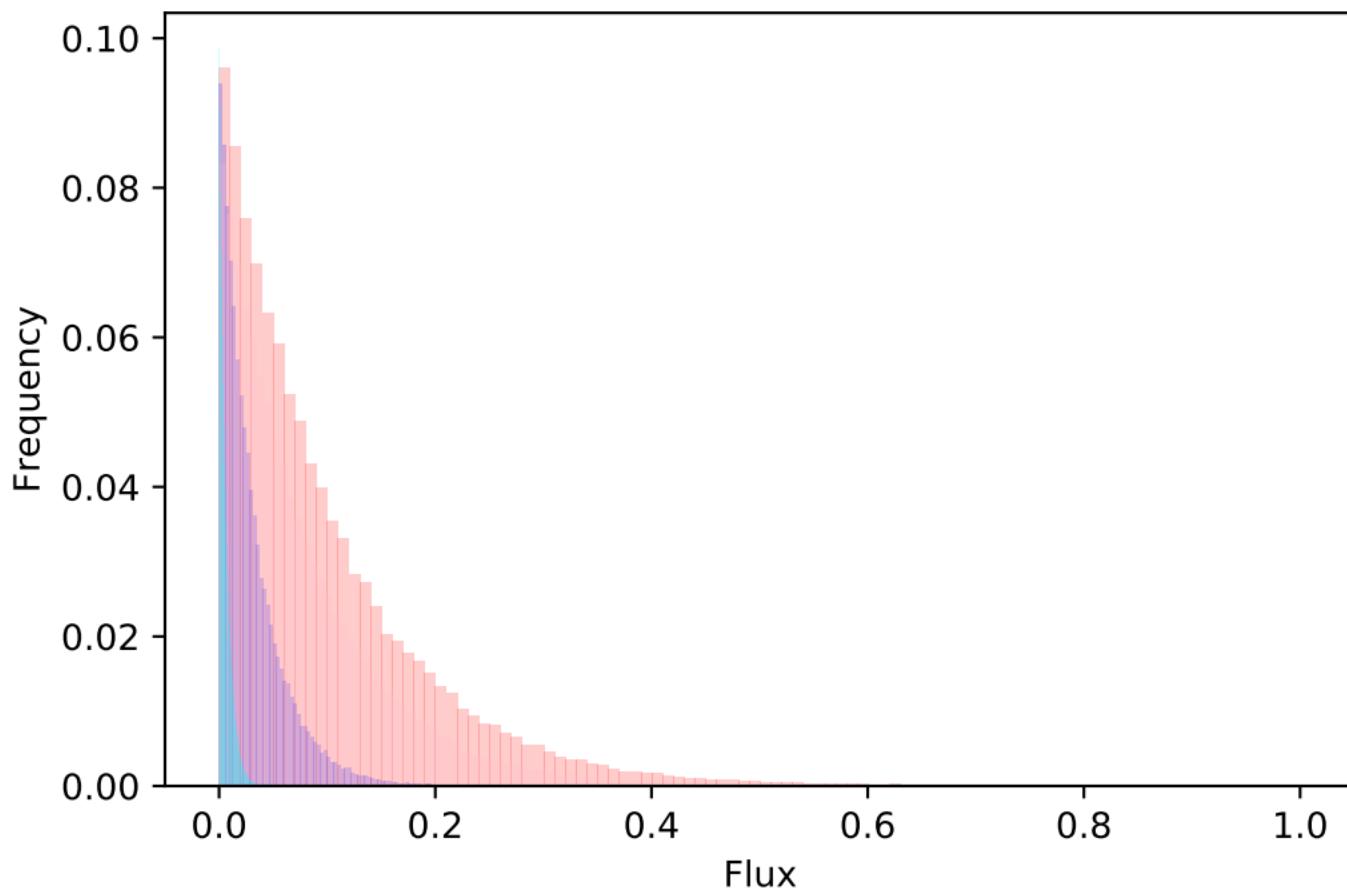
407 : Leu_c <=> Leu_p
[!-!]



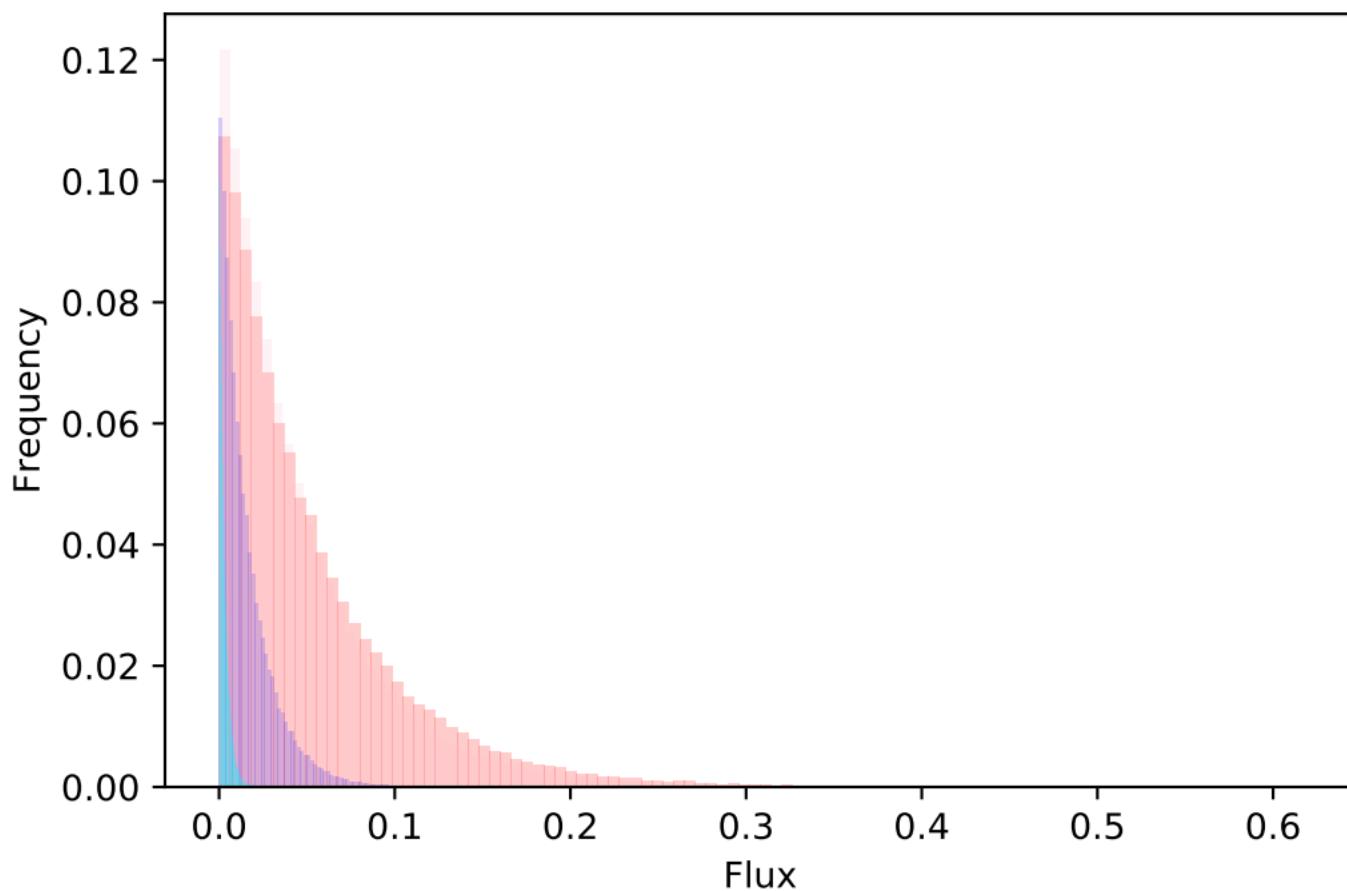
408 : Lys_c <=> Lys_p
[!-!]



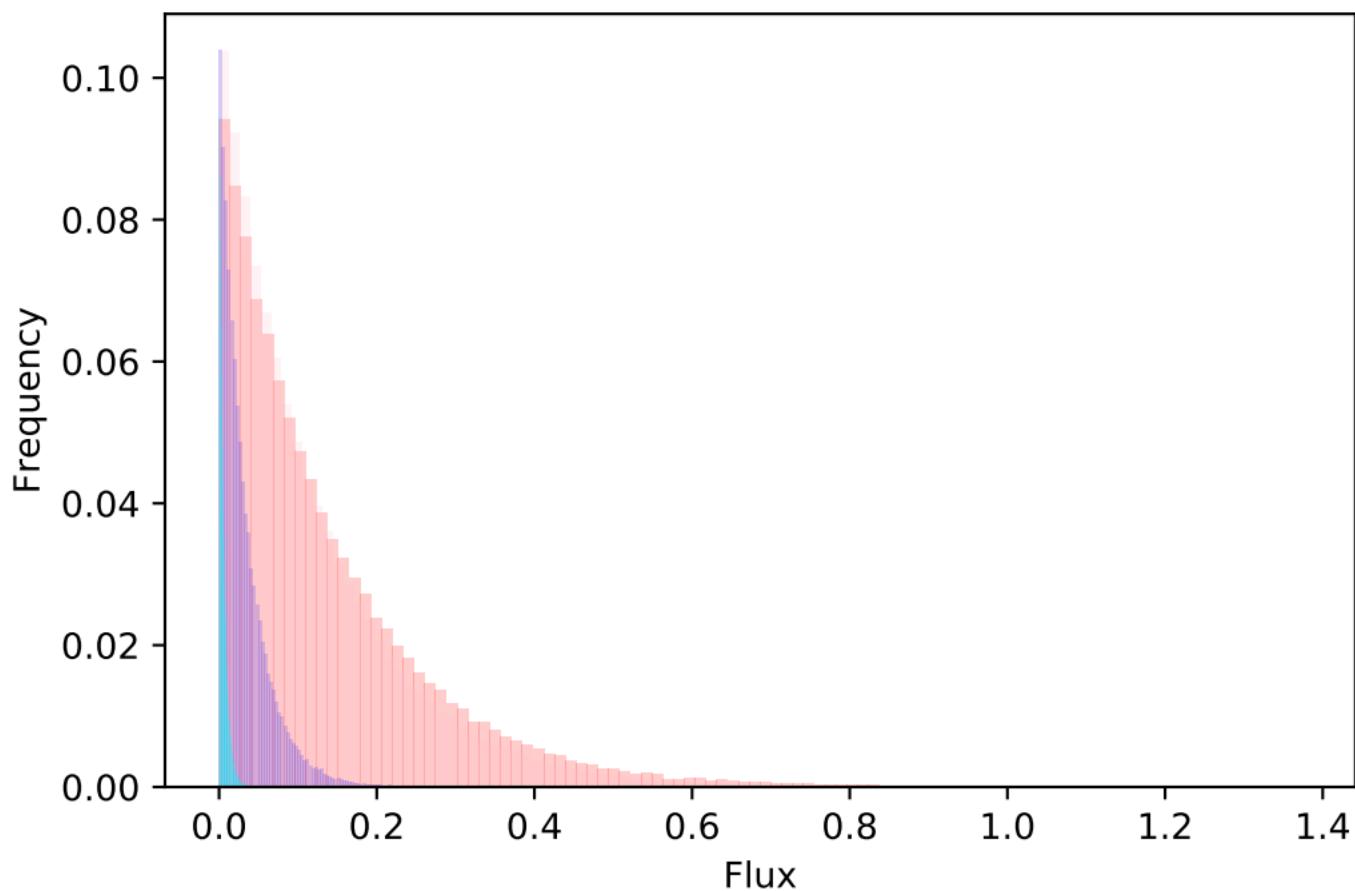
409 : Met_c <=> Met_p
[!-!]



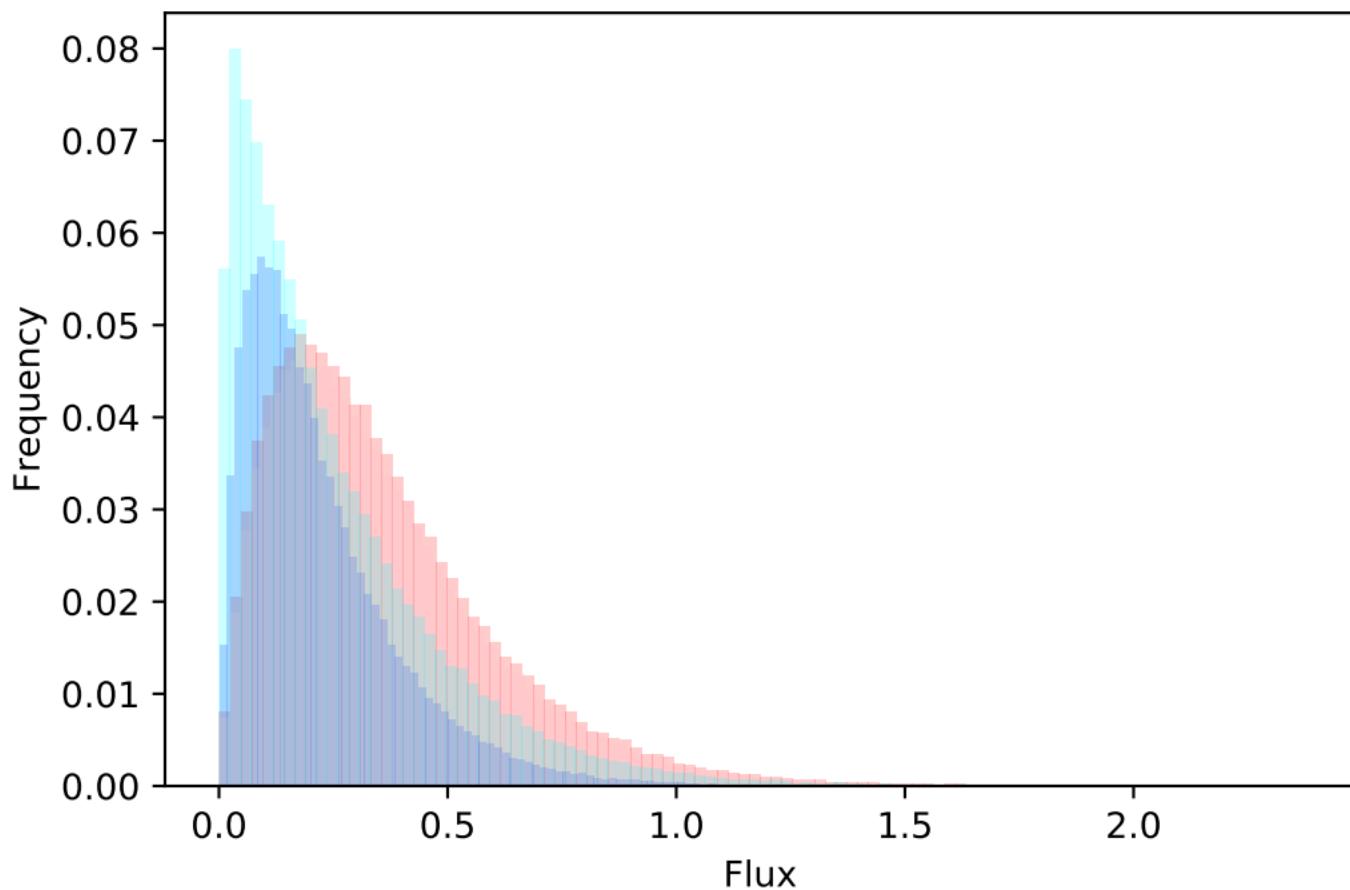
410 : Phe_c <=> Phe_p
['-']



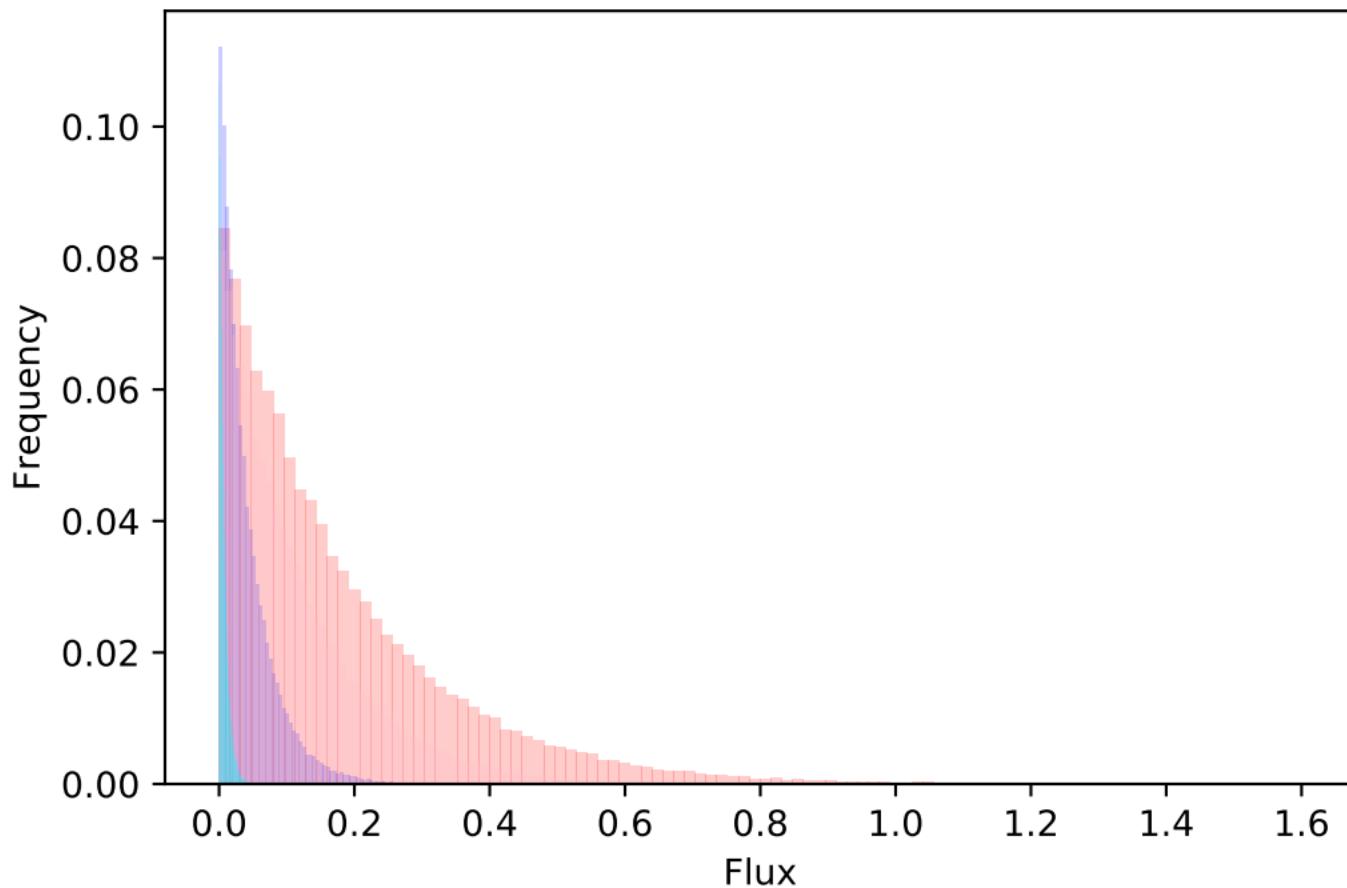
411 : Pro_c <=> Pro_p
[!-]



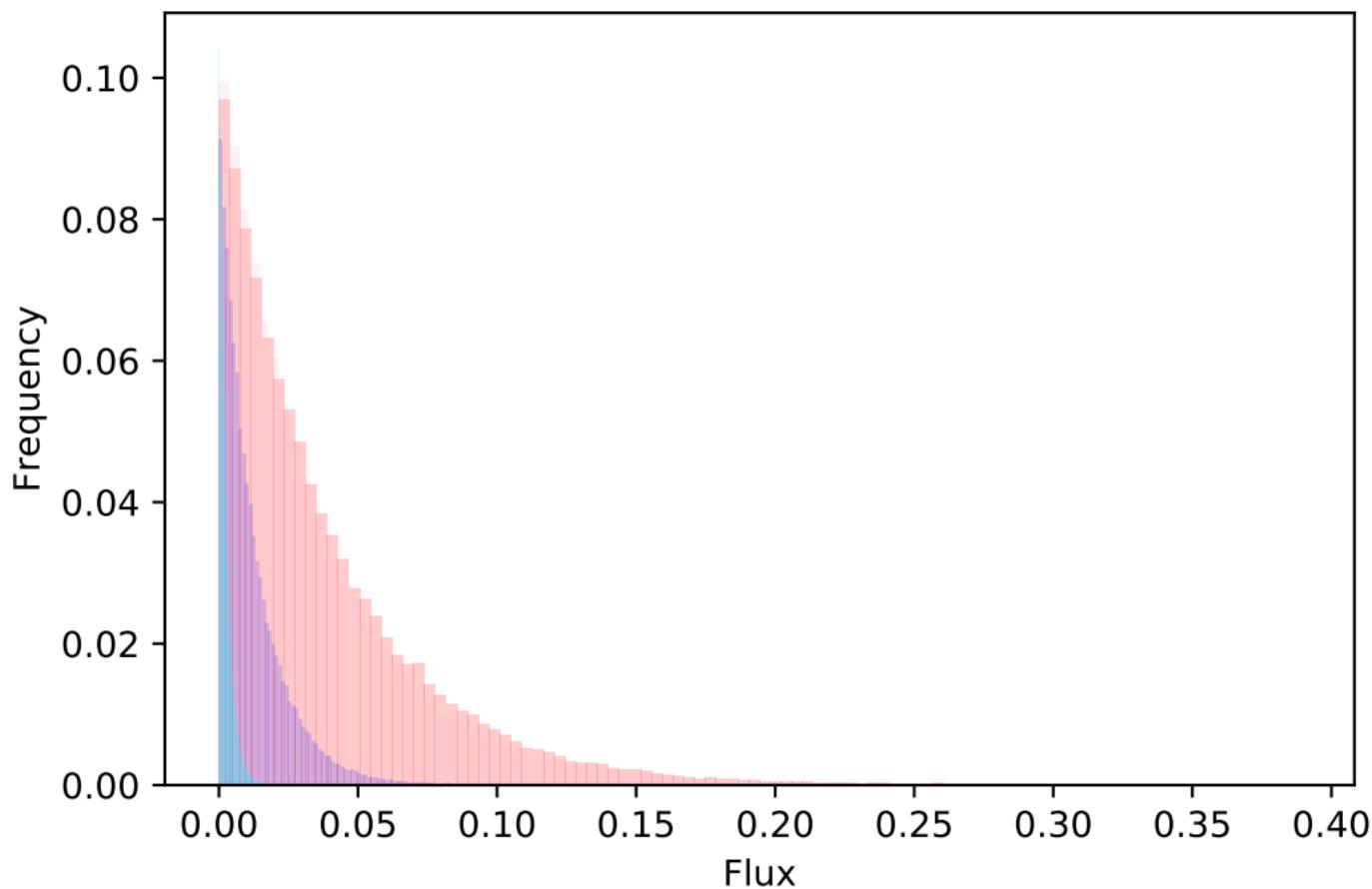
412 : Ser_c <=> Ser_p
[!-!]



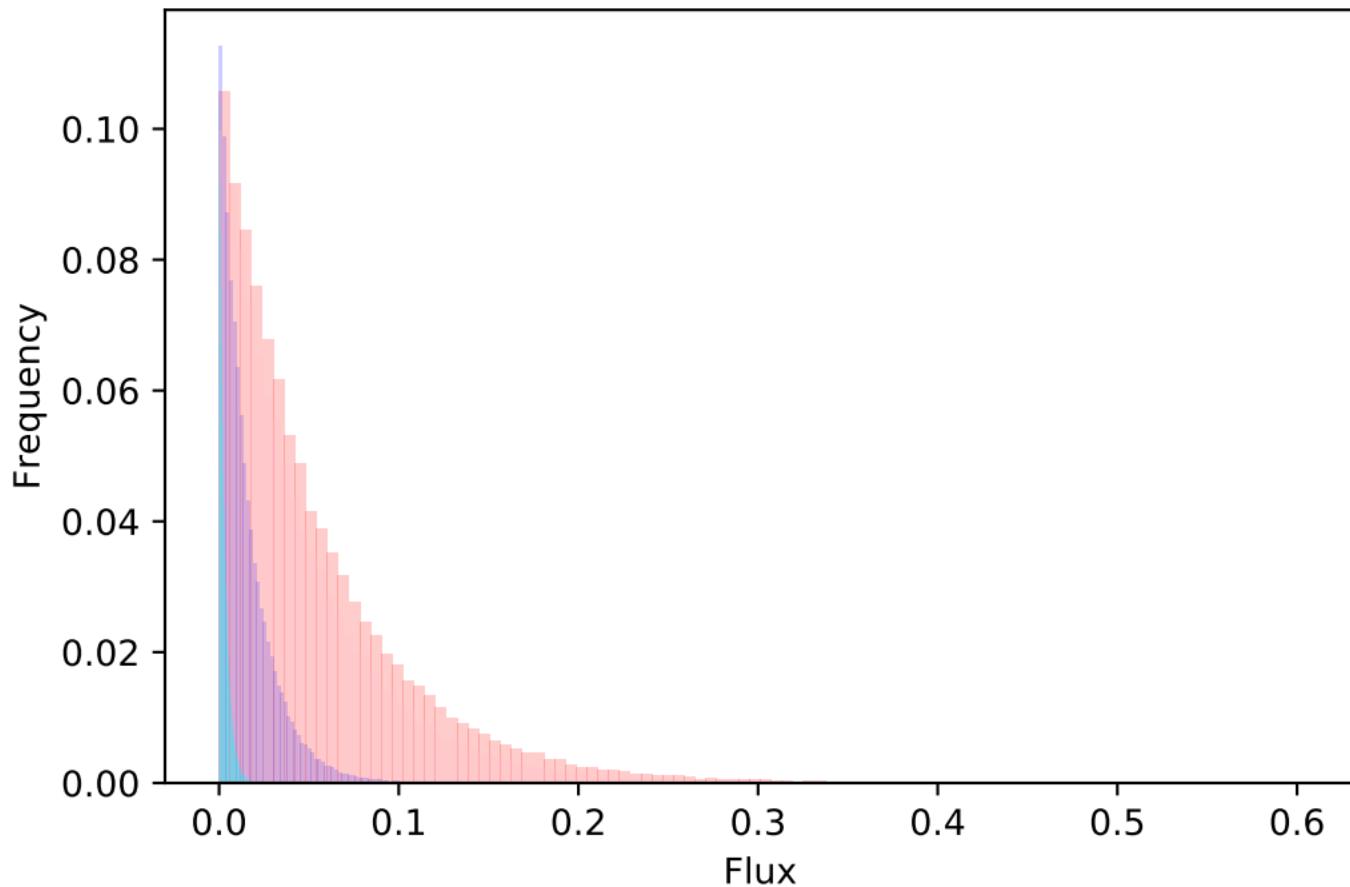
413 : Thr_c <=> Thr_p
['-']



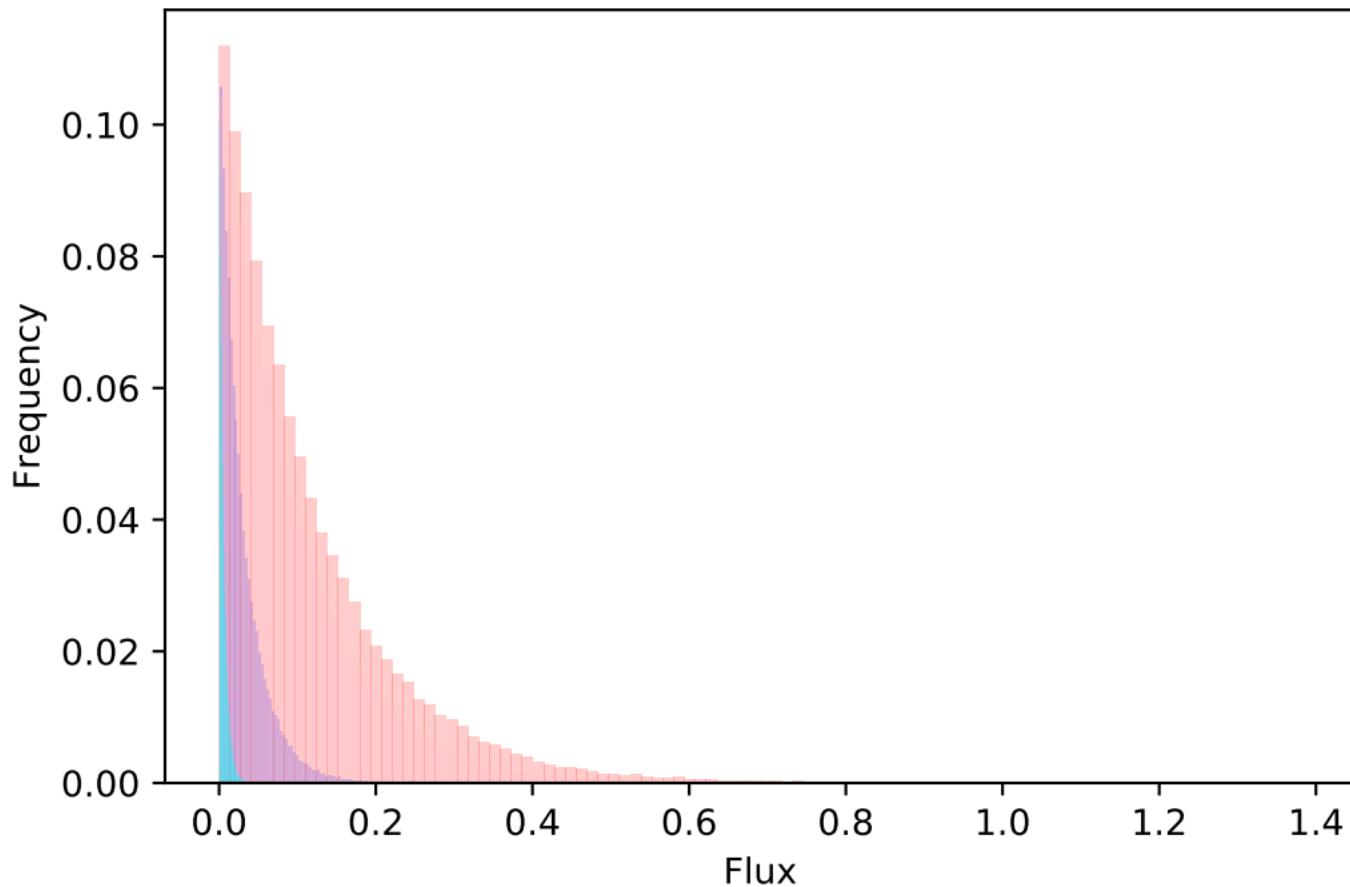
414 : Trp_c <=> Trp_p
[!-]



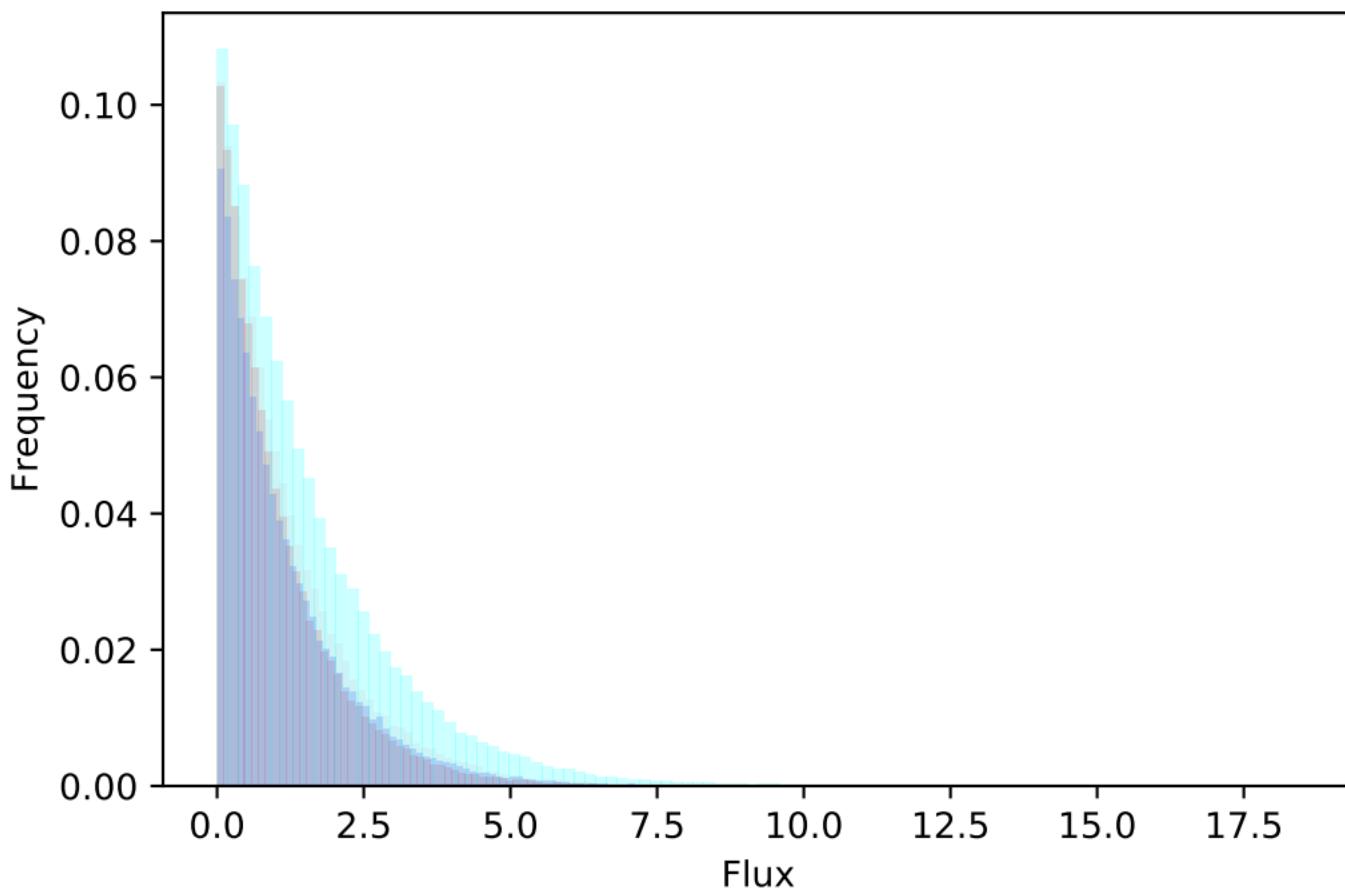
415 : Tyr_c <=> Tyr_p
[!-]



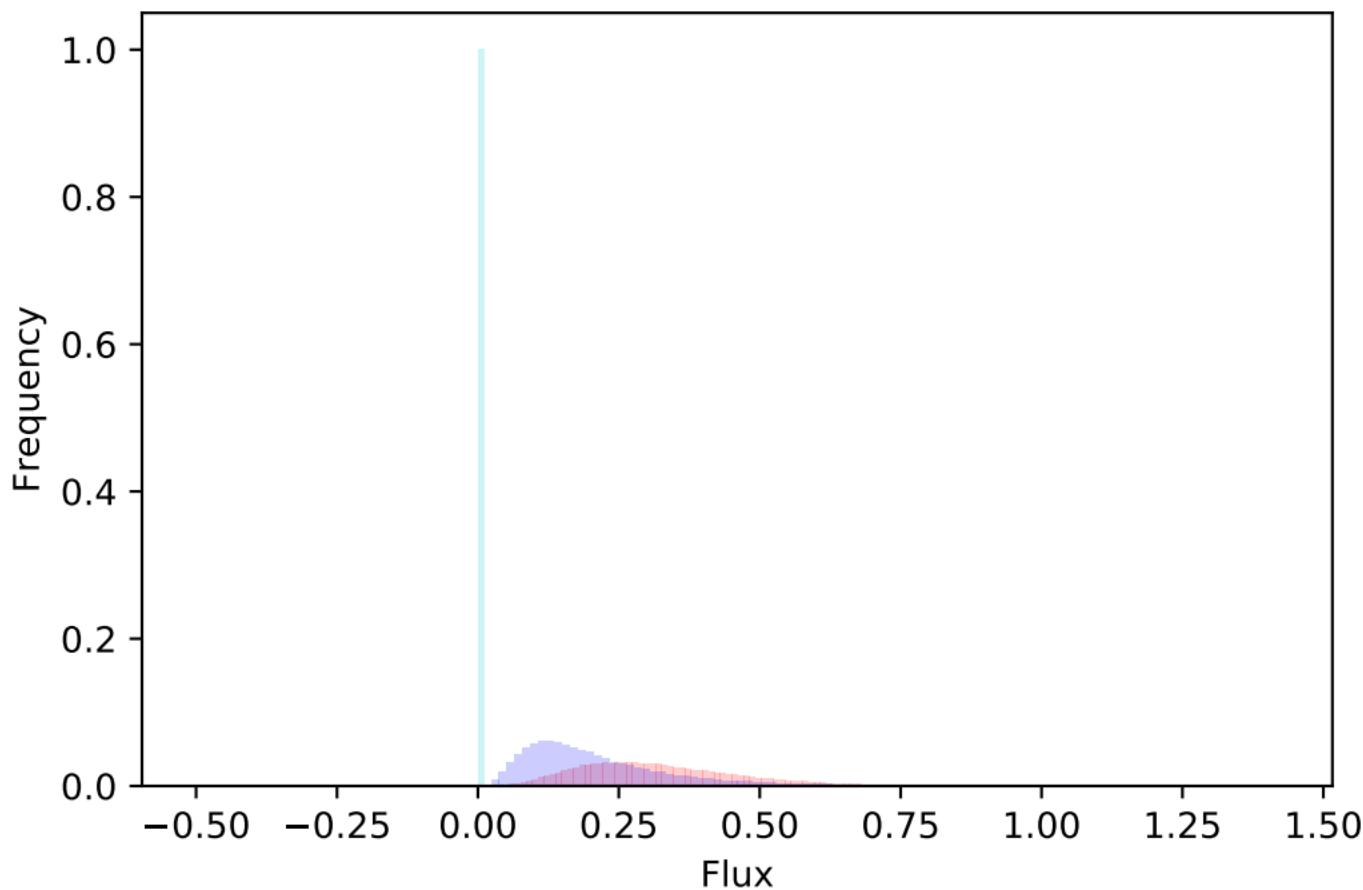
416 : Val_c <=> Val_p
[!-!]



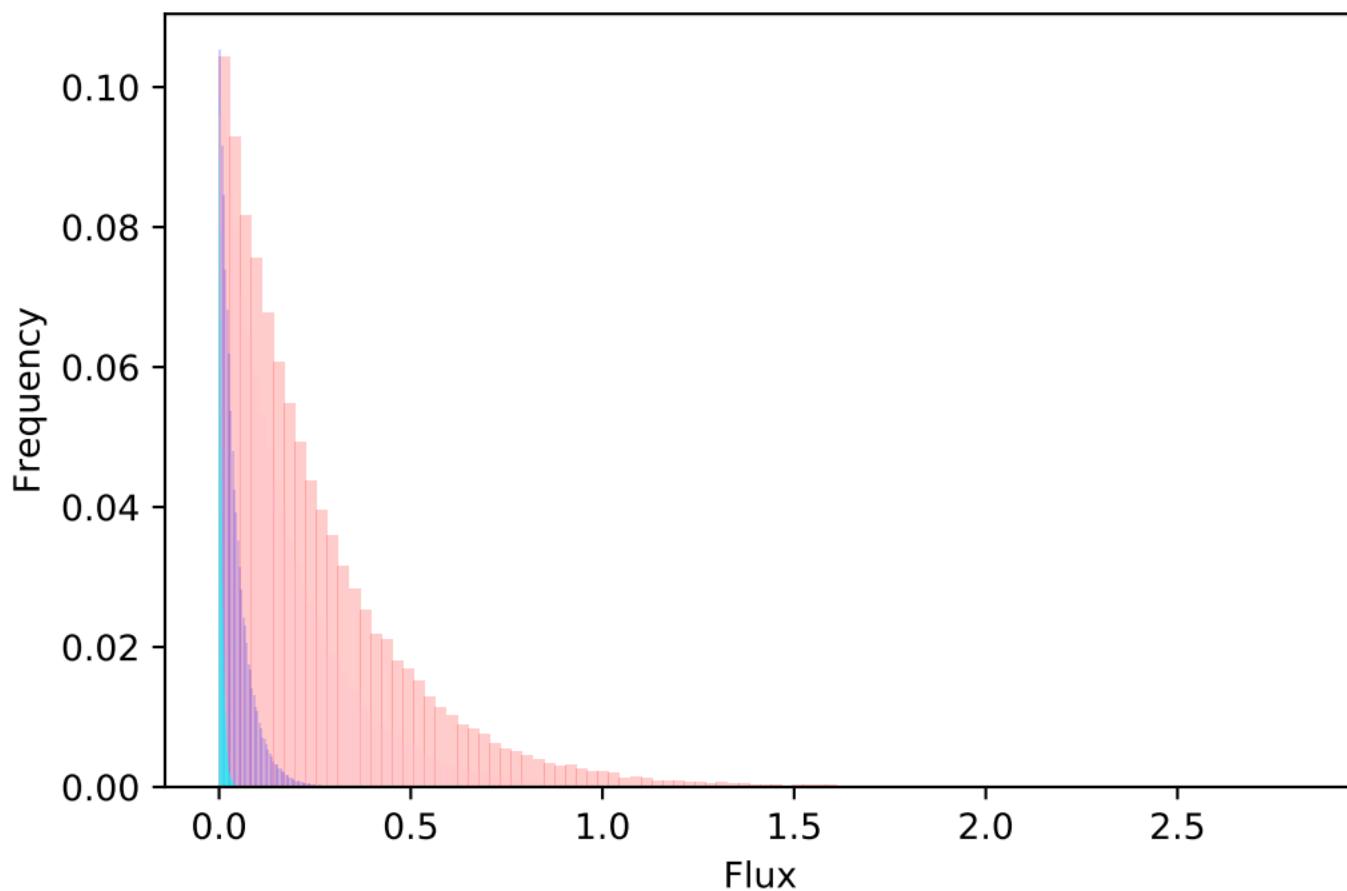
417 : Ala_h --> Ala_c
['-']



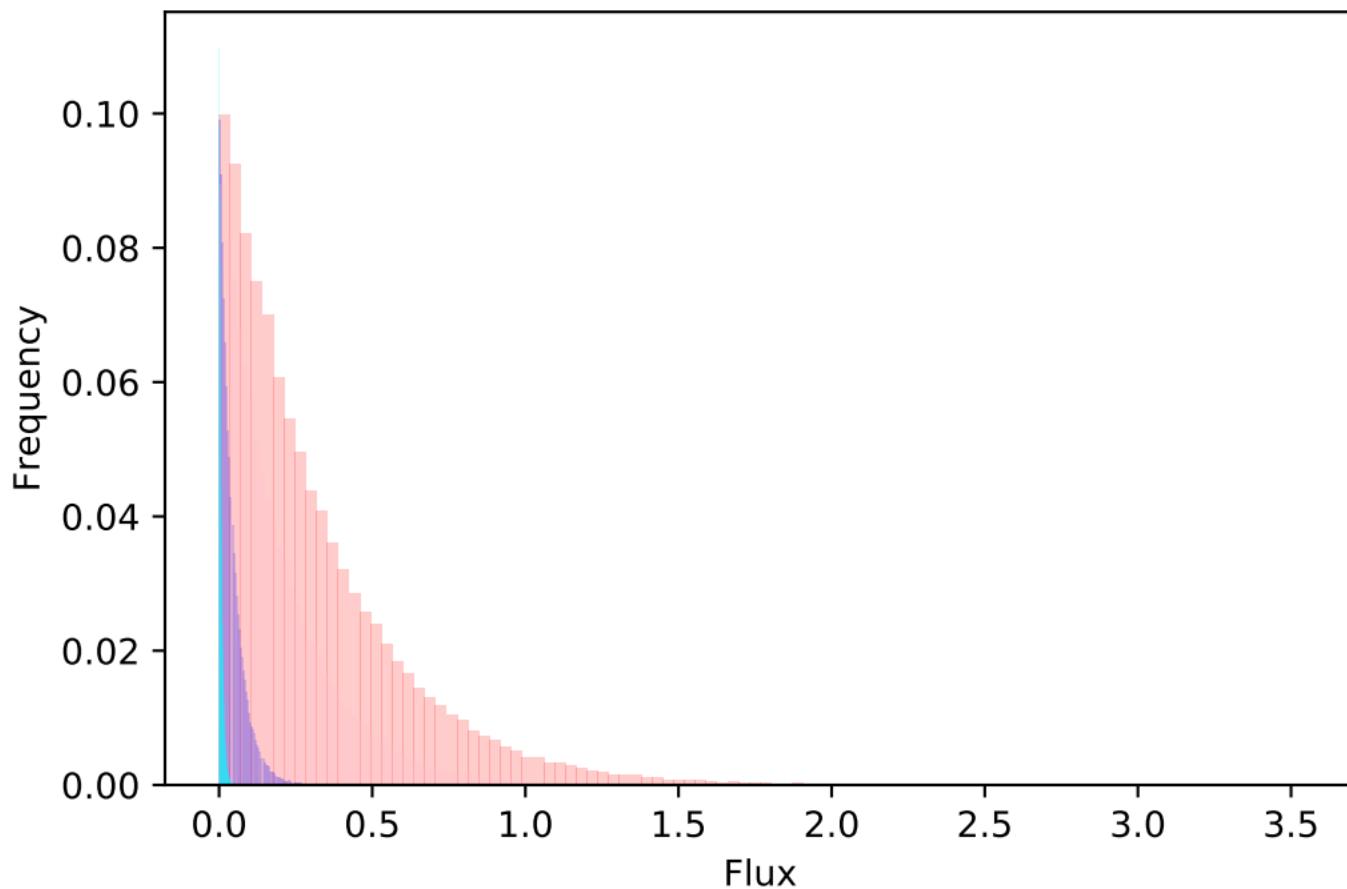
418 : Arg_h --> Arg_c
['-']



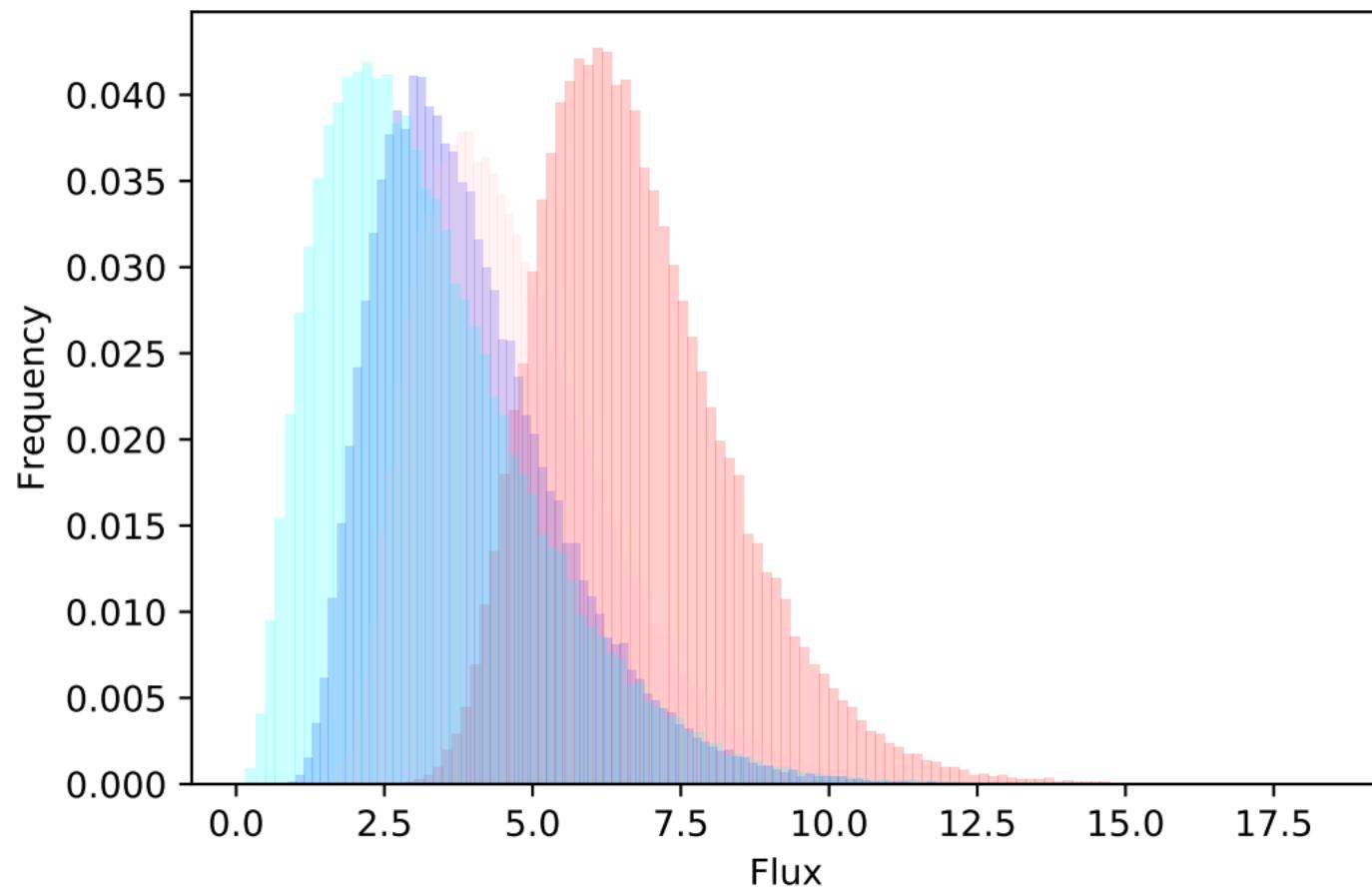
419 : Asn_c --> Asn_h + H_h
['-']



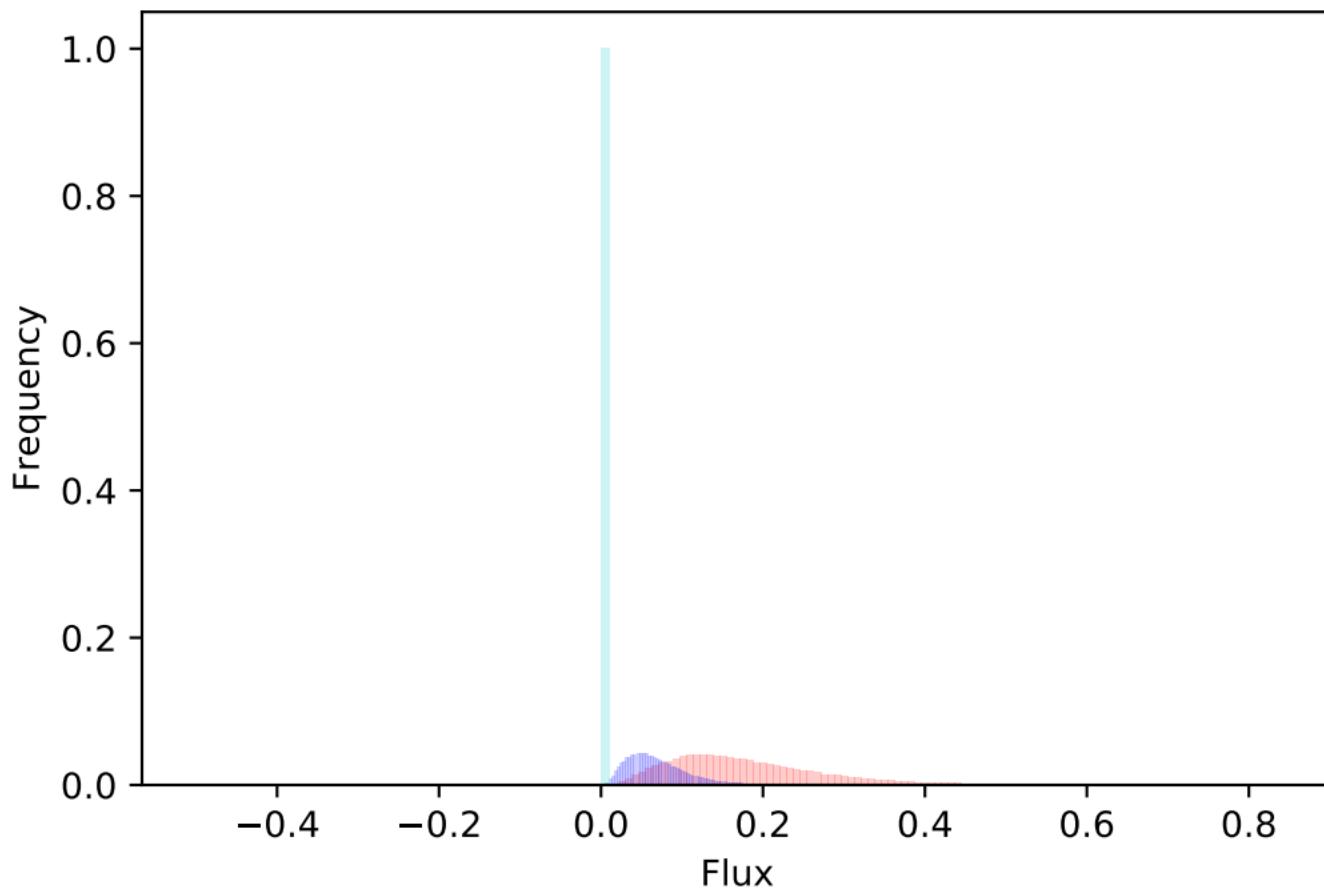
420 : Asn_c --> Asn_m
[-']



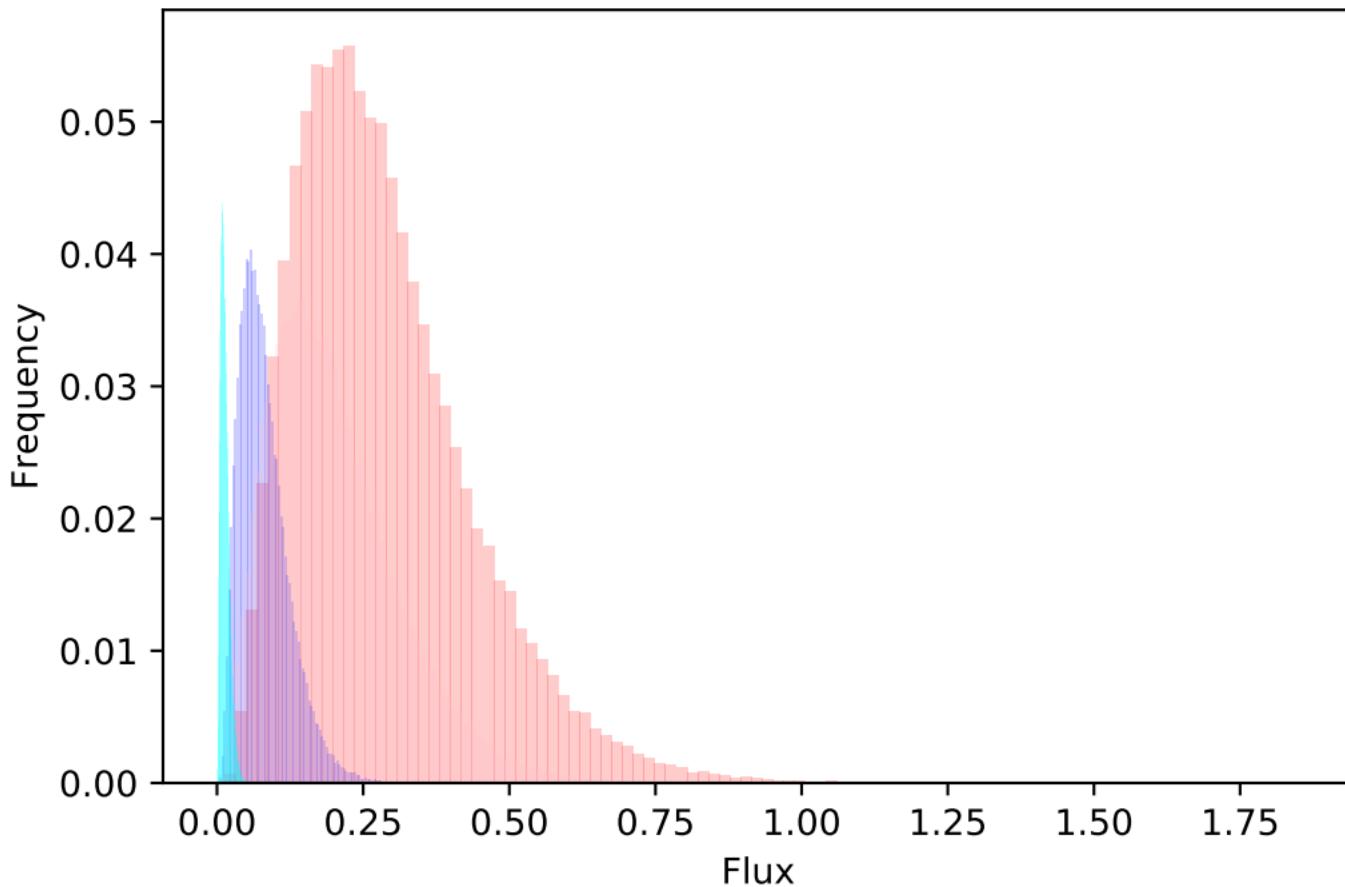
421 : Glu_c --> Glu_h
[-]



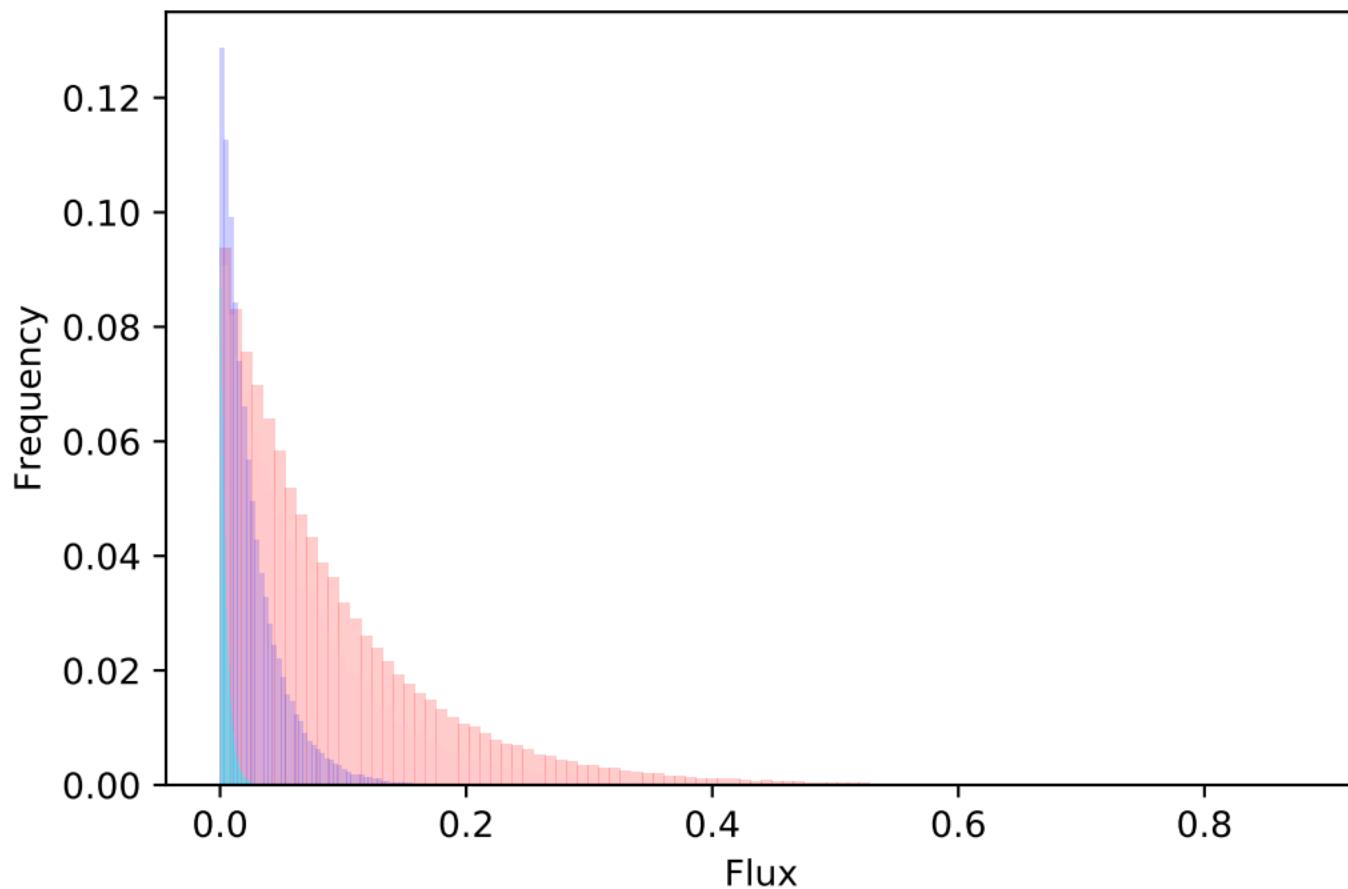
422 : His_h --> His_c
[!-]



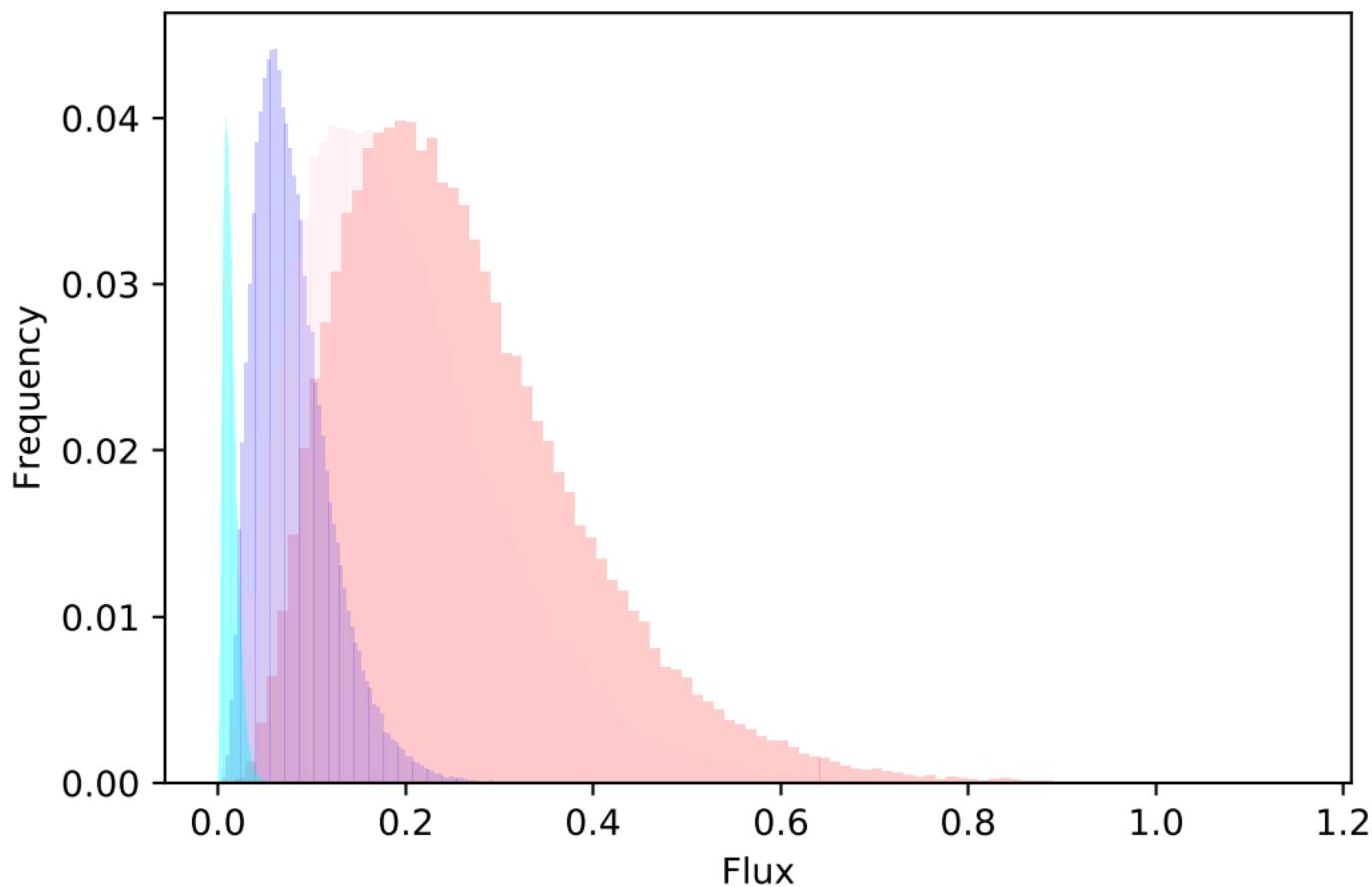
424 : ll_e_h --> ll_e_c
[!-]



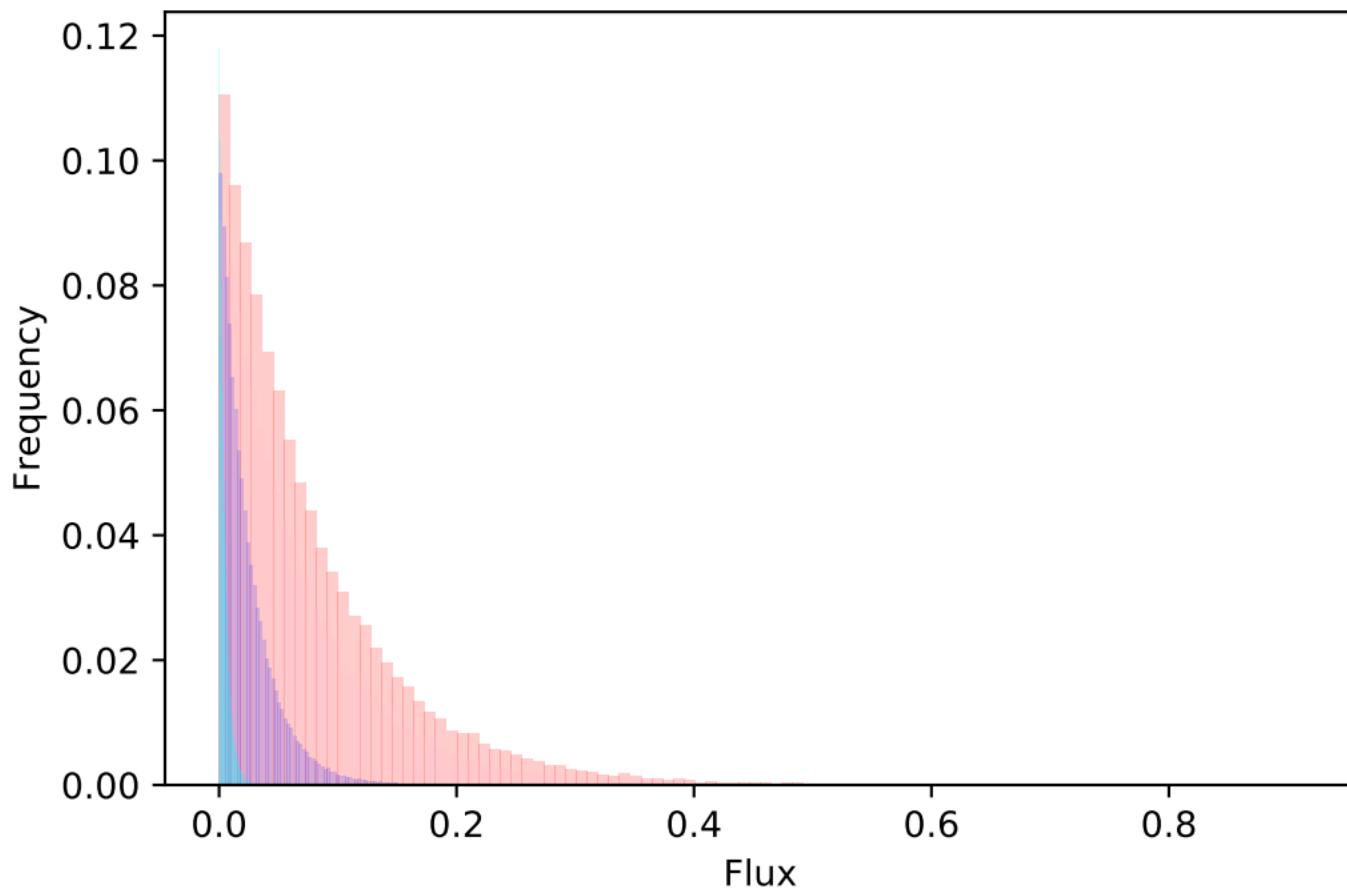
425 : Ile_c --> Ile_m
[!-]



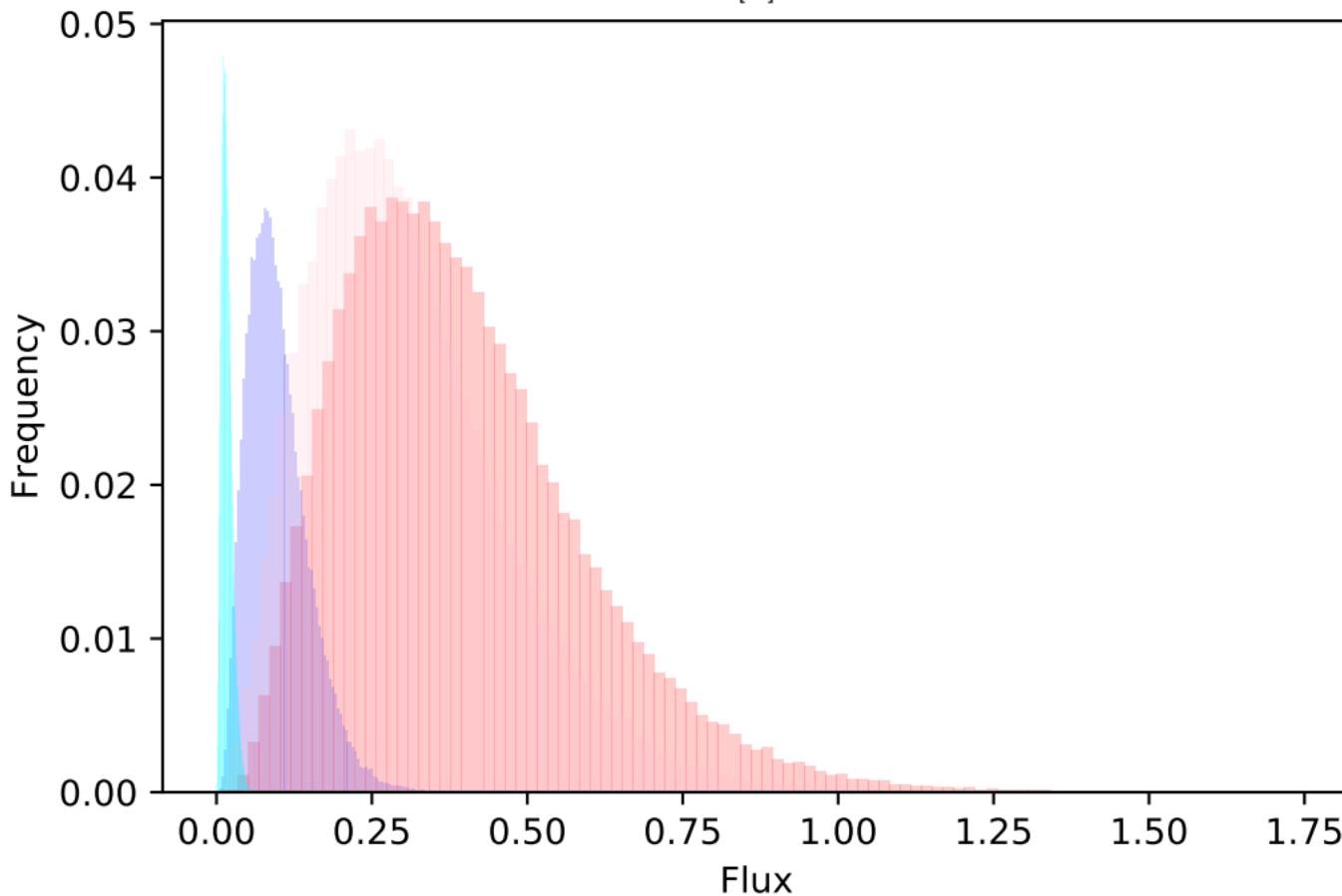
426 : Leu_h --> Leu_c
[-]



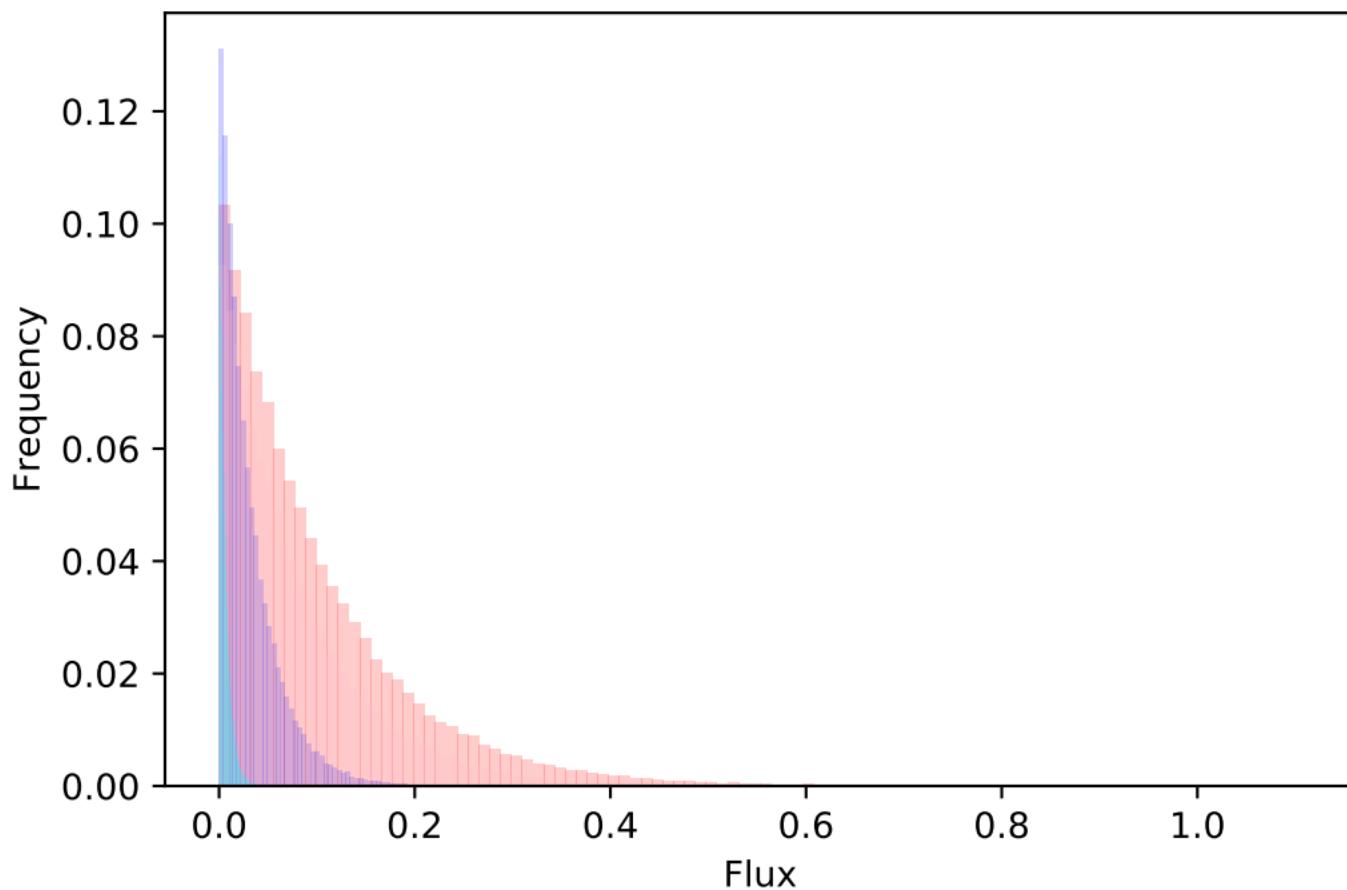
427 : Leu_c --> Leu_m
[-]



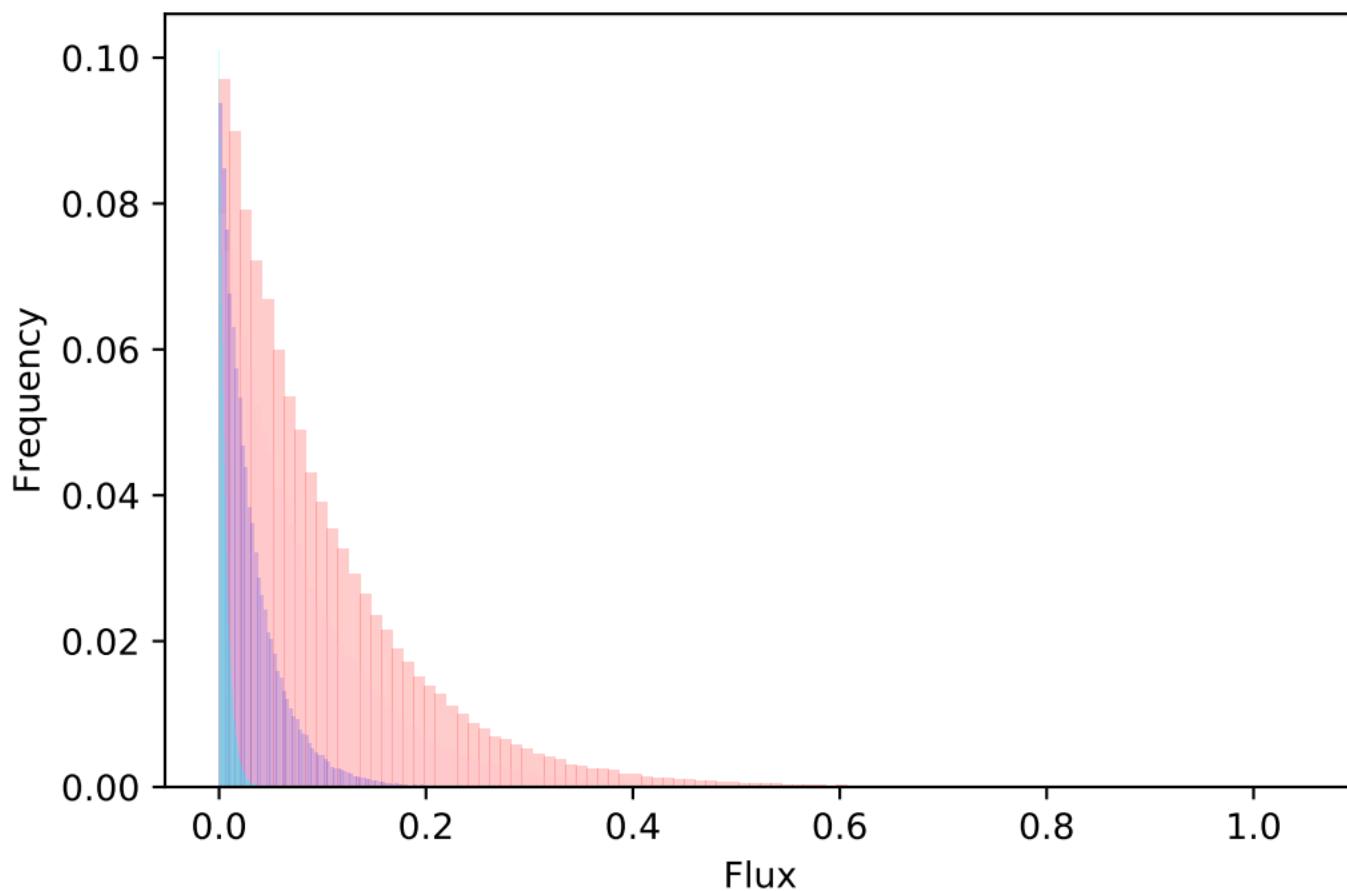
428 : Lys_h --> Lys_c
[⁻ -]



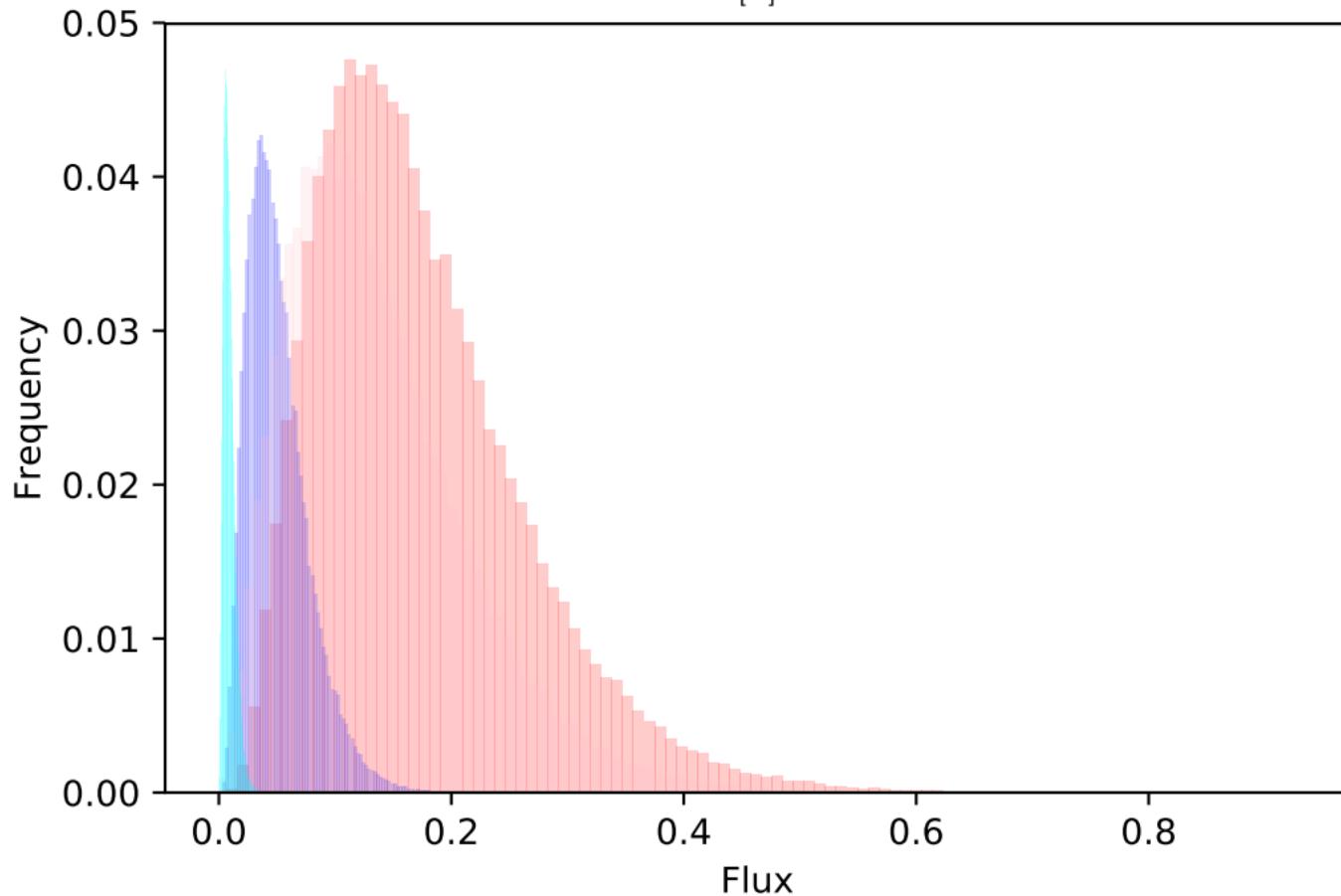
429 : Met_c --> Met_h
[-]



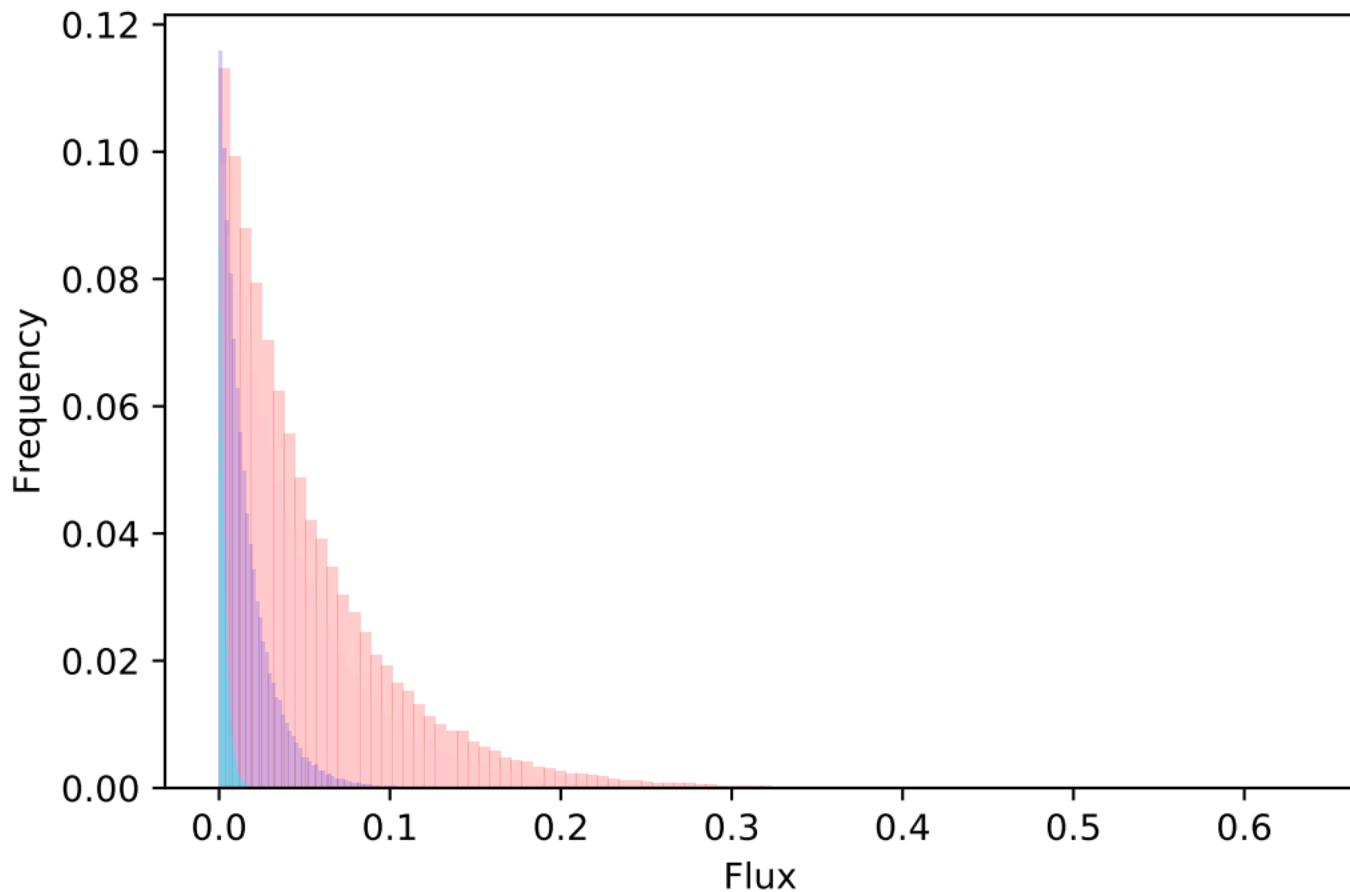
430 : Met_c --> Met_m
[-]



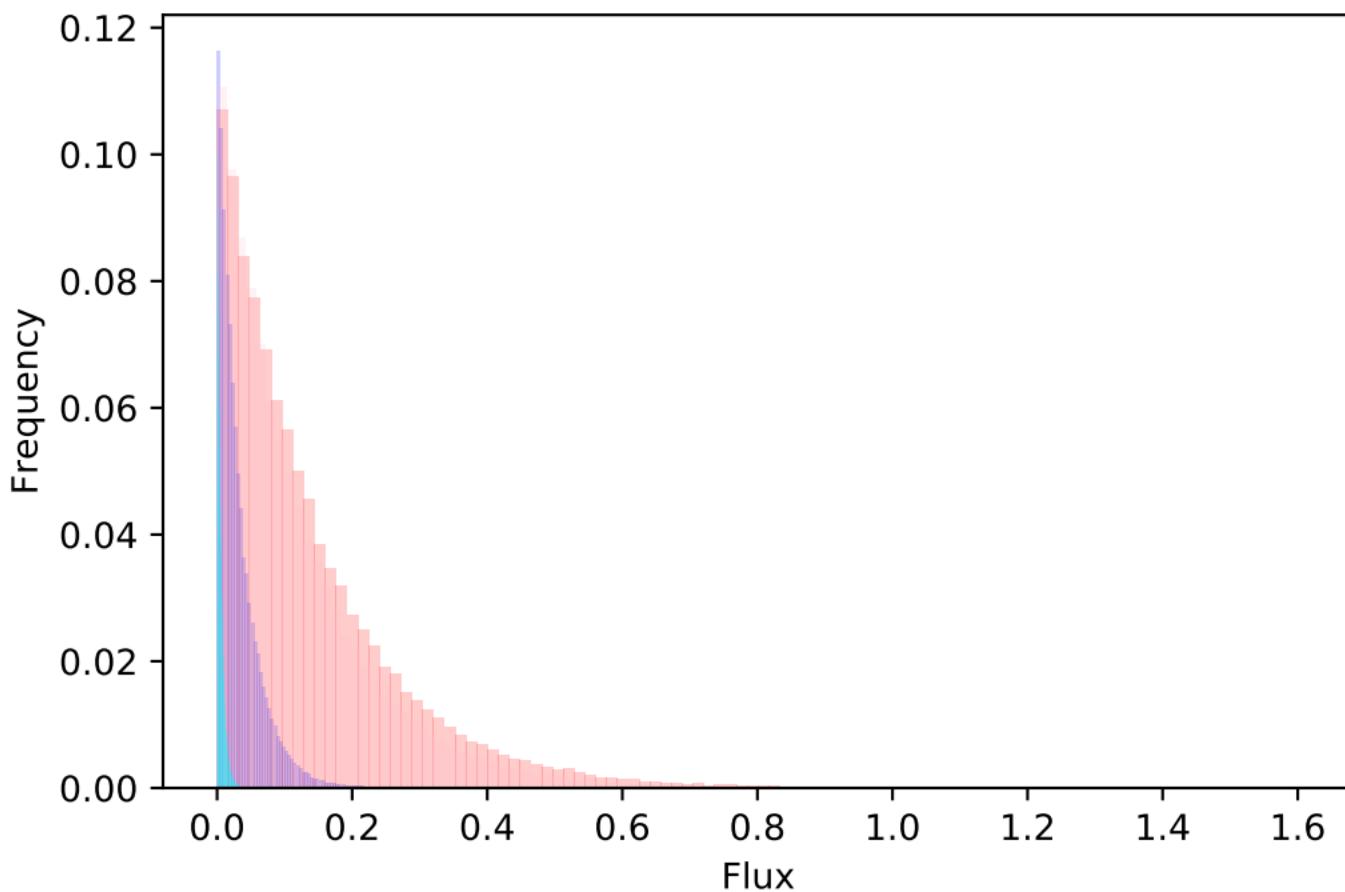
431 : Phe_h --> Phe_c
[-]



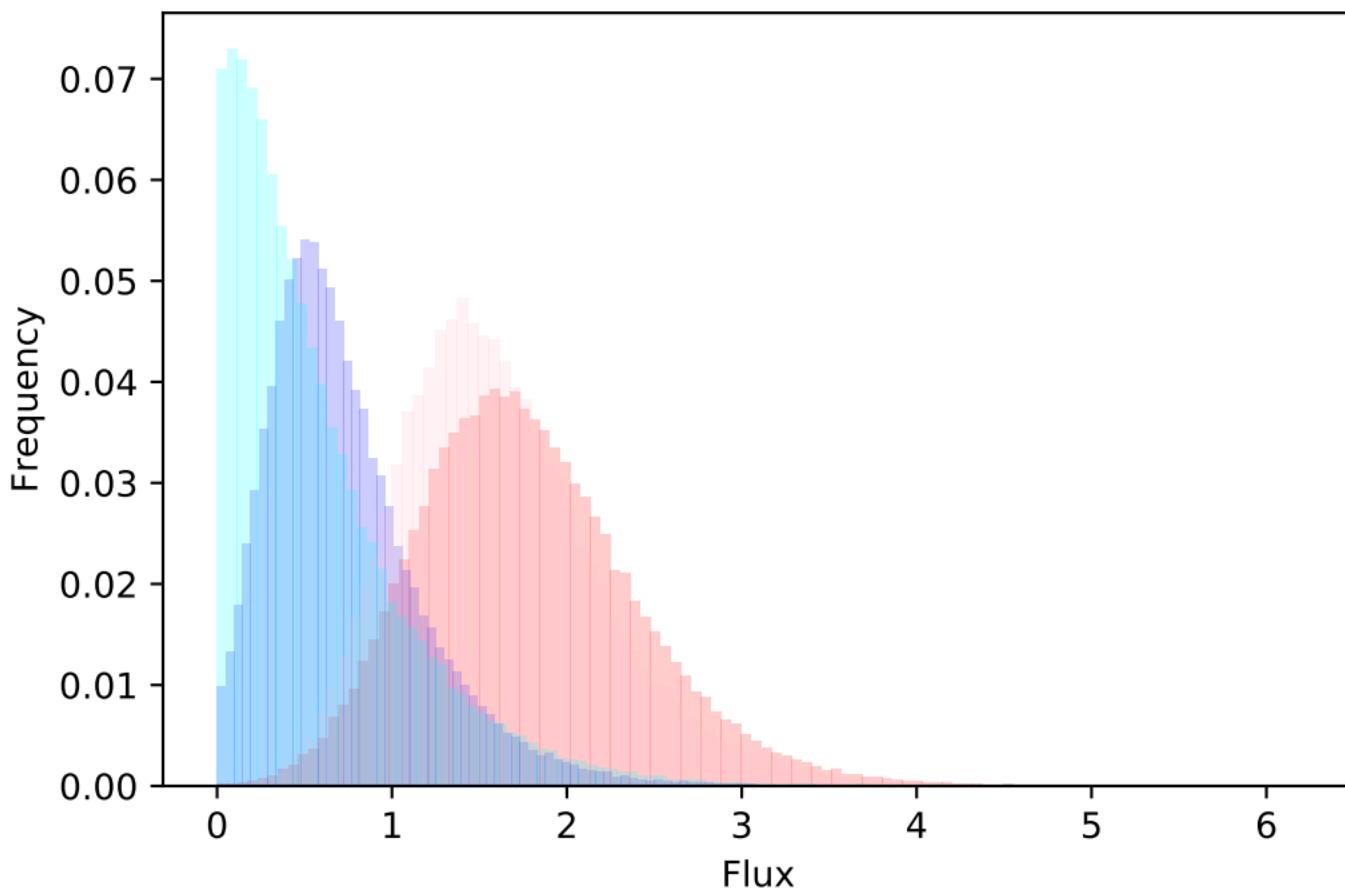
432 : Phe_c --> Phe_m
[-]



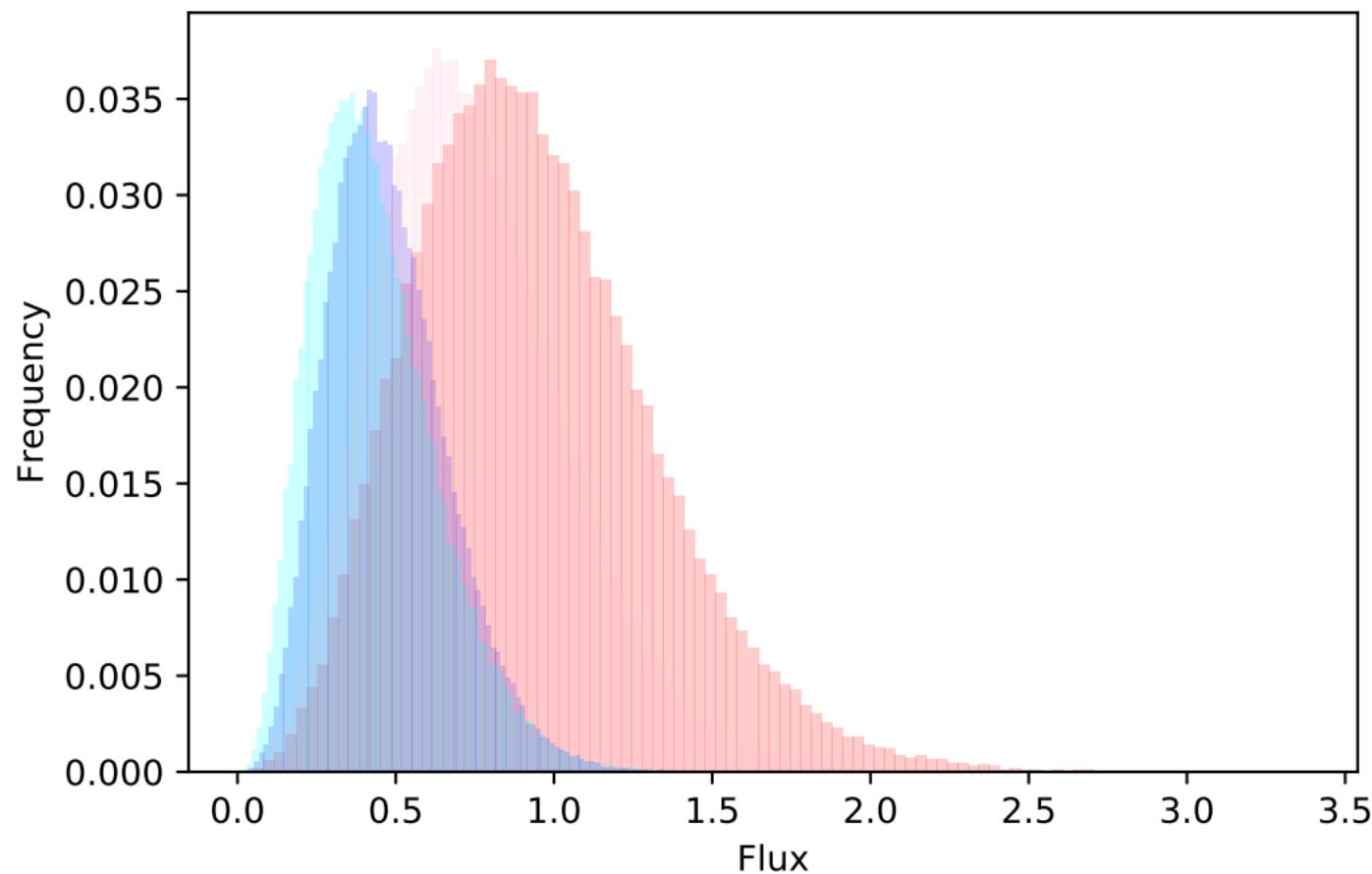
433 : Pro_c --> Pro_h
[-]



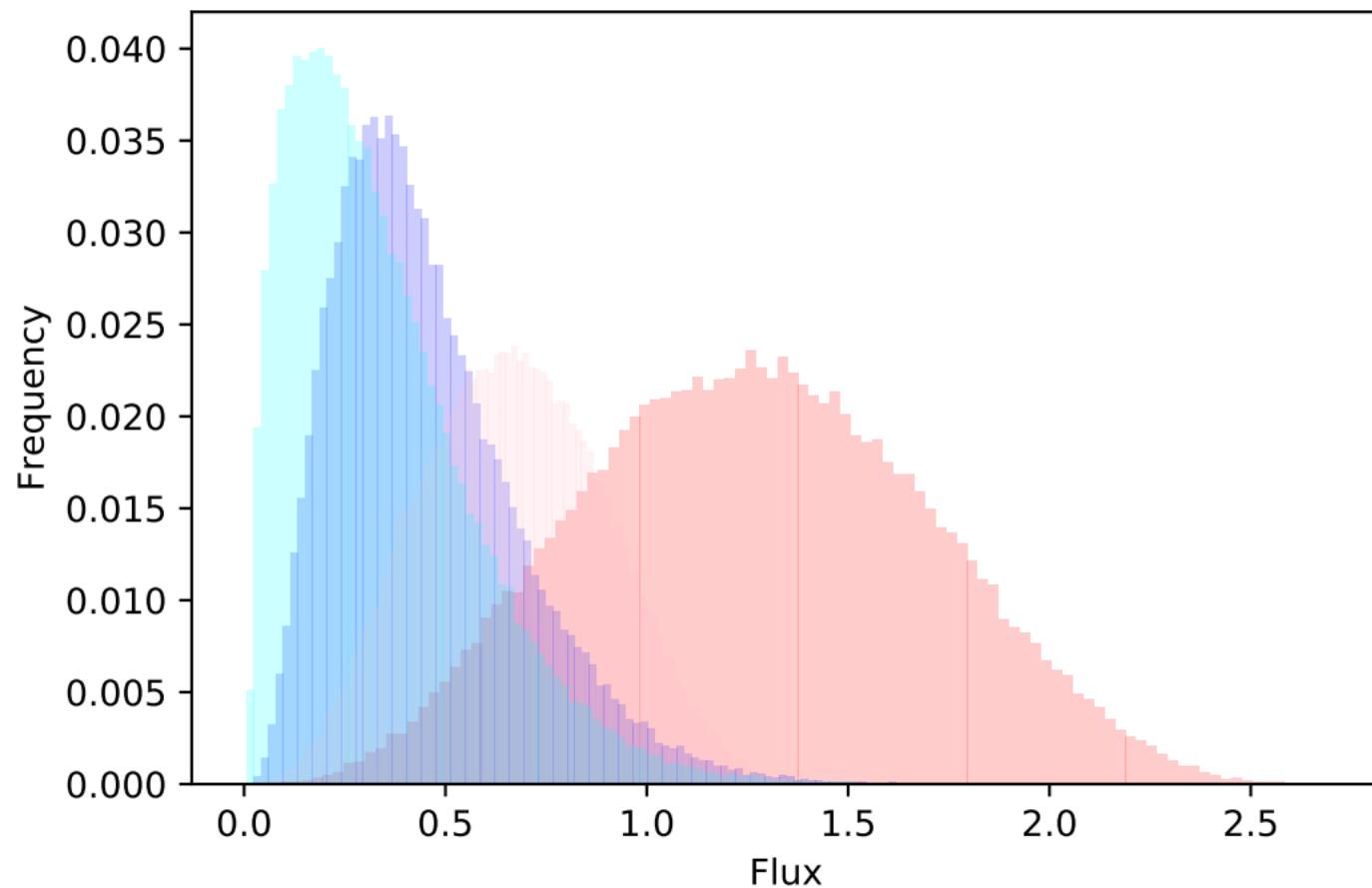
434 : Ser_h --> Ser_c
[-']



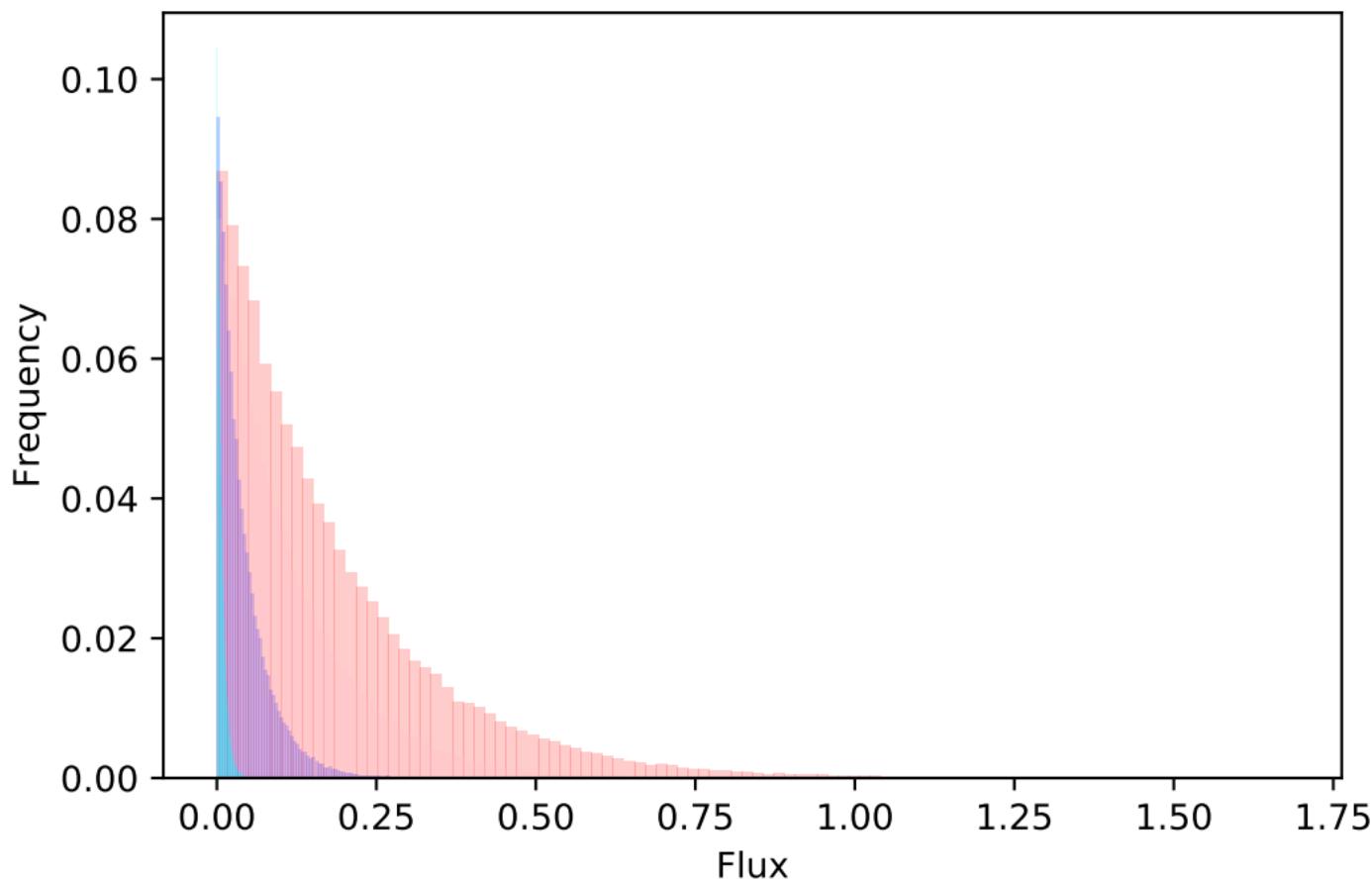
435 : Ser_c --> Ser_m
[-]



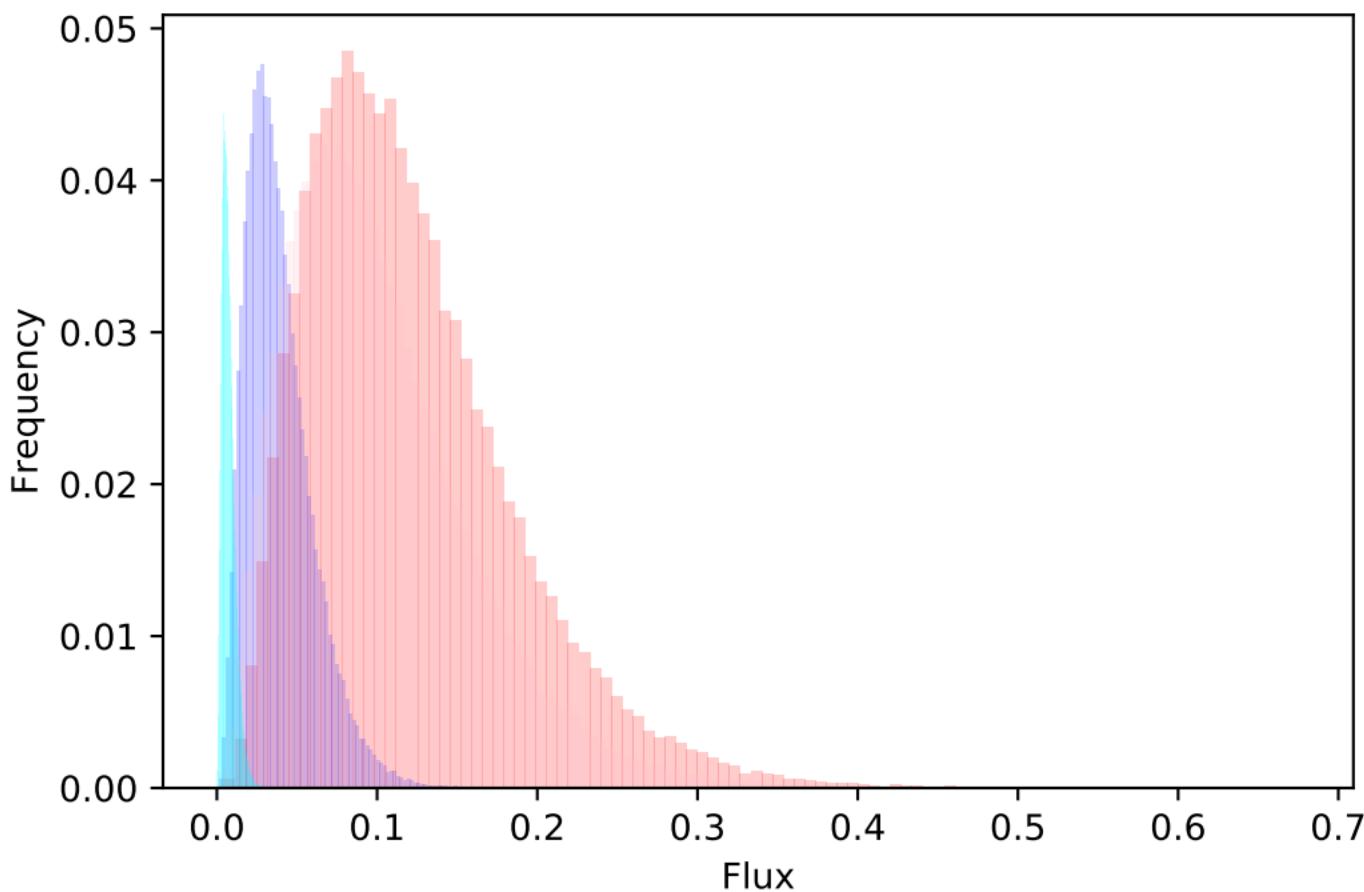
436 : Thr_h --> Thr_c
[-]



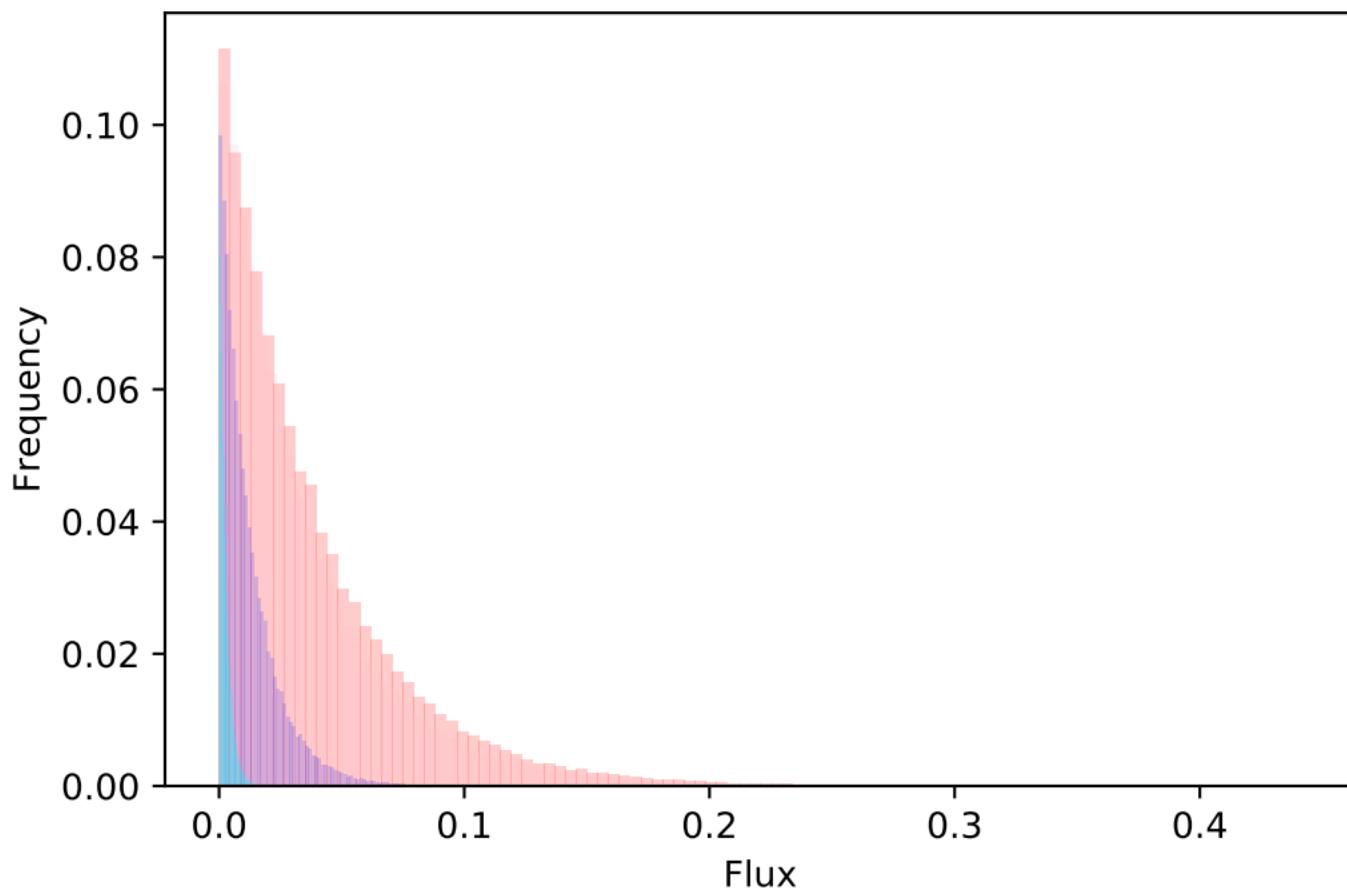
437 : Thr_c --> Thr_m
['-']



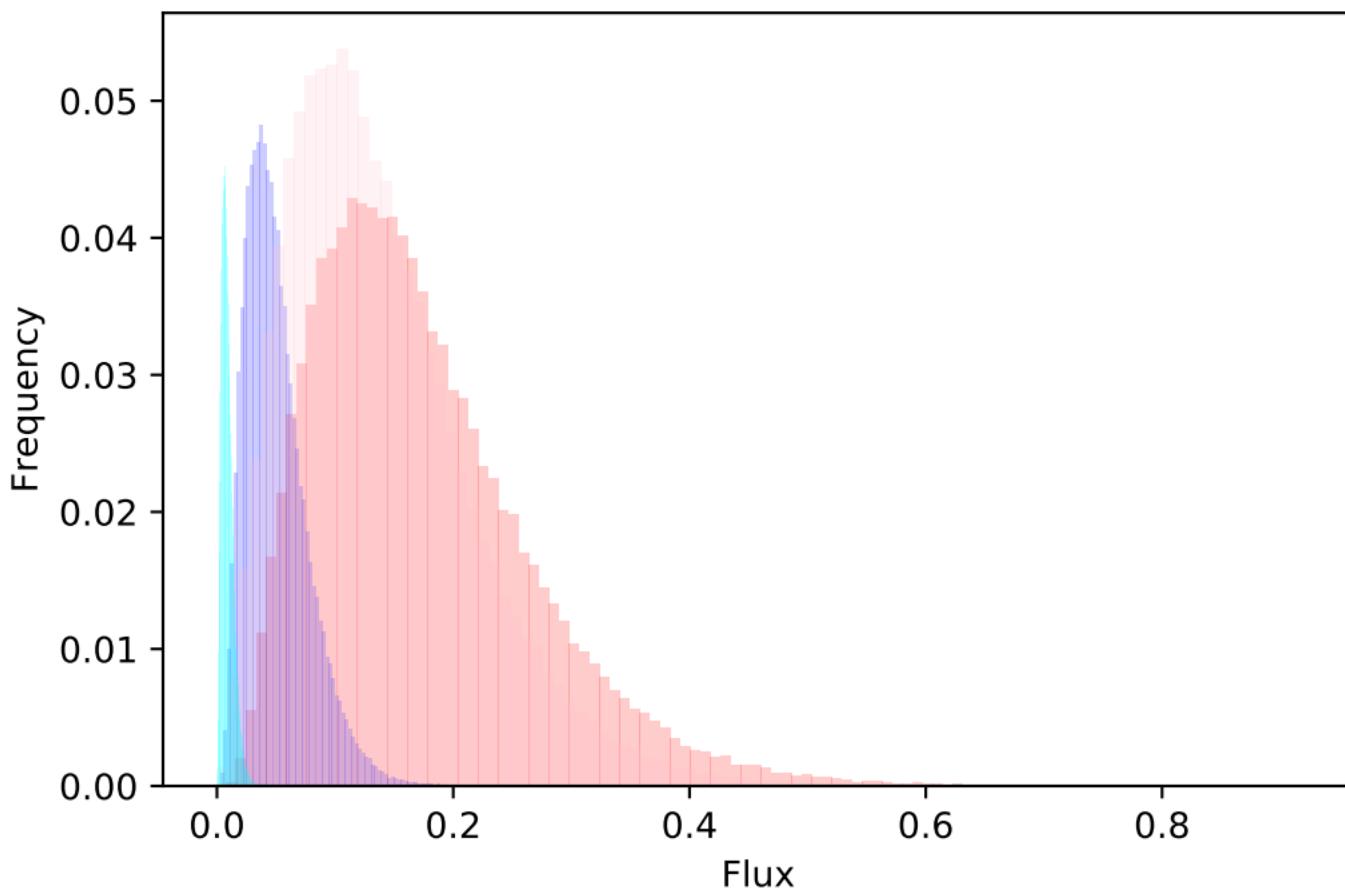
438 : Trp_h --> Trp_c
[-]



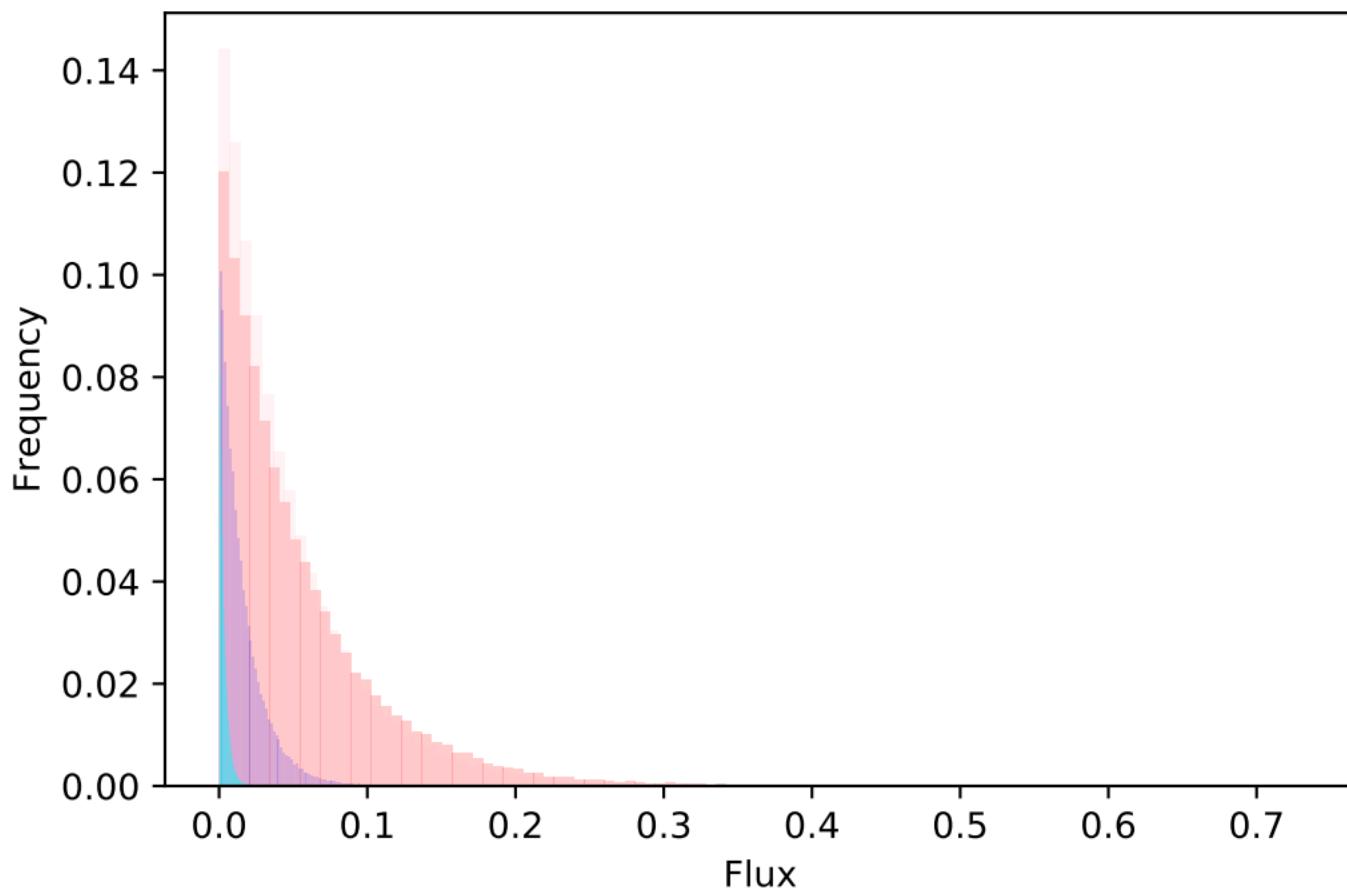
439 : Trp_c --> Trp_m
[-']



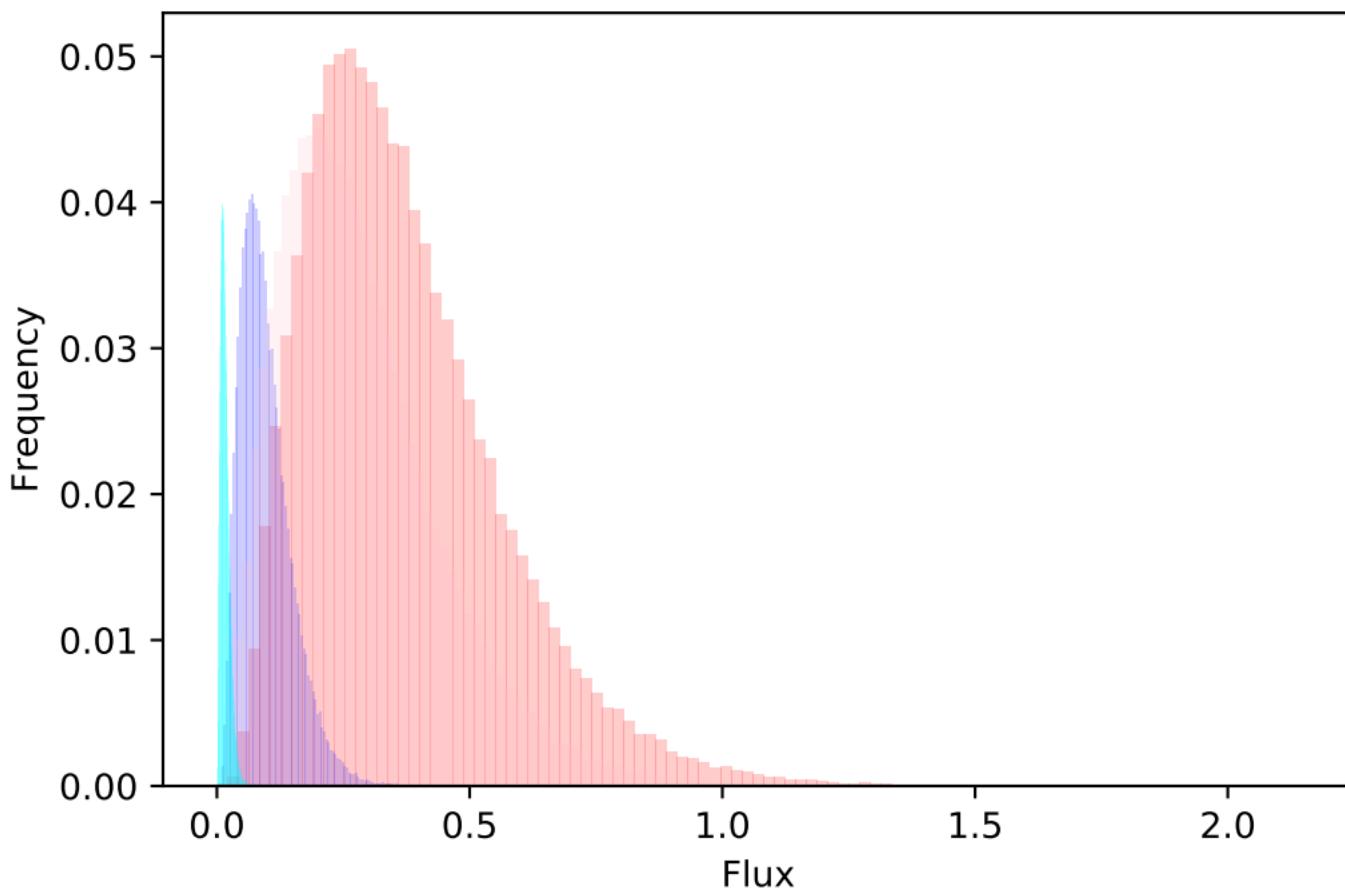
440 : Tyr_h --> Tyr_c
[-']



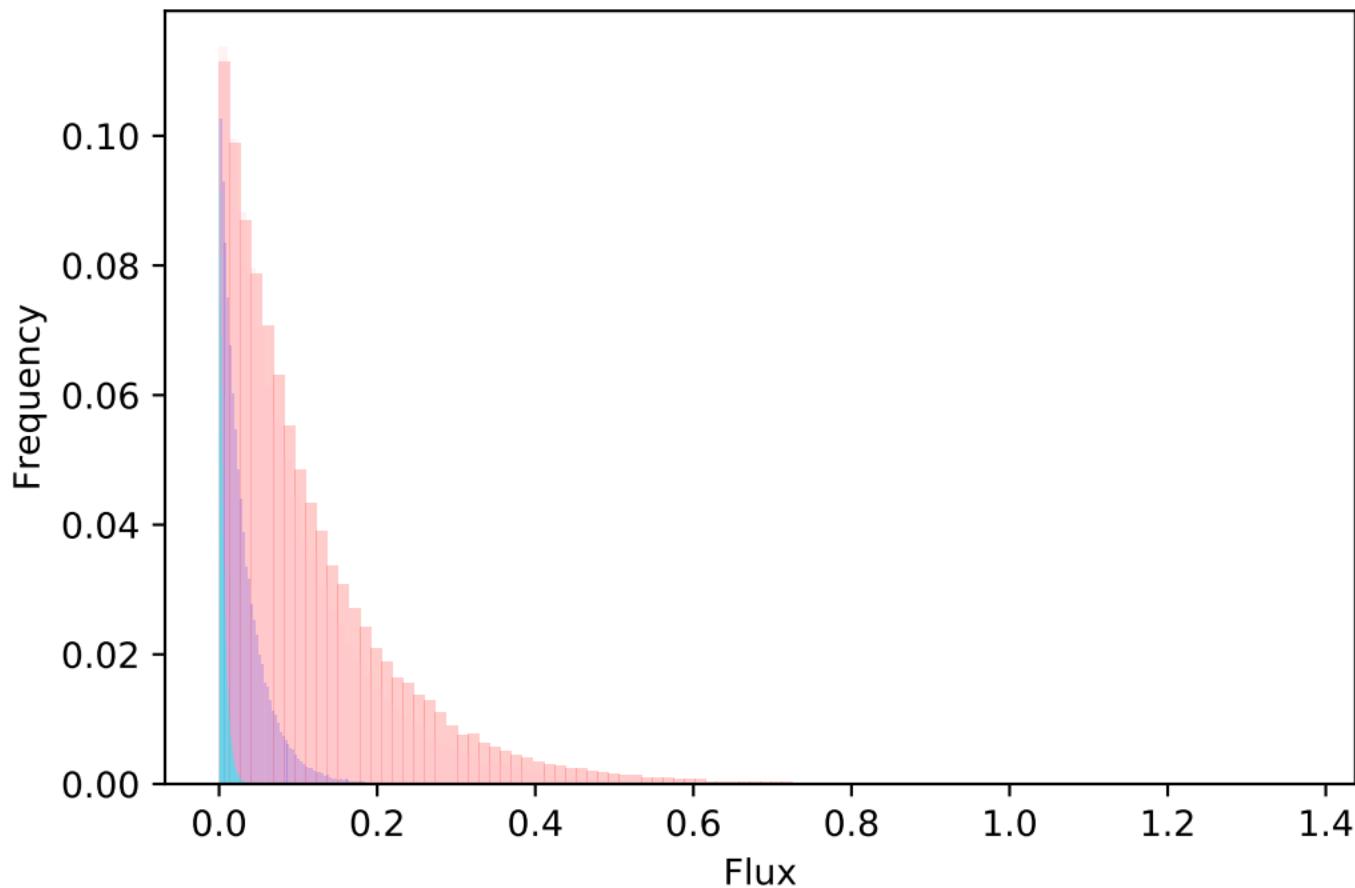
441 : Tyr_c --> Tyr_m
[-]



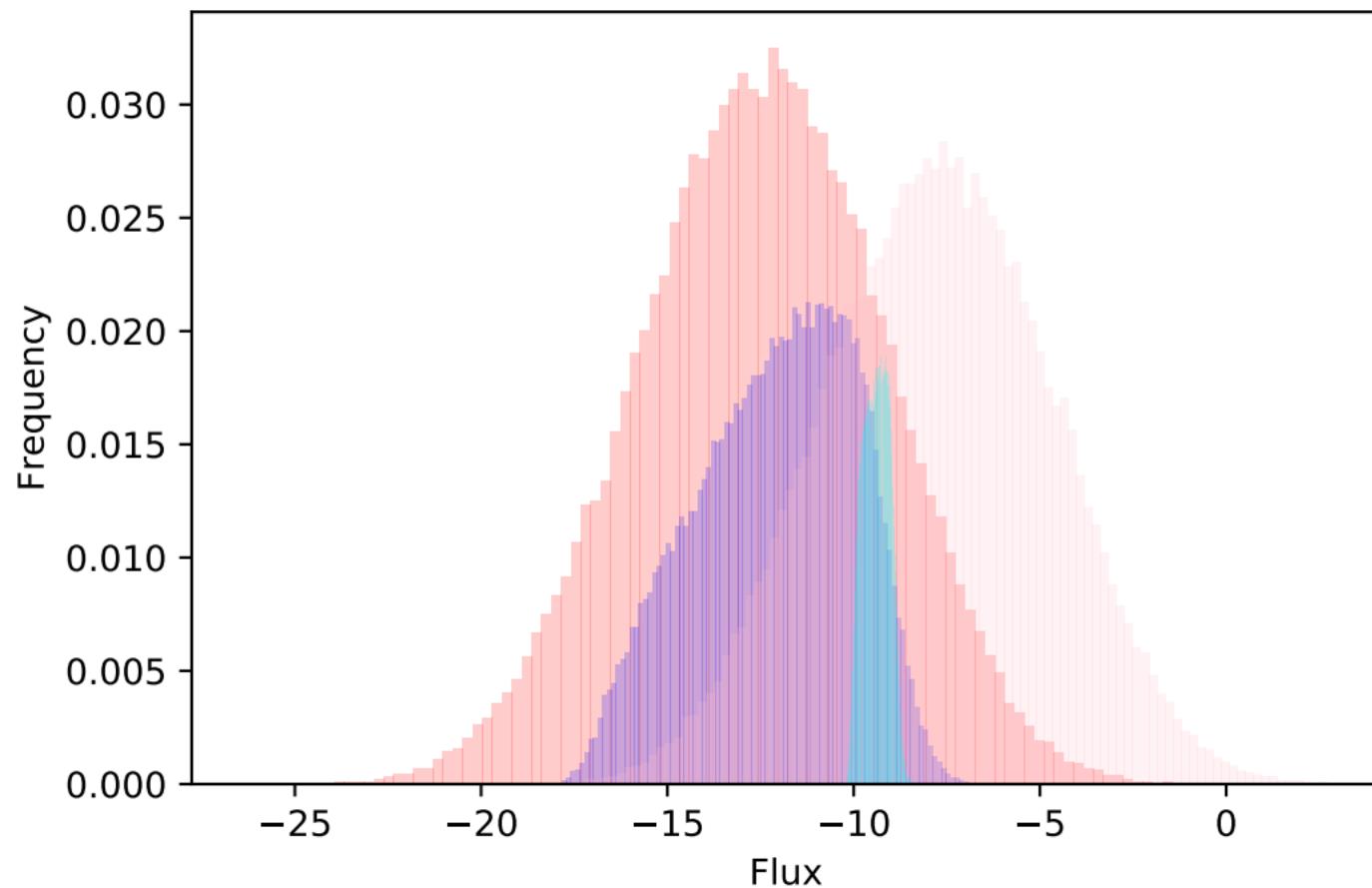
442 : Val_h --> Val_c
[-]



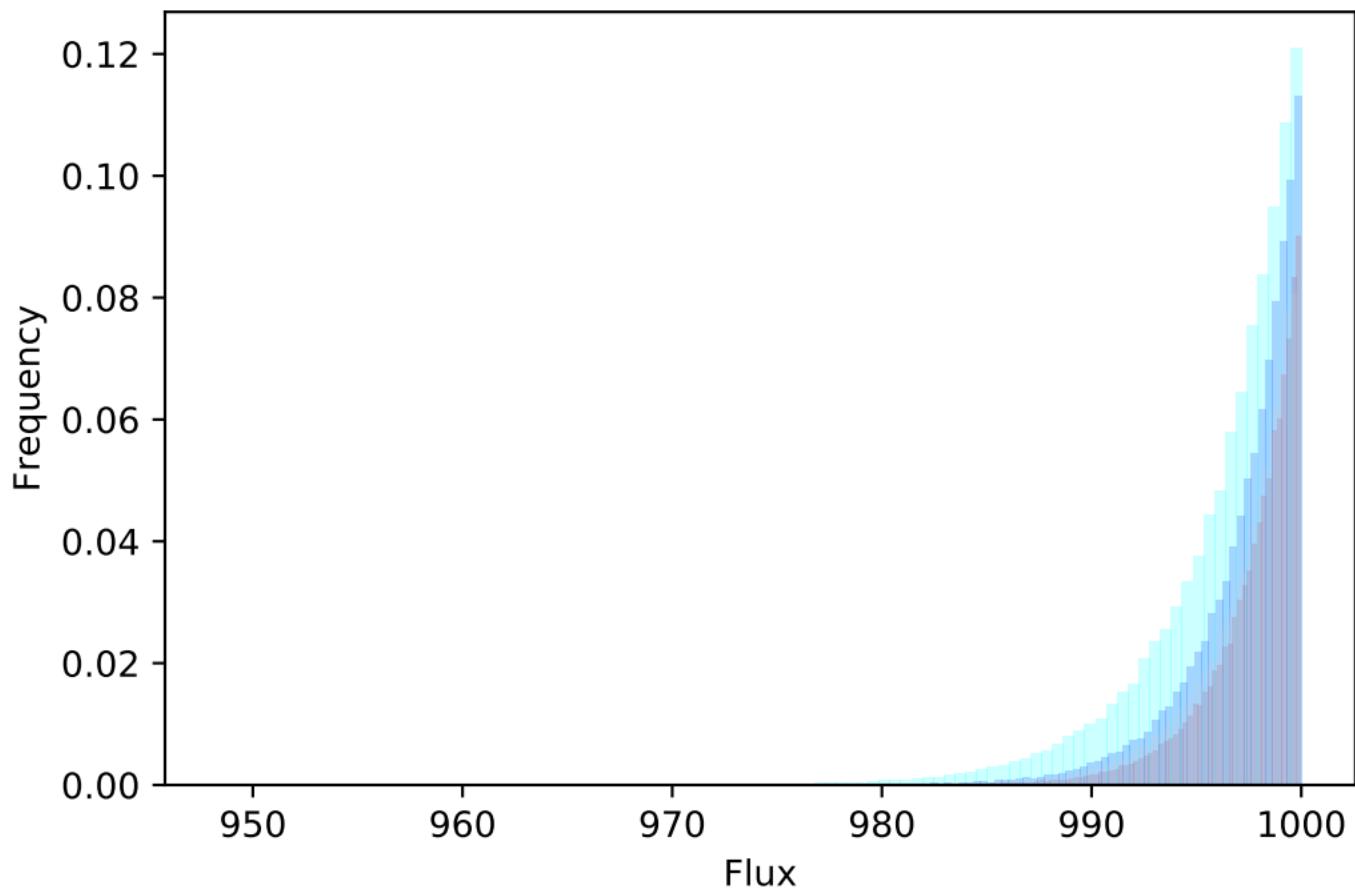
443 : Val_c --> Val_m
[-]



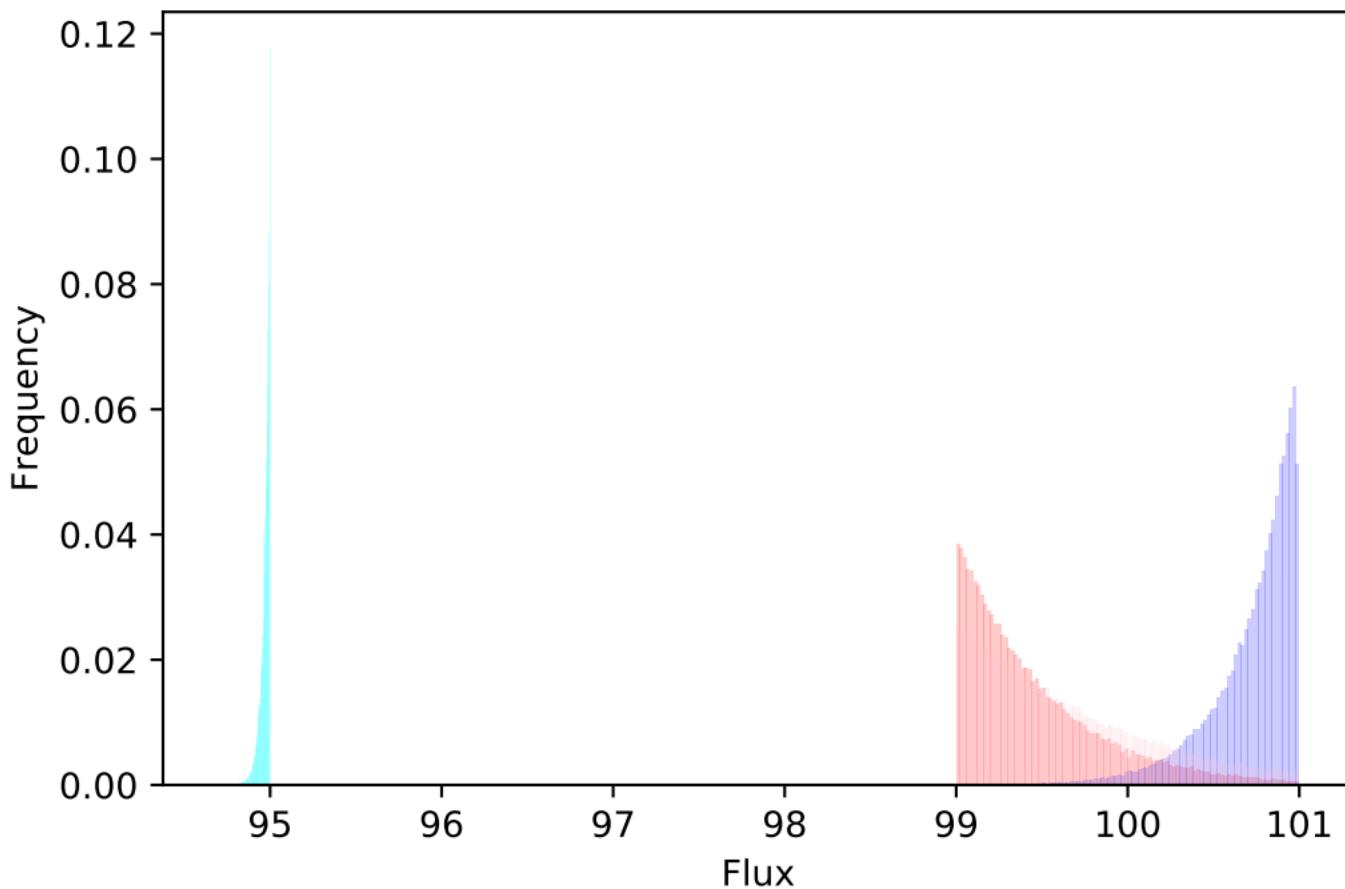
444 : $\leftarrow\rightarrow$ H_c
[!-!]



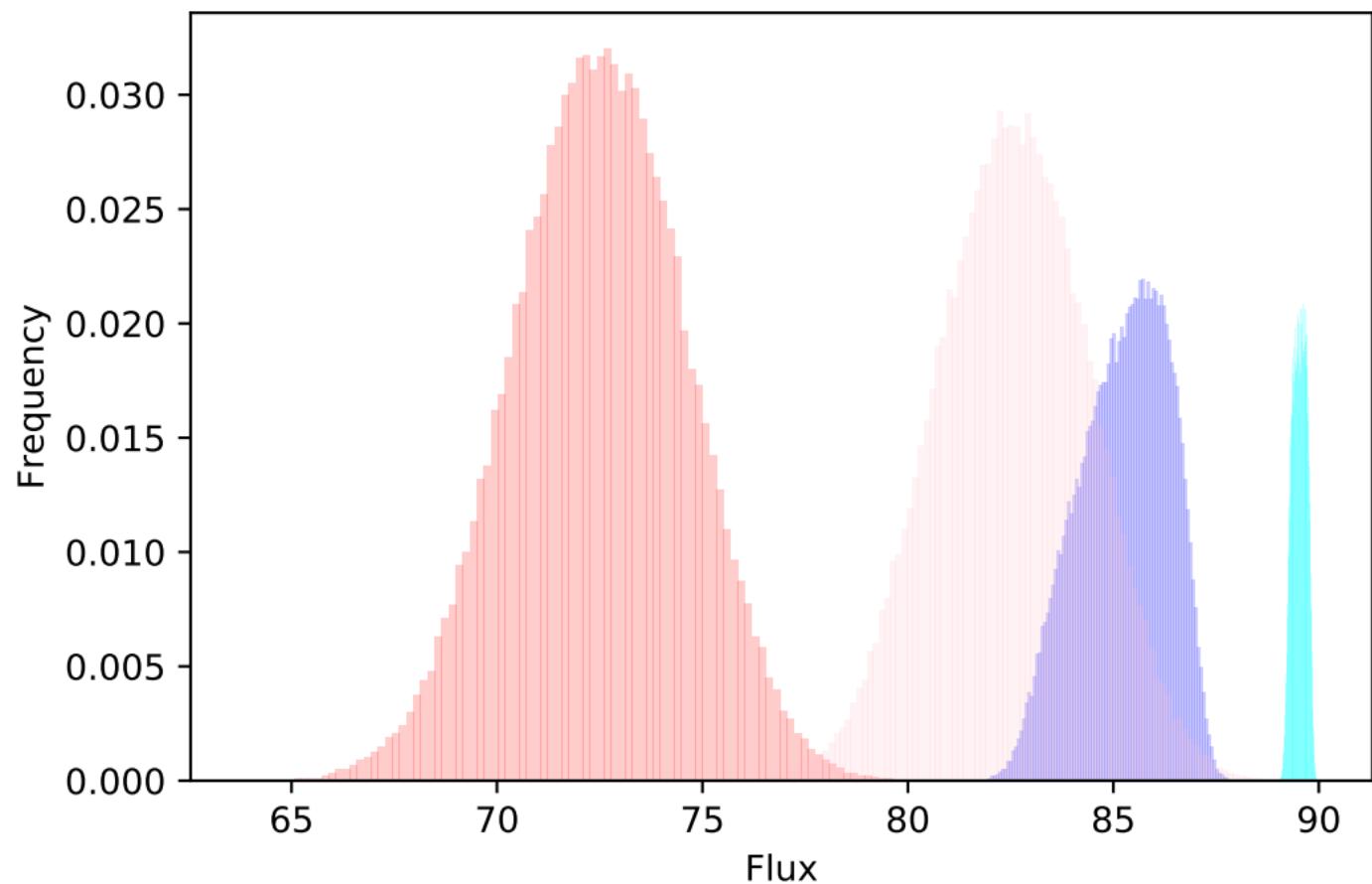
445 : --> hnu_h
['-']

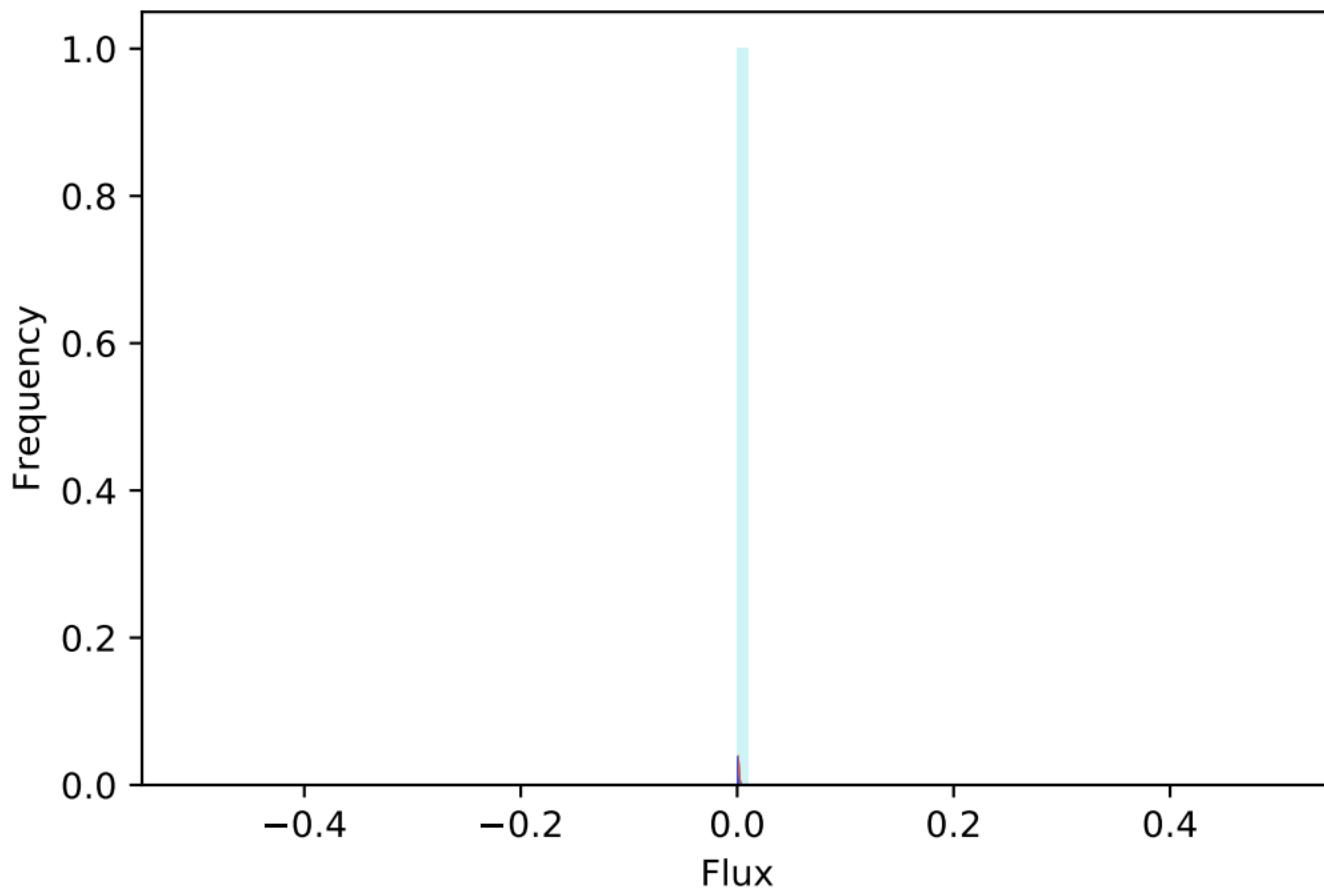
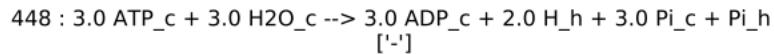


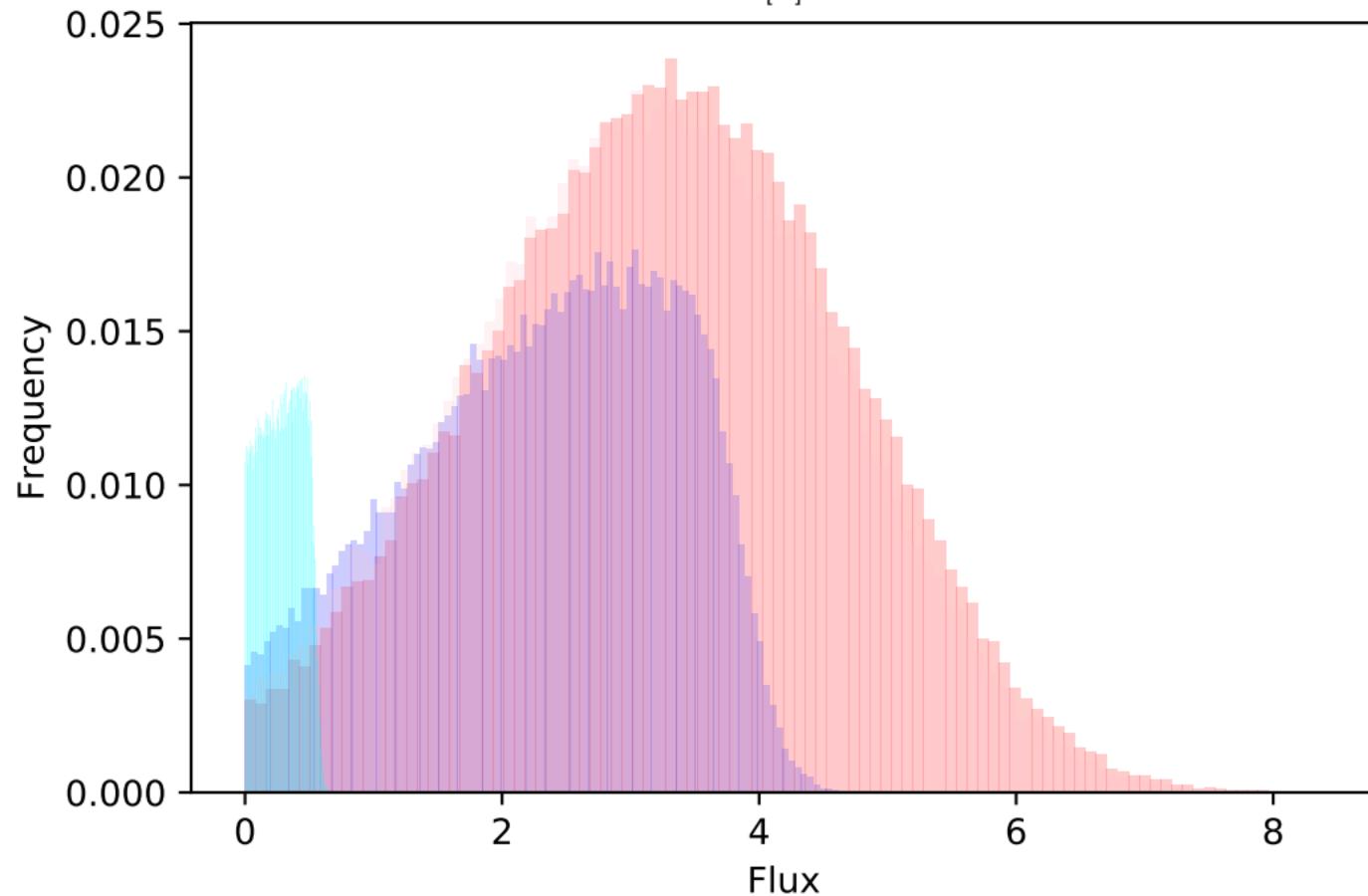
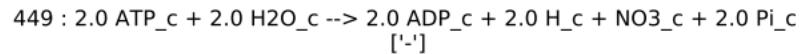
446 : --> CO2_c
['-']



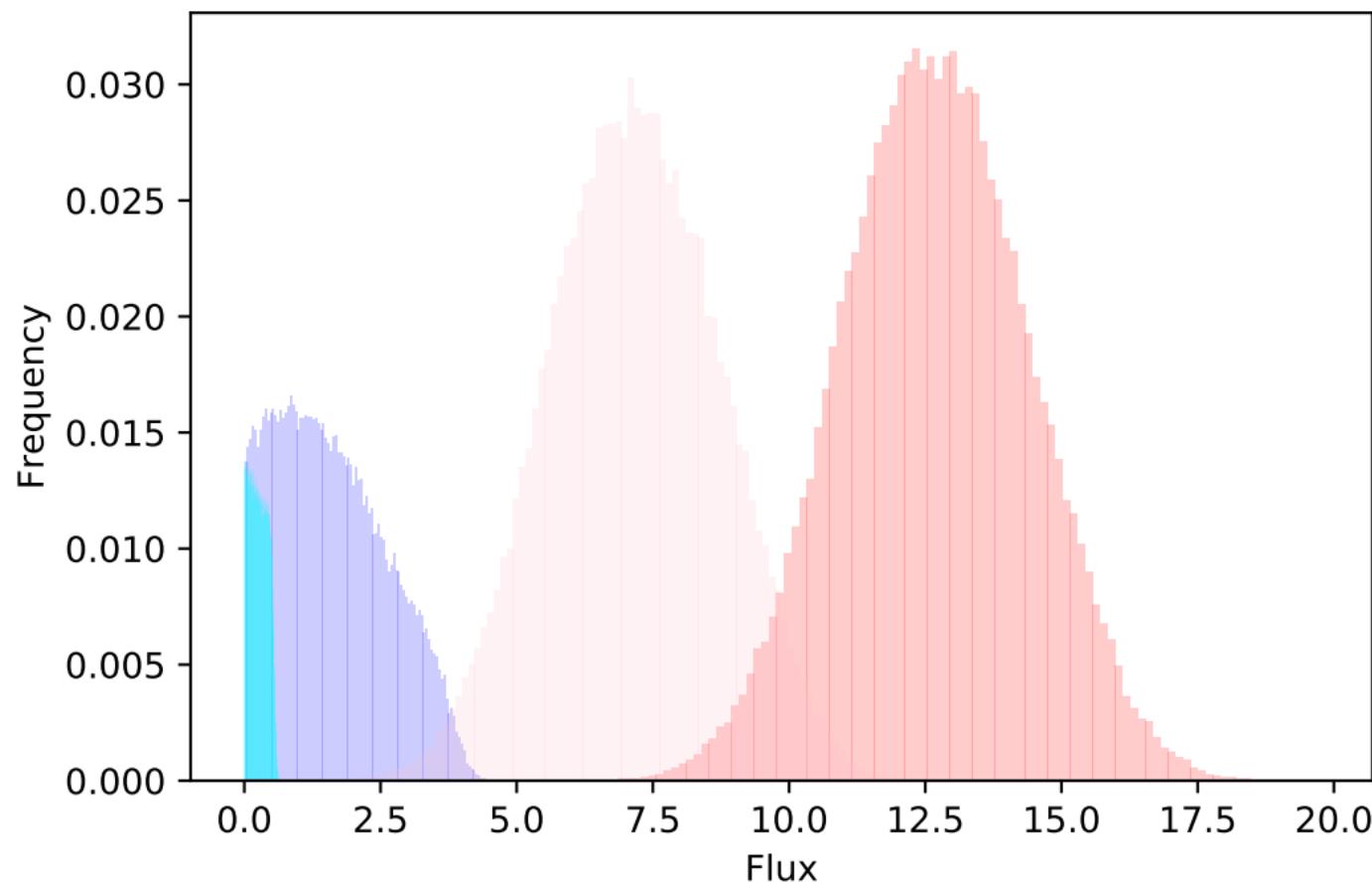
447 : --> H2O_c
[-]

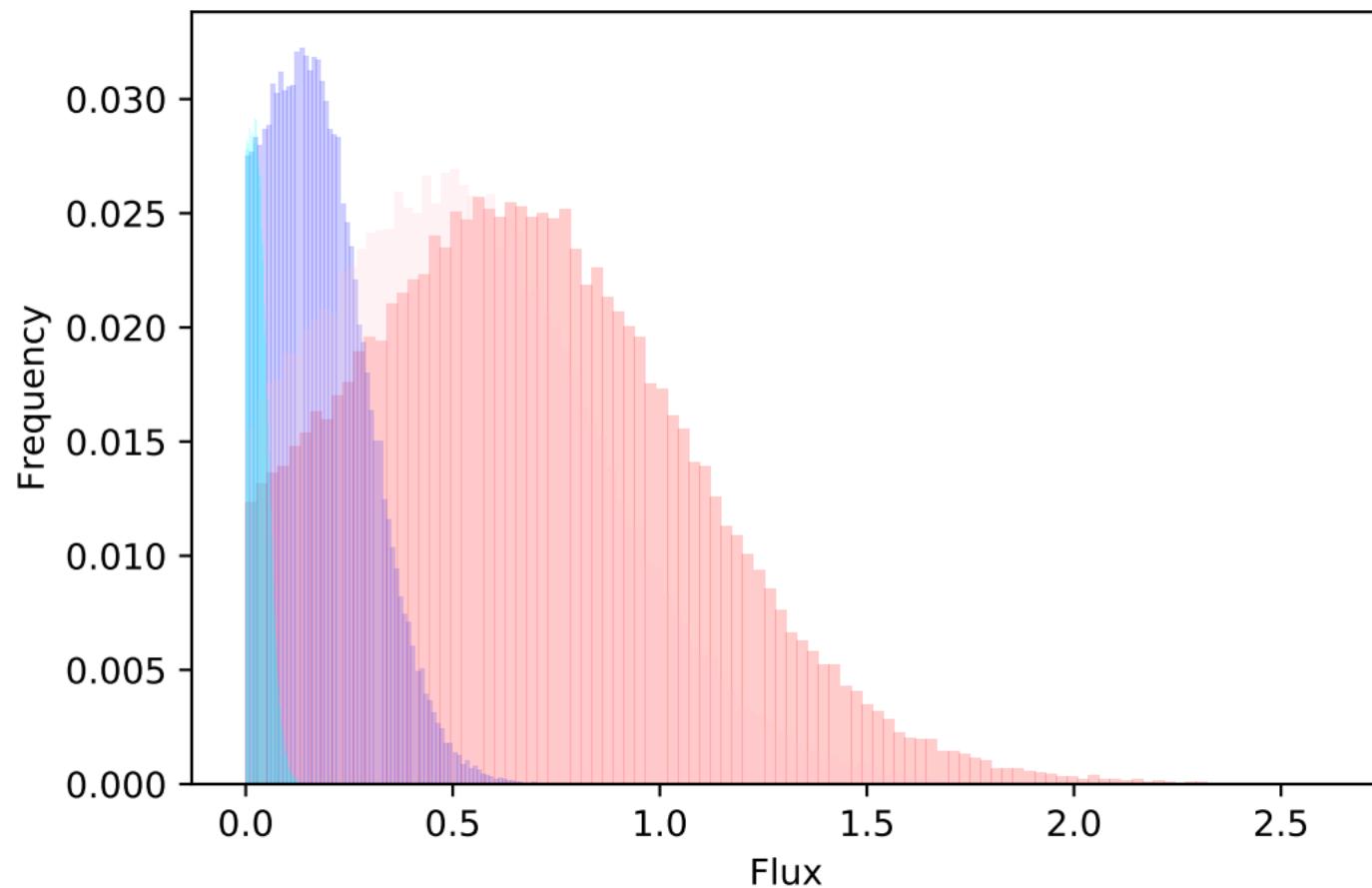
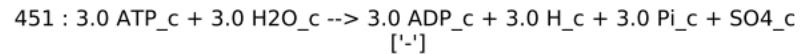




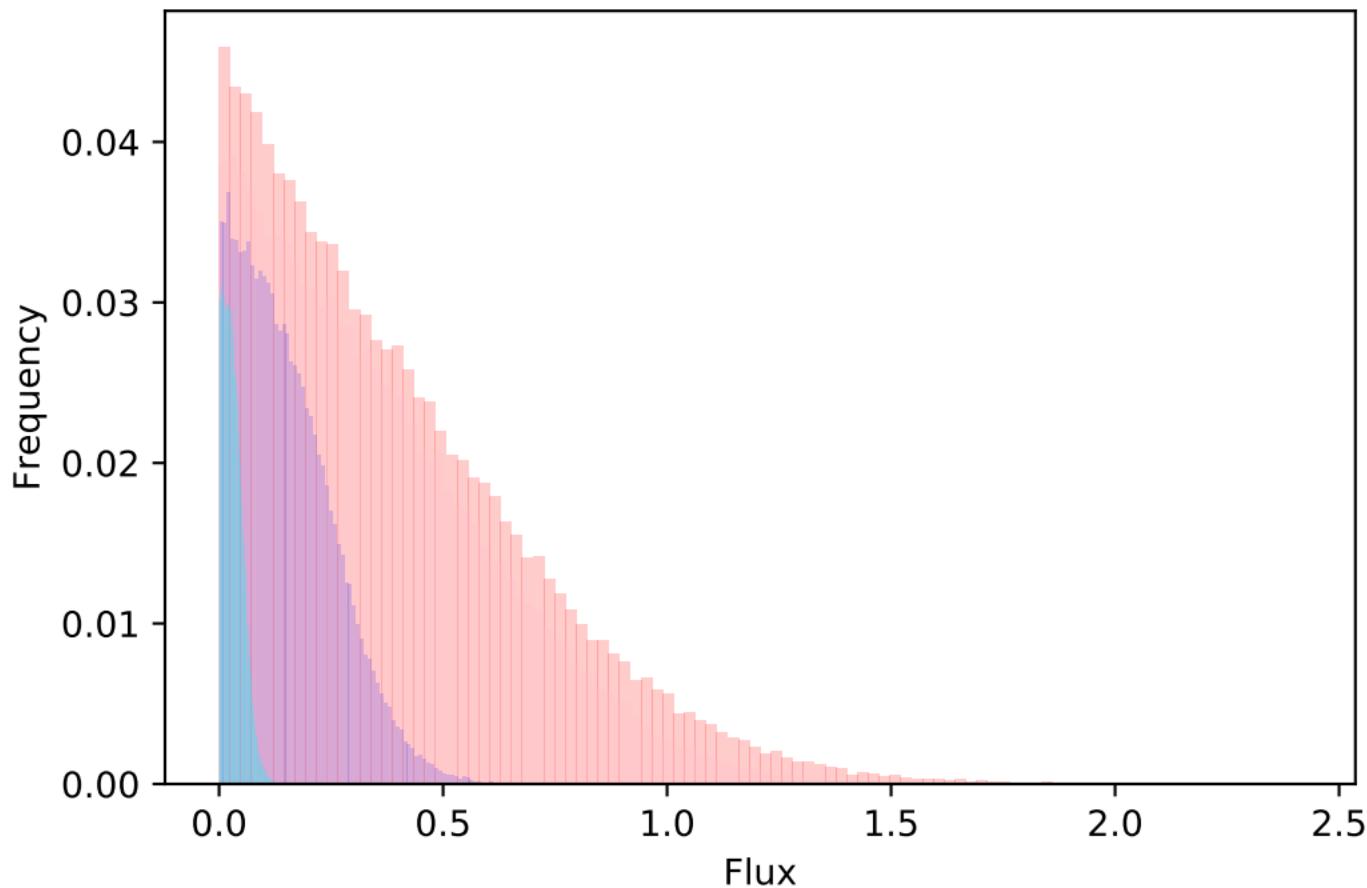


450 : --> NH4_c
['-']

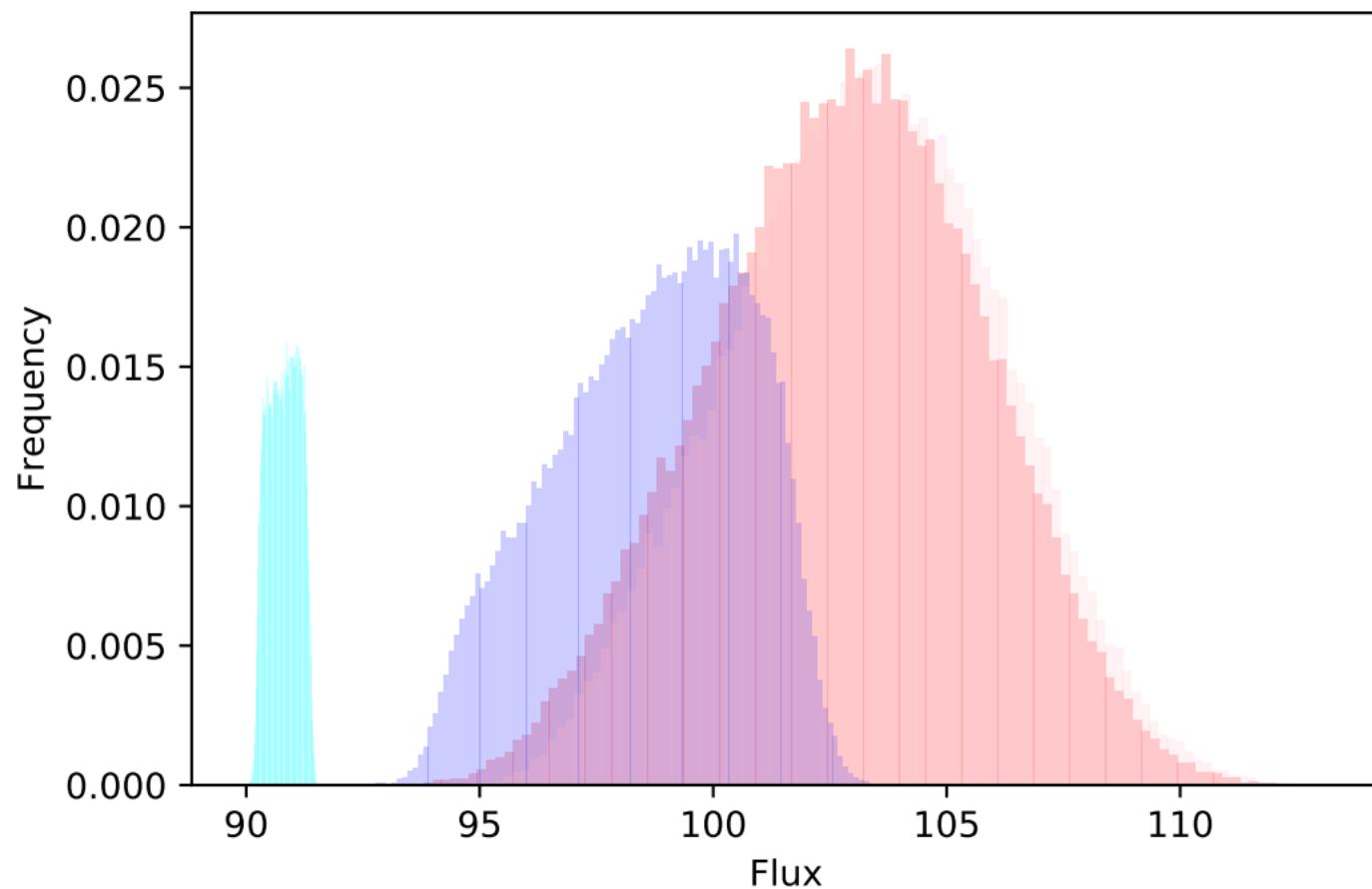




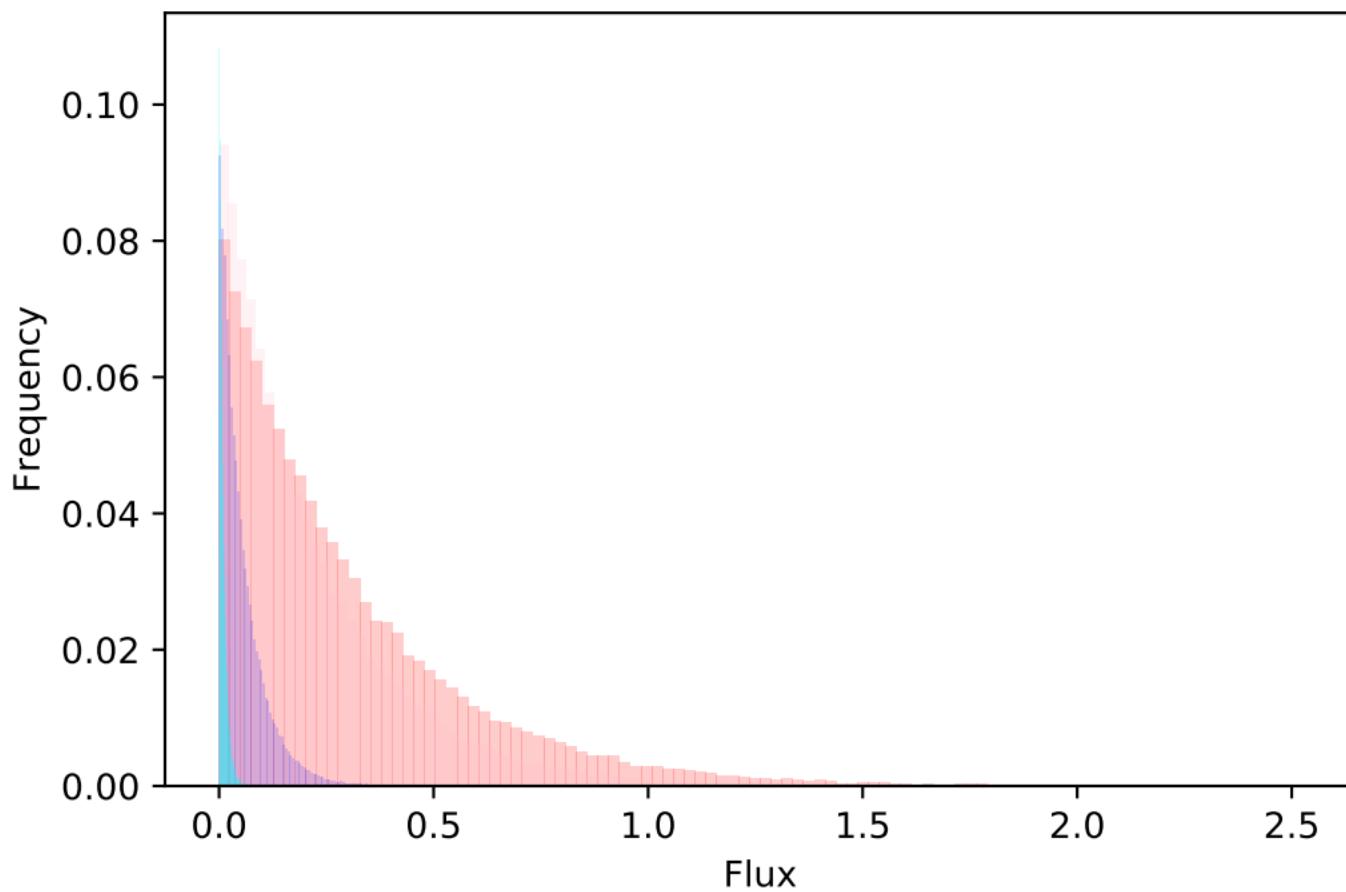
452 : --> H2S_c
['-']



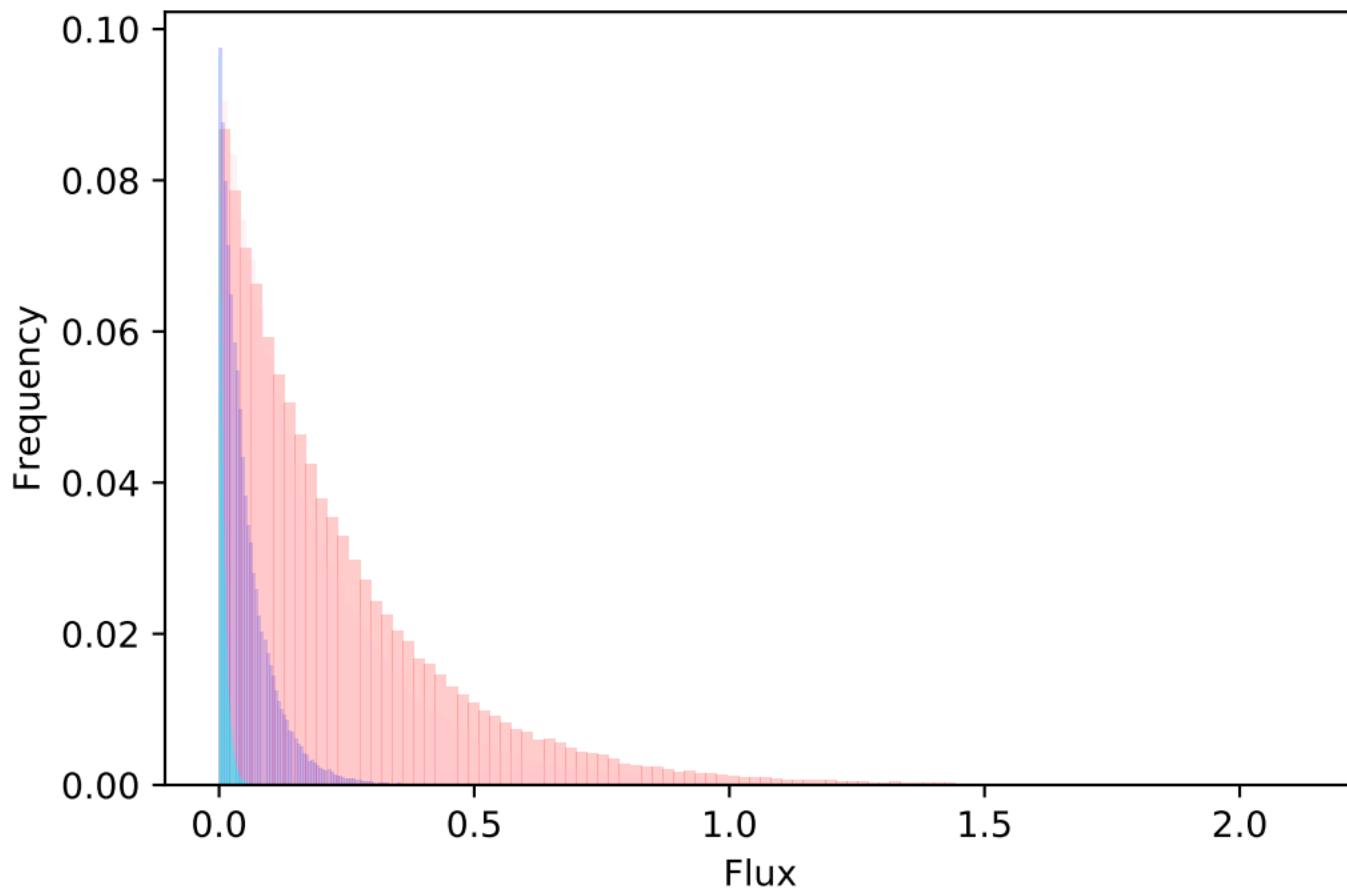
453 : O₂ c -->
[-]



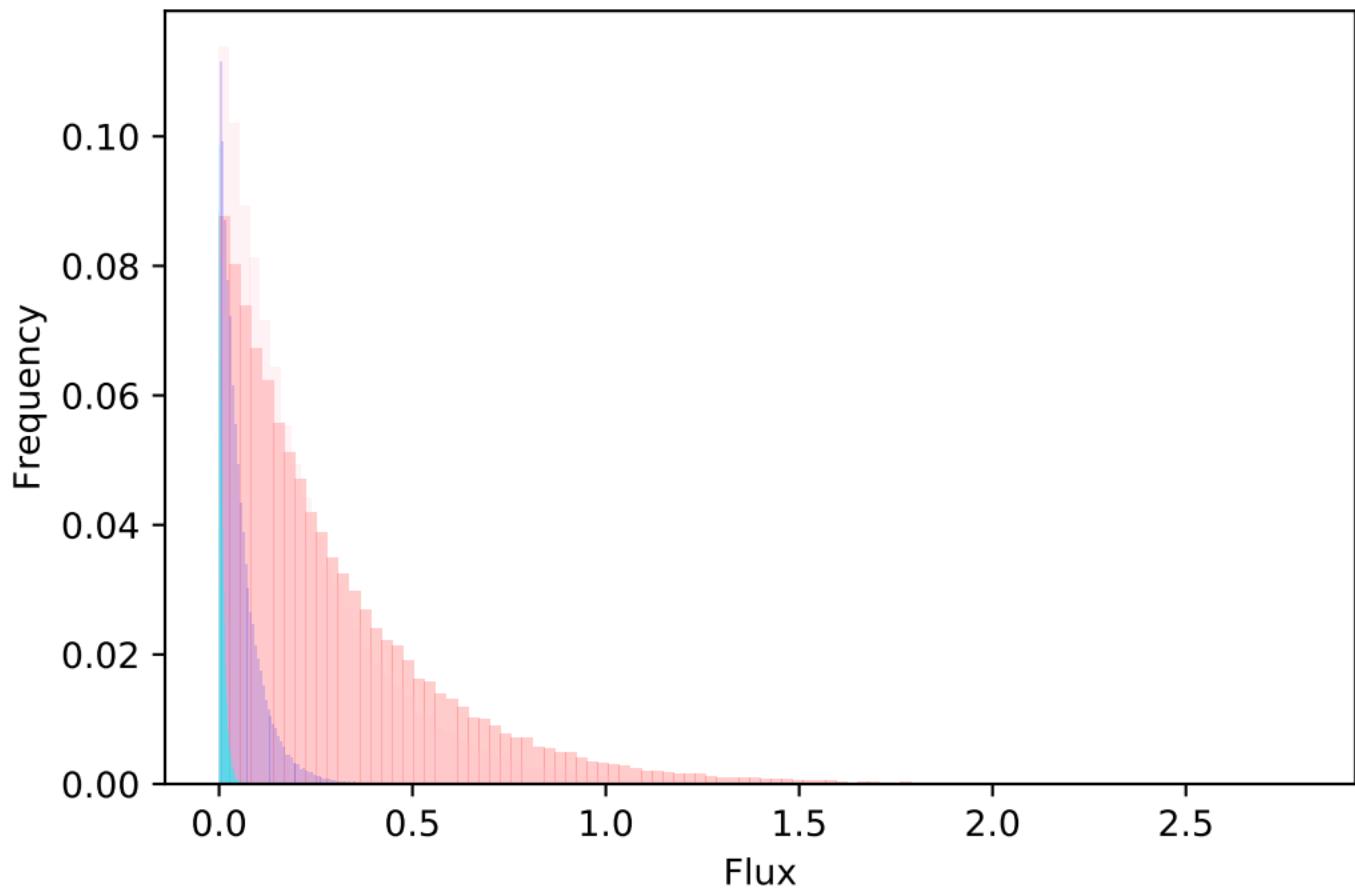
454 : Ala_c -->
[${}^{\prime -} \overline{}$]



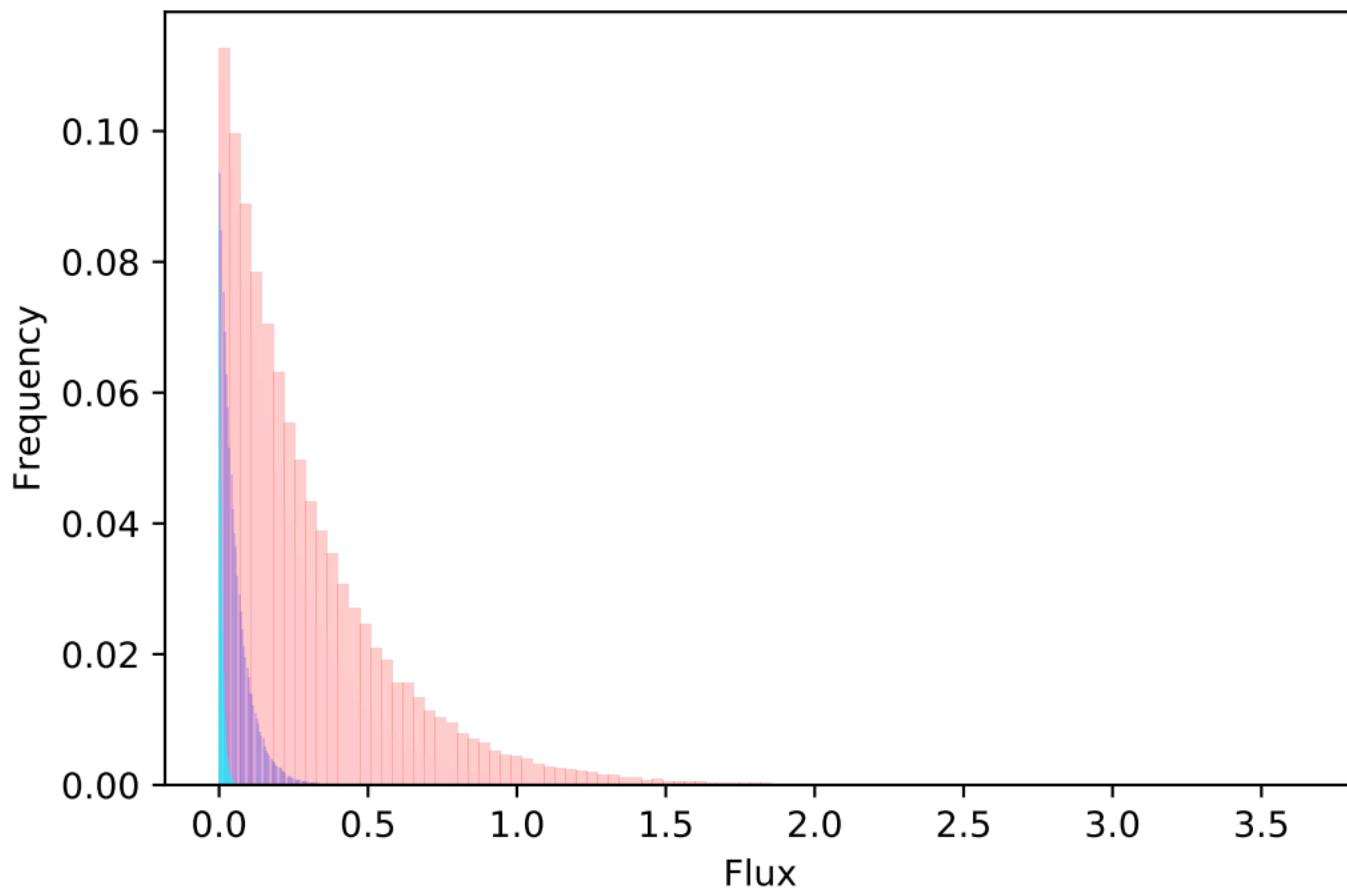
455 : Ala_h -->
['-']



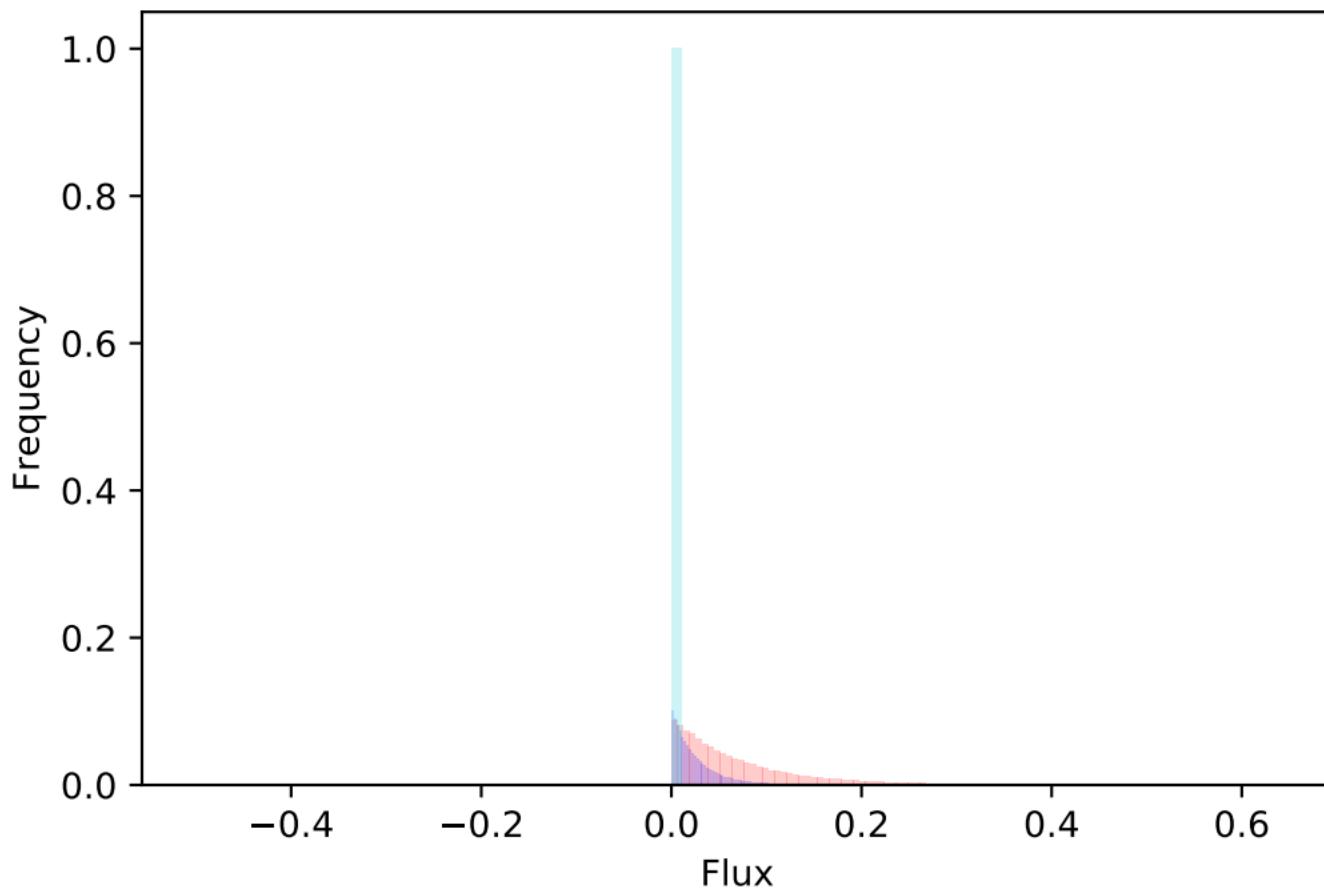
456 : Ala_m -->
[${}^1\text{H}$]



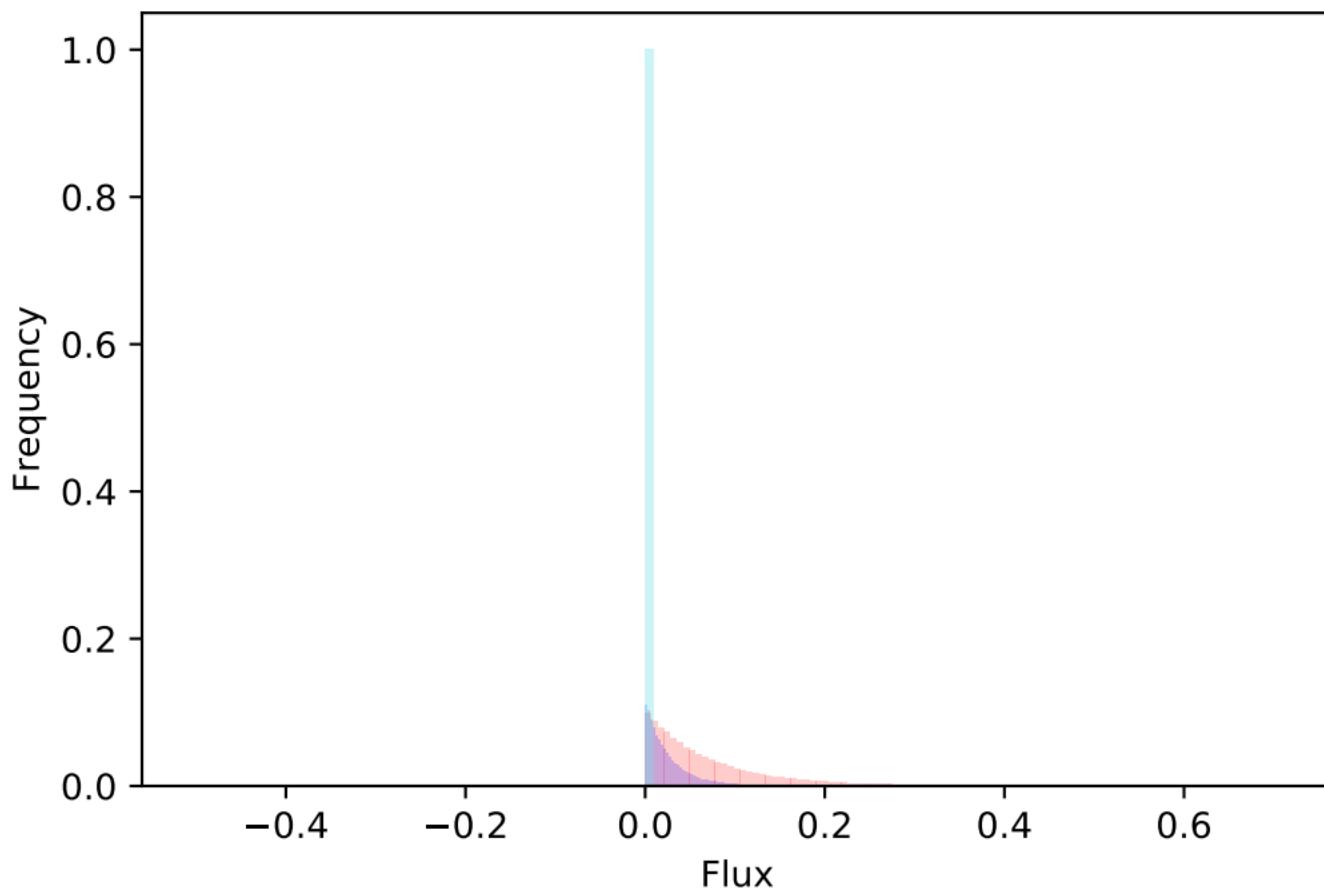
457 : Ala_p -->
['-']



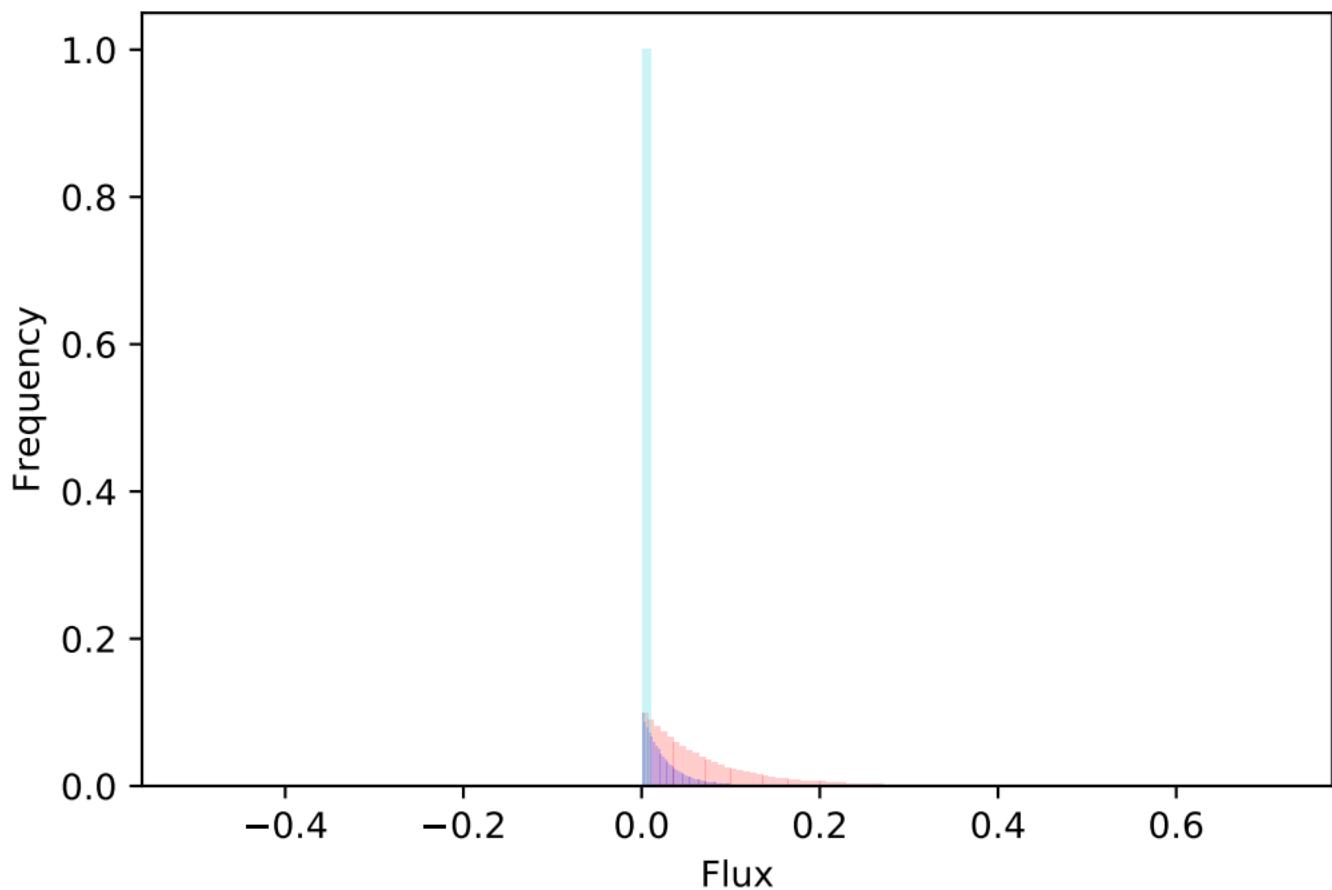
458 : Arg_c -->
['-']



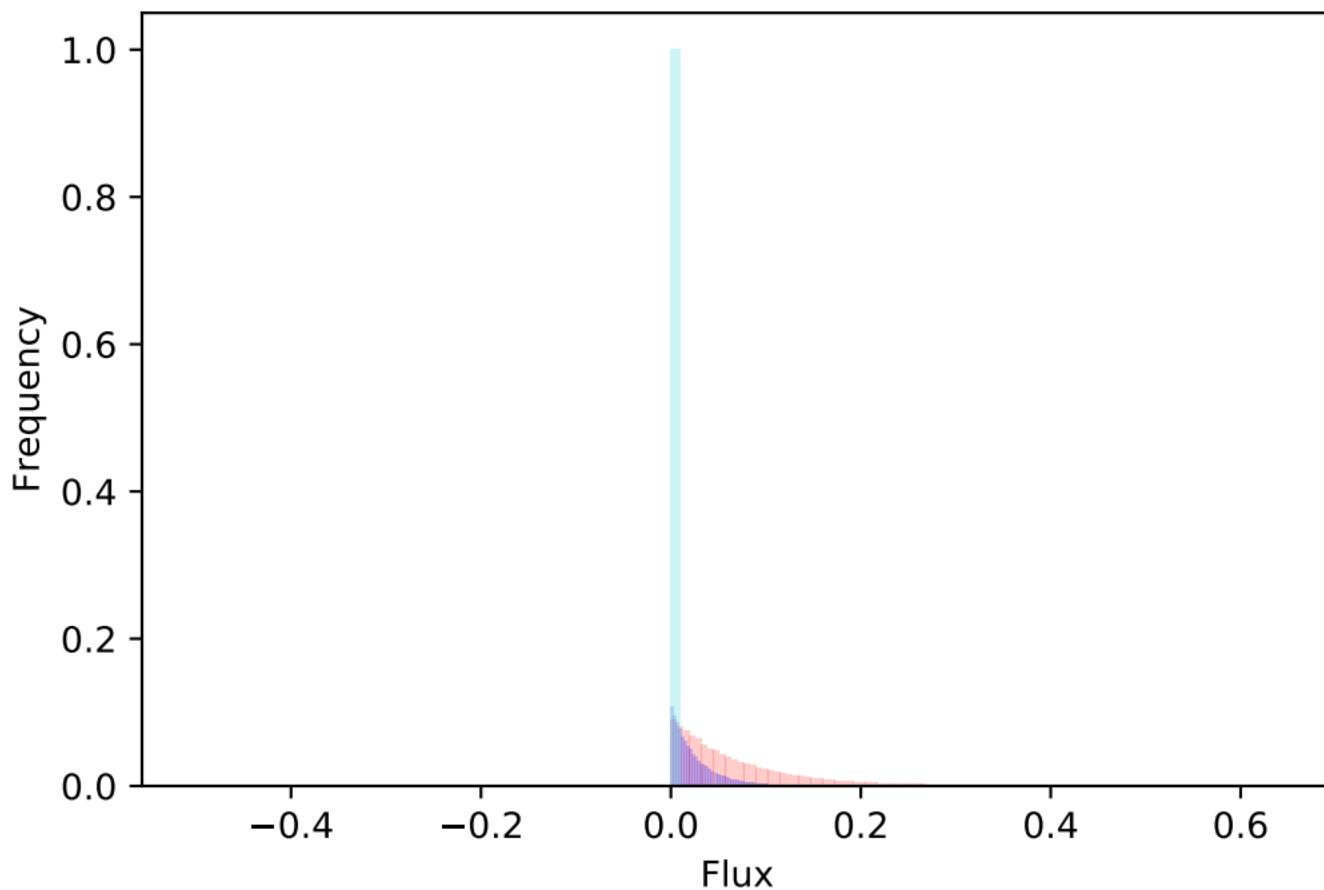
459 : Arg_h -->
['-']



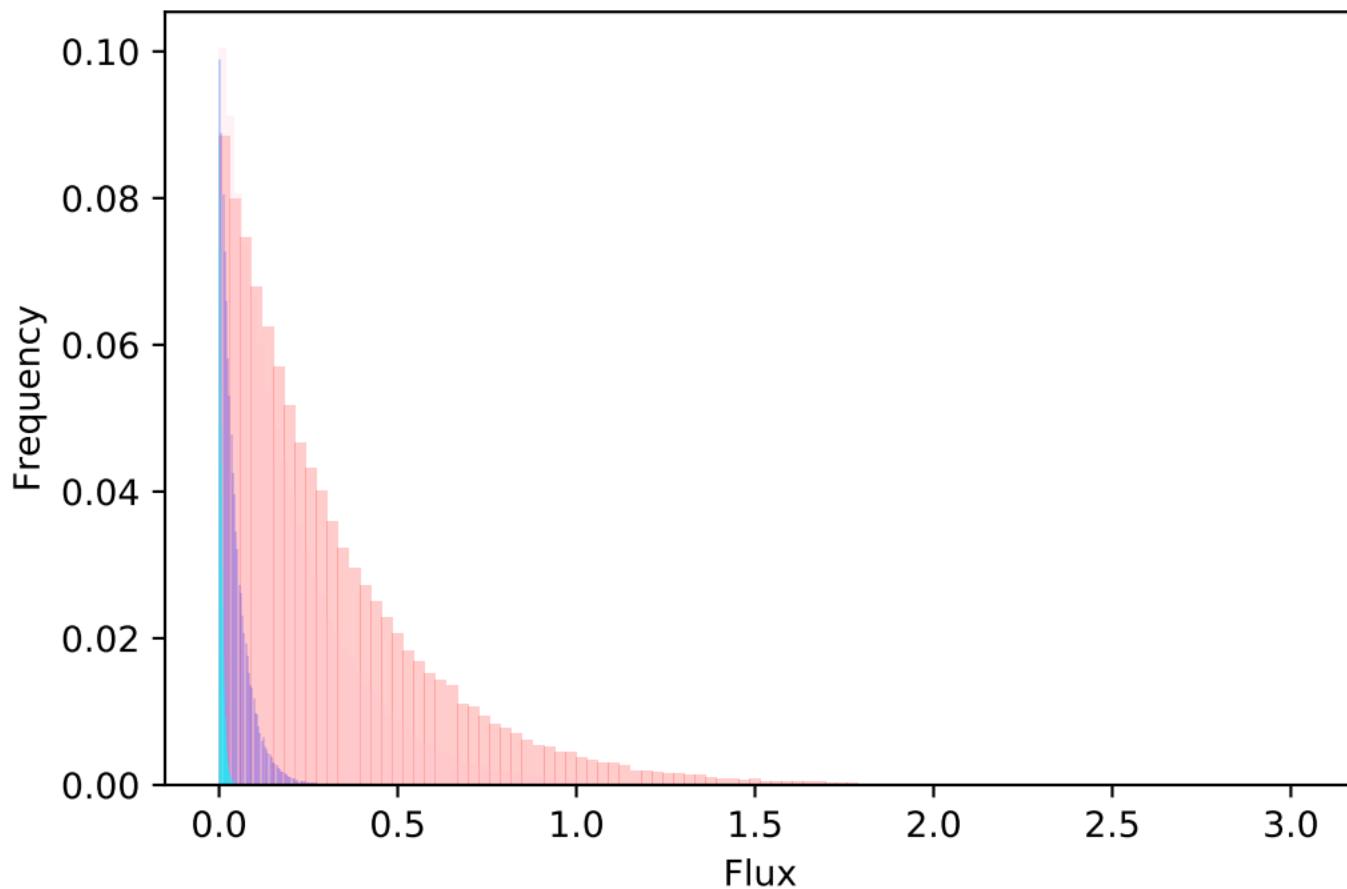
460 : Arg_m -->
['-']



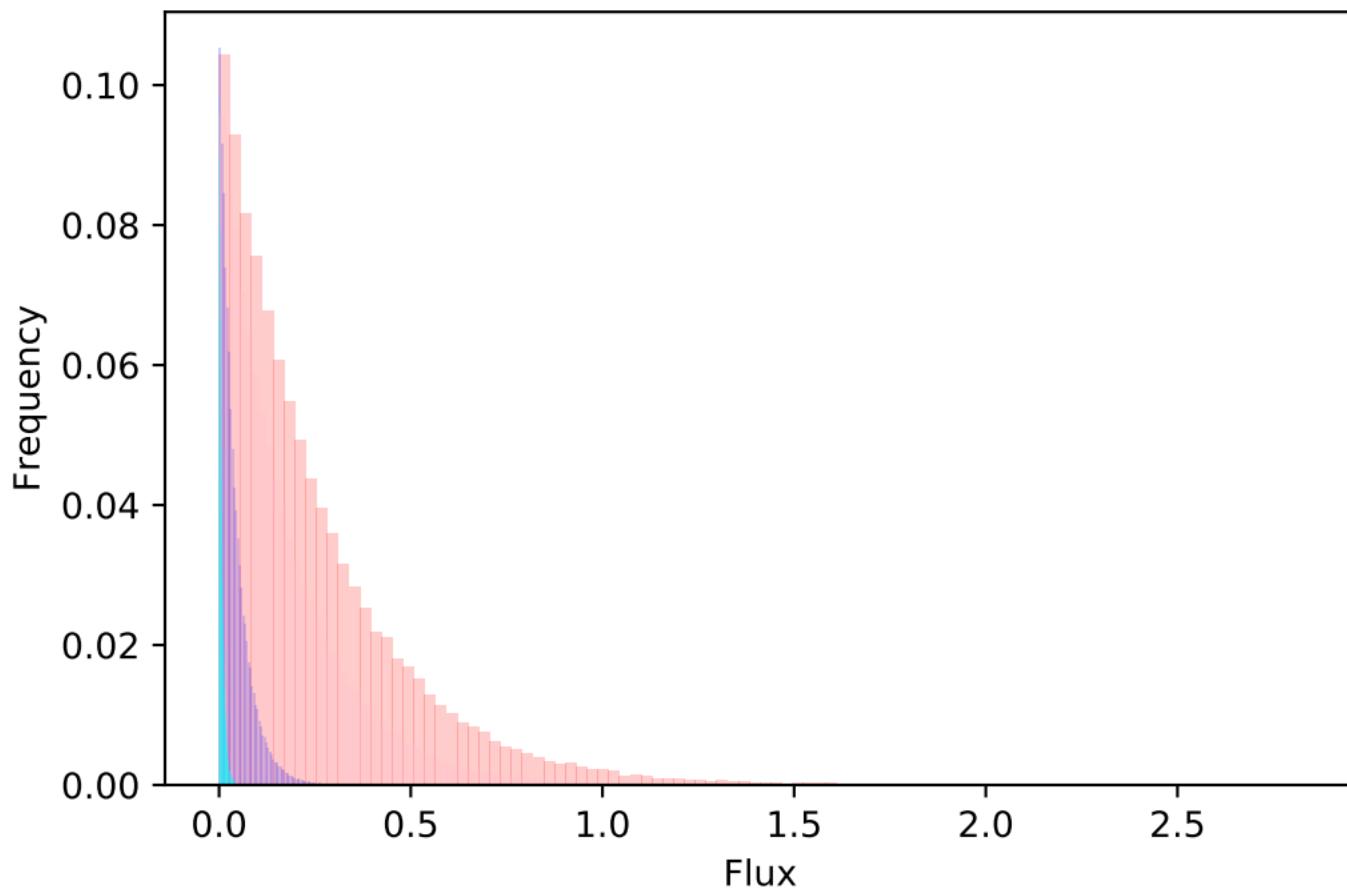
461 : Arg_p -->
['-']



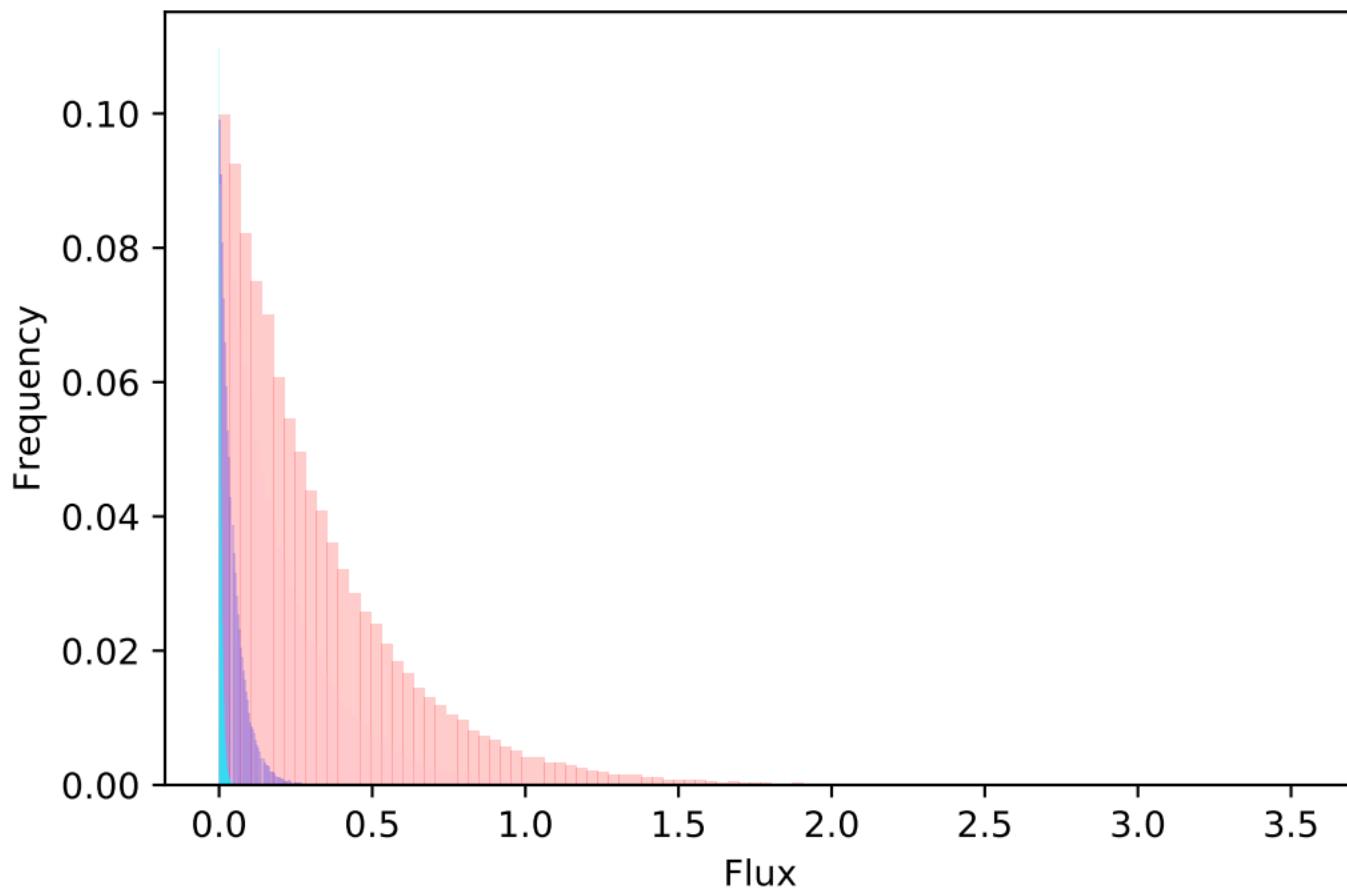
462 : Asn_c -->
['-']



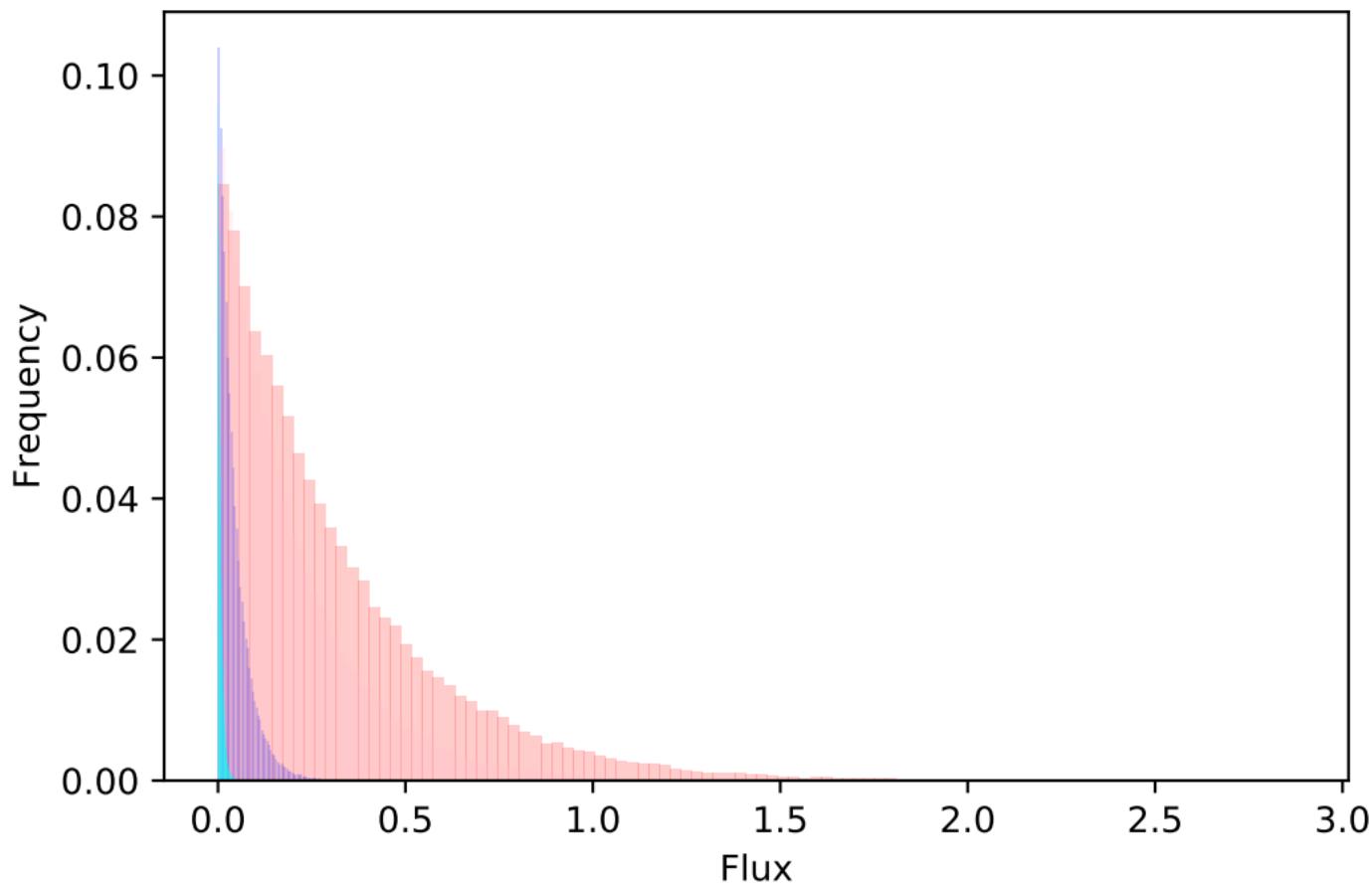
463 : Asn_h -->
['-']



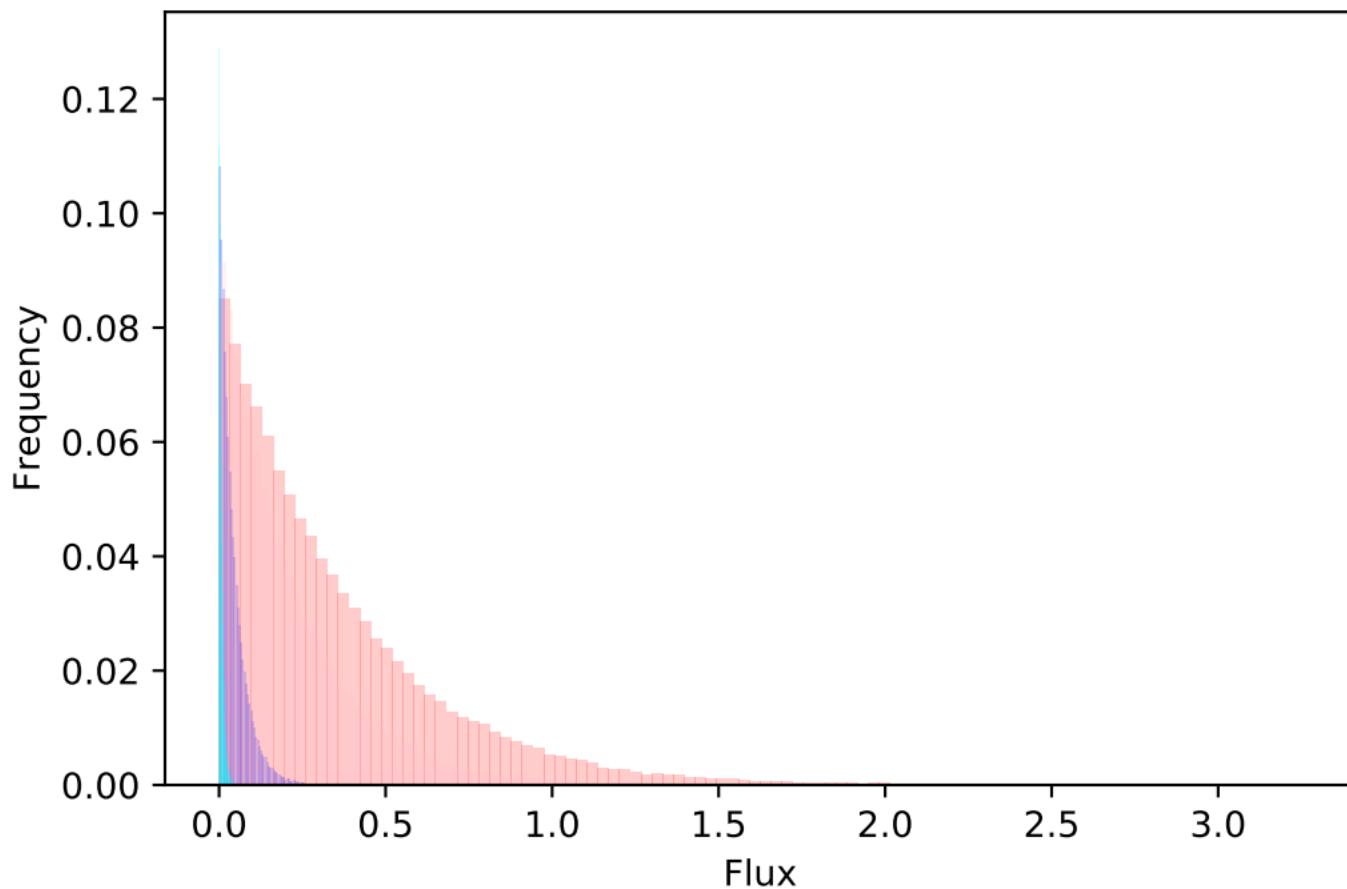
464 : Asn_m -->
[${}^{\prime} \text{-} {}^{\prime}$]



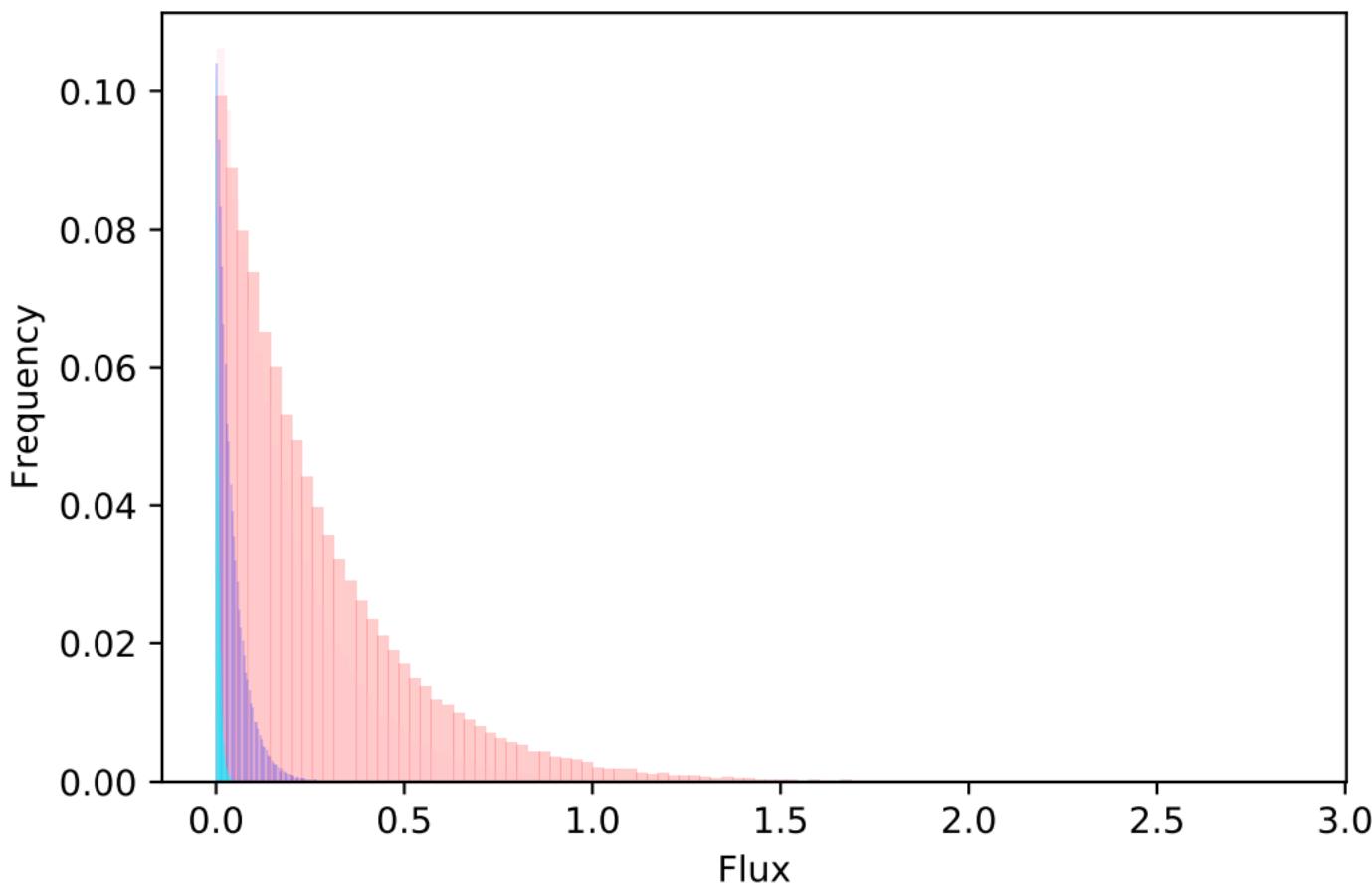
465 : Asn_p -->
['-']



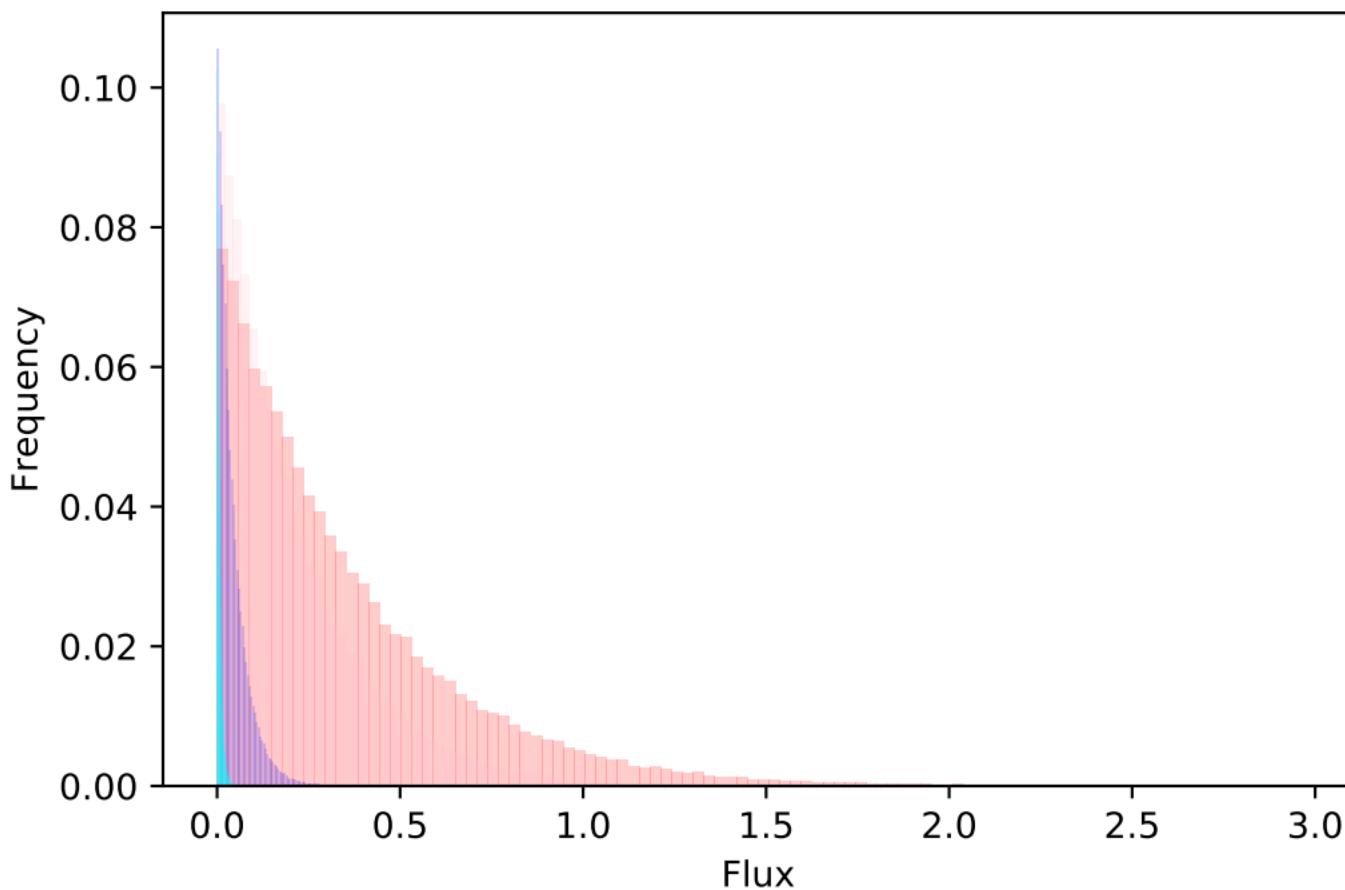
466 : Asp_c -->
['-']



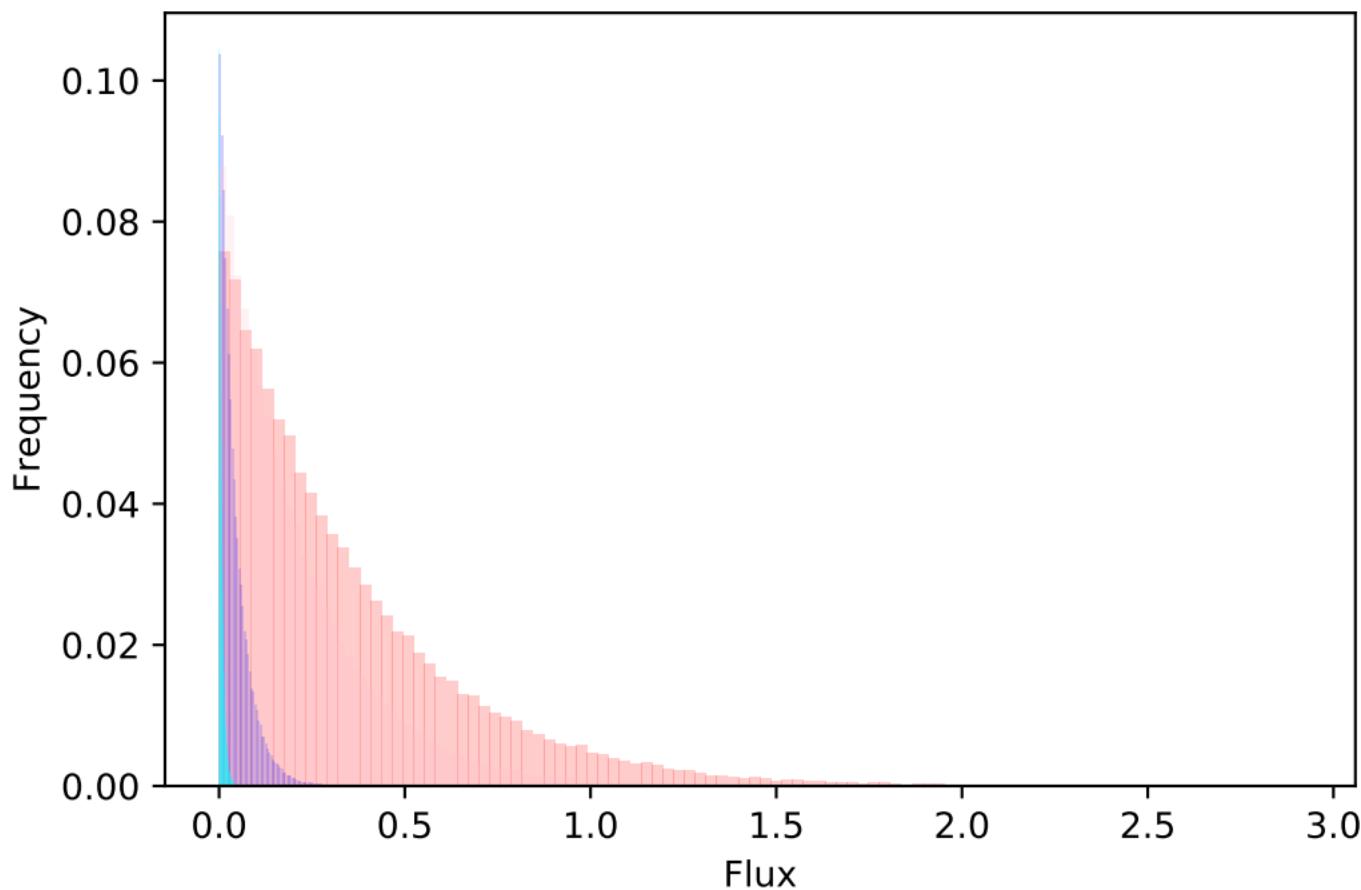
467 : Asp_h -->
['-']



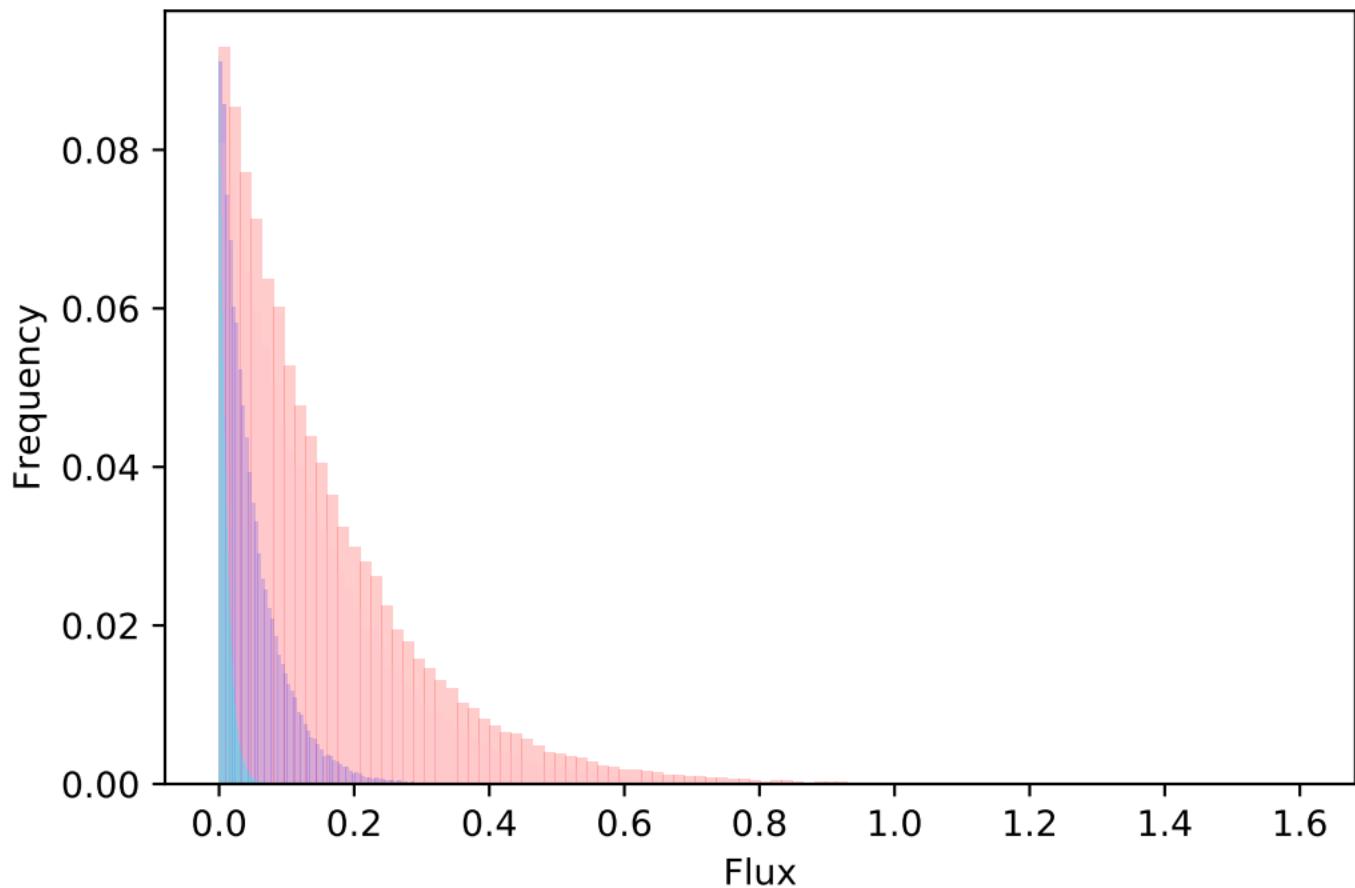
468 : Asp_m -->
[${}^{\prime -} \bar{}$]



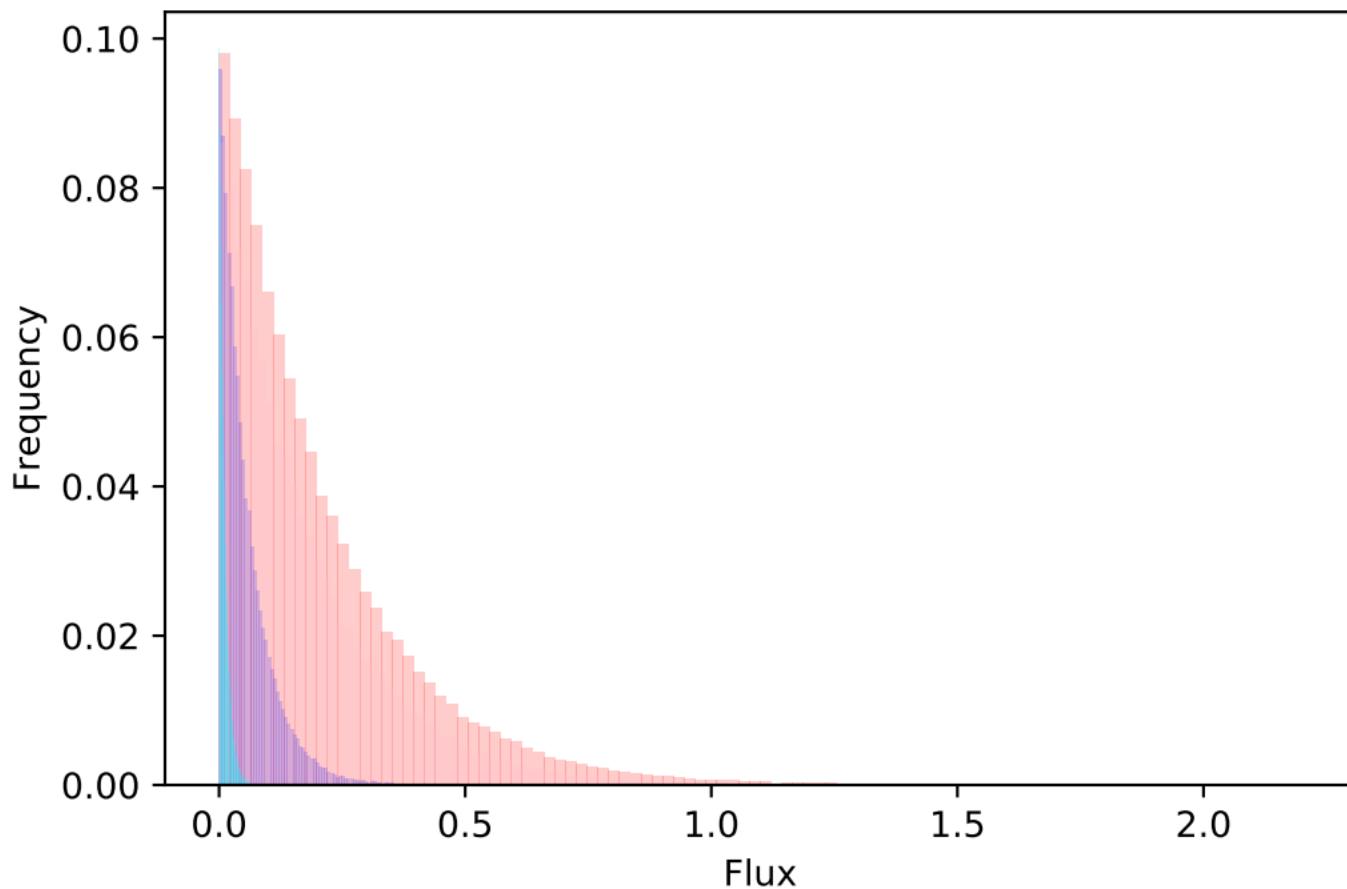
469 : Asp_p -->
['-']



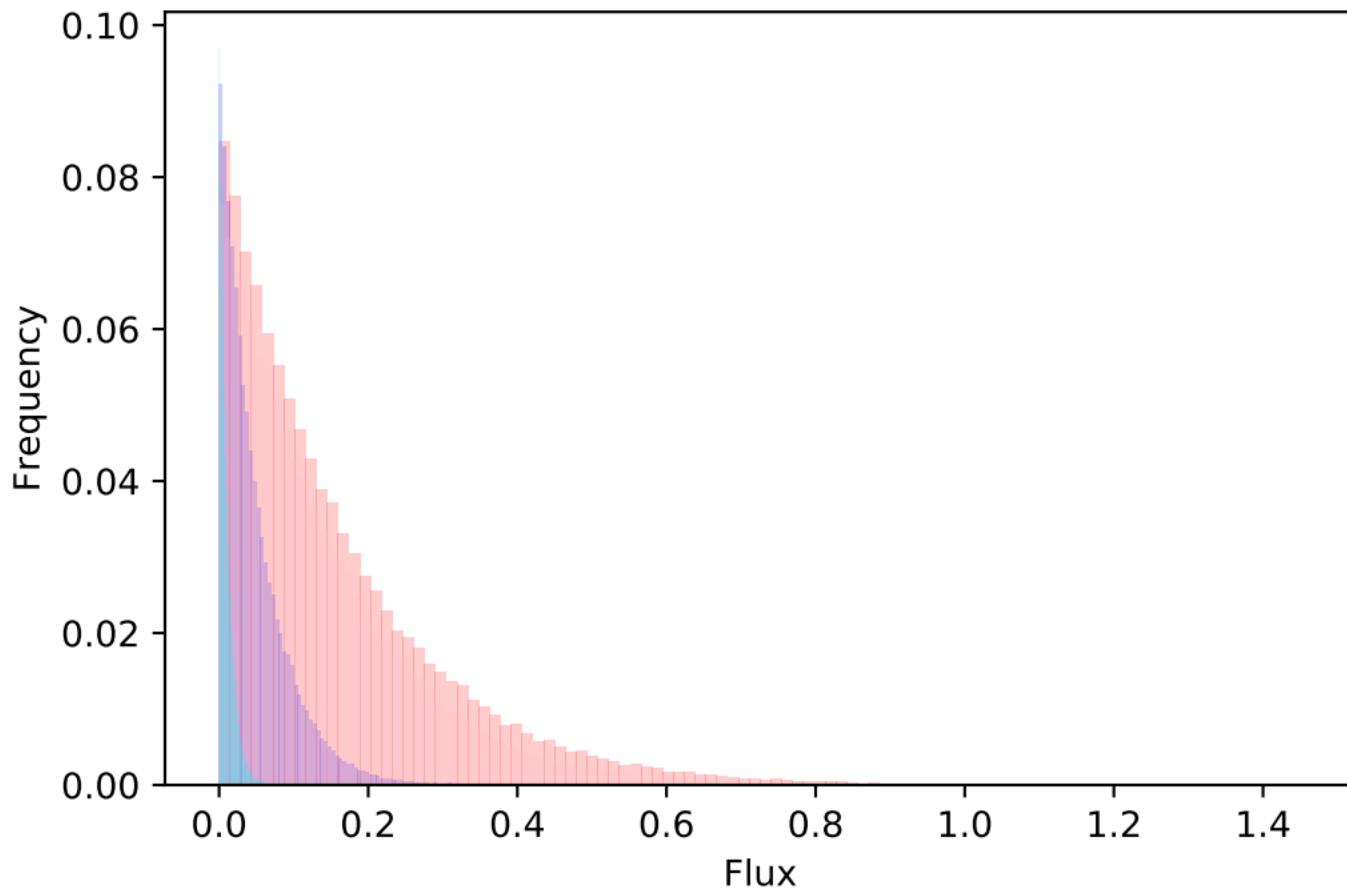
470 : Cys_c -->
[⁻₋]



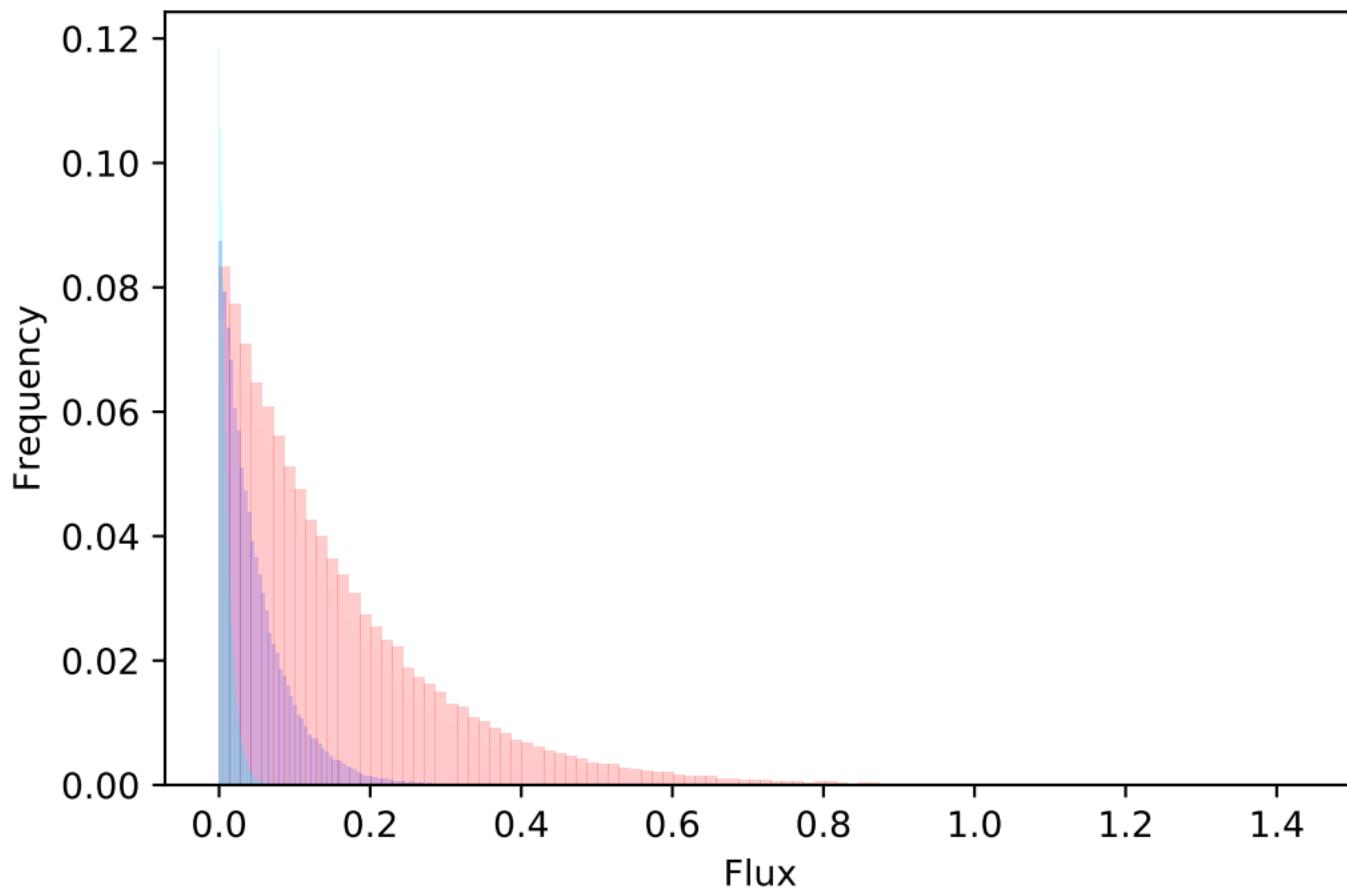
471 : Cys_h -->
[⁻₋]



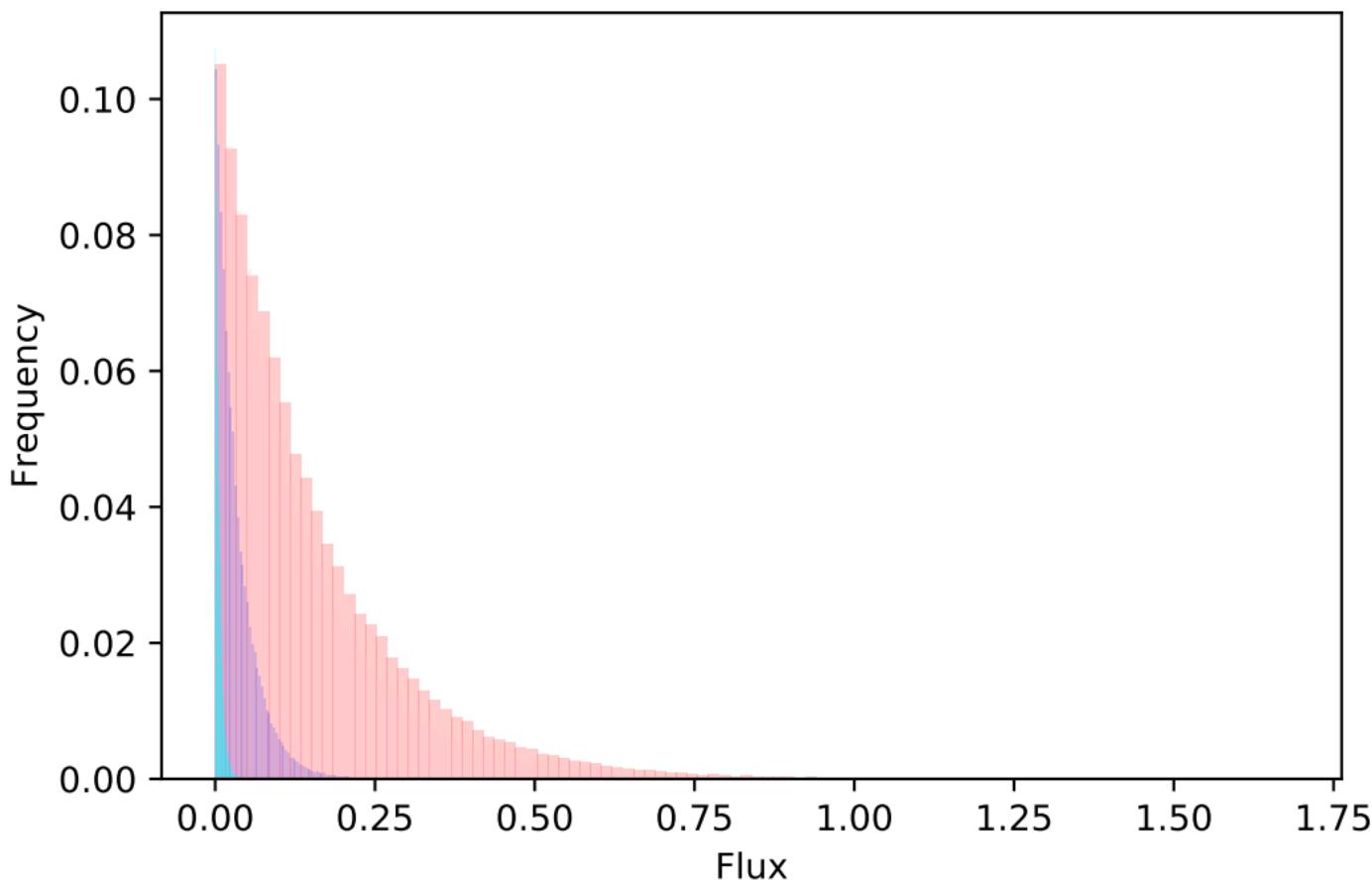
472 : Cys_m -->
[^t-^r]



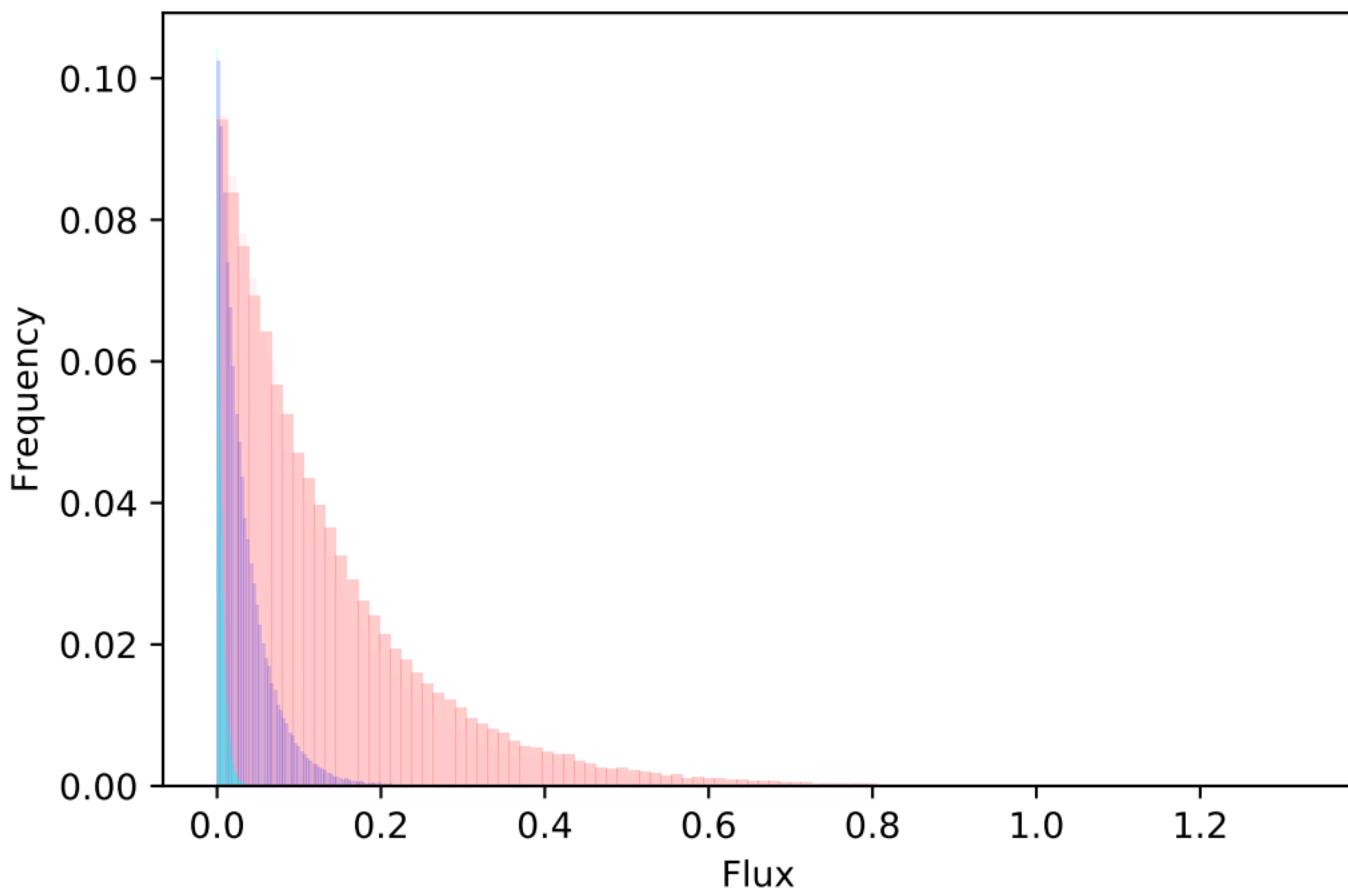
473 : Cys_p -->
[⁻ -]



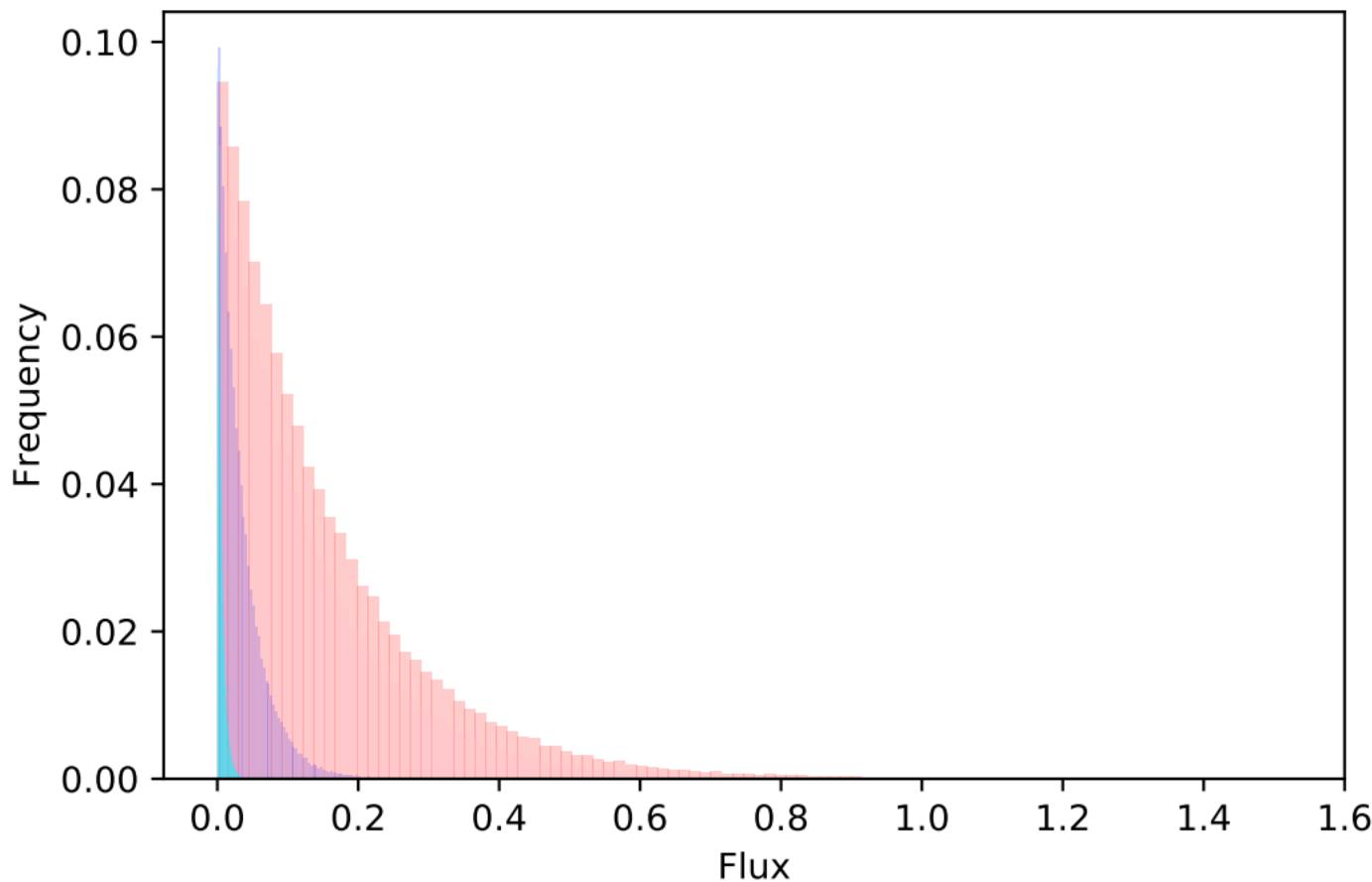
474 : Gln_c -->
[${}^{\prime -} \overline{}$]



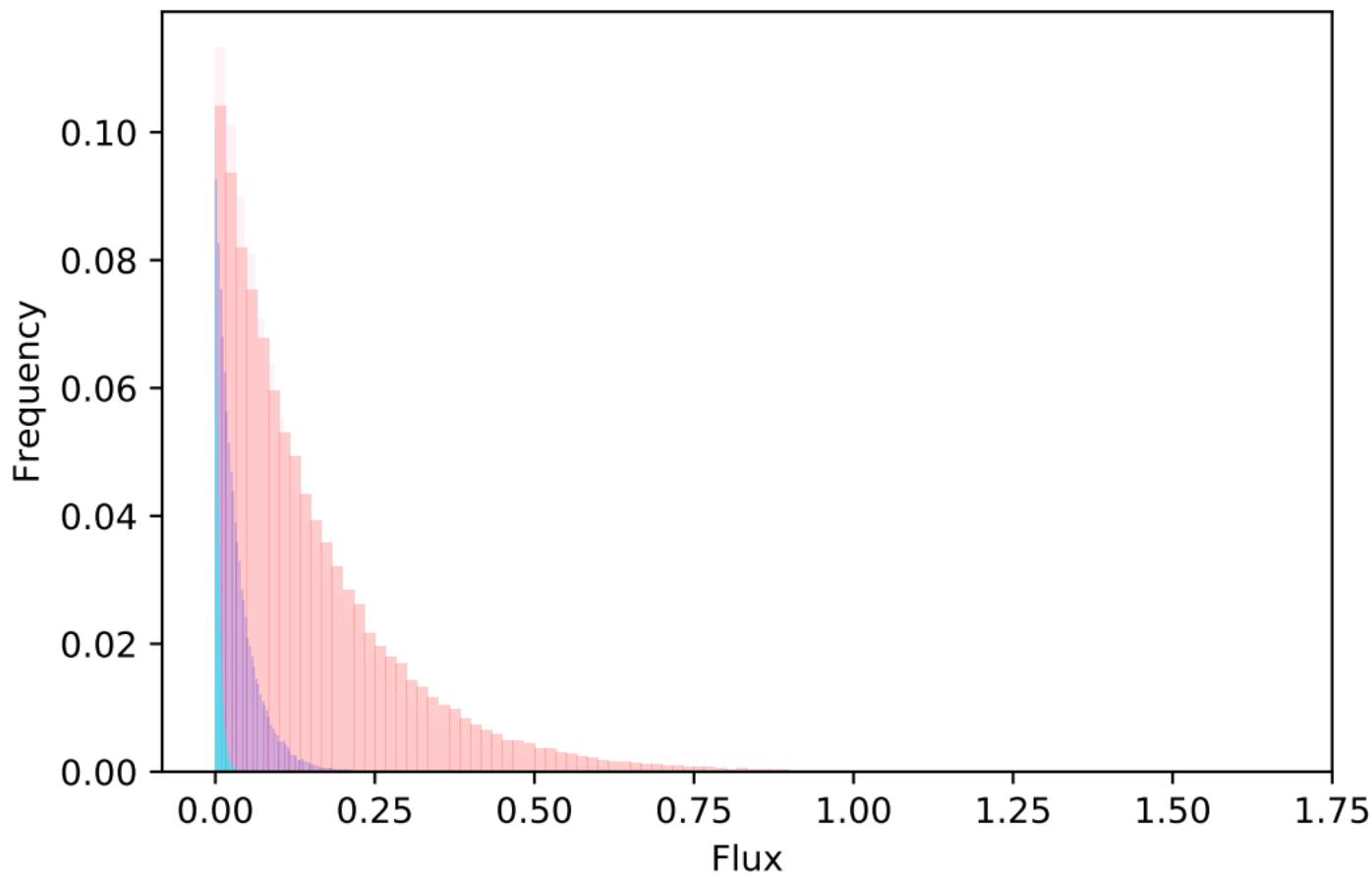
475 : Gln_h -->
['-']



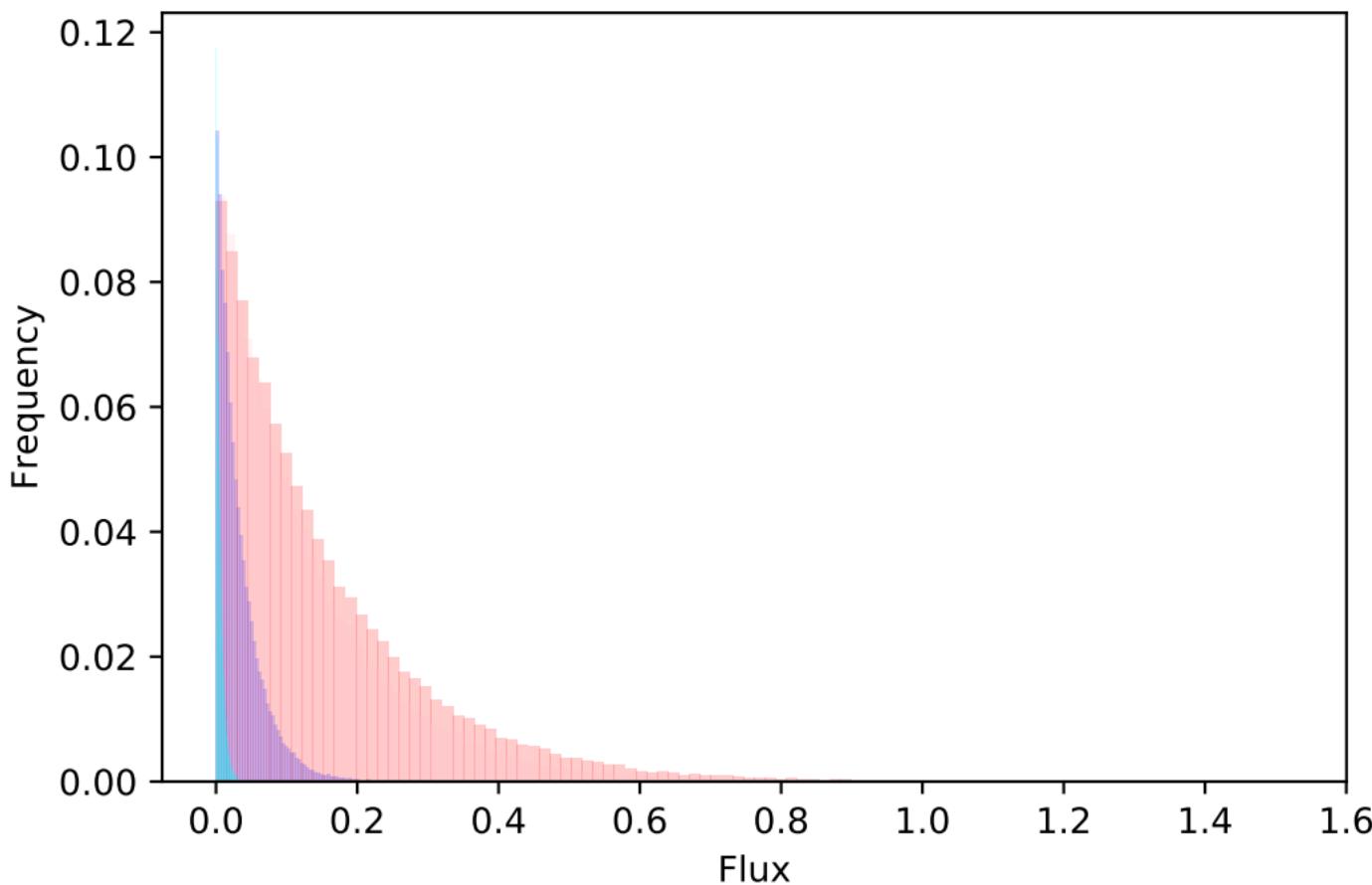
476 : Gln_m -->
[$\text{L}^{-\text{v}}$]



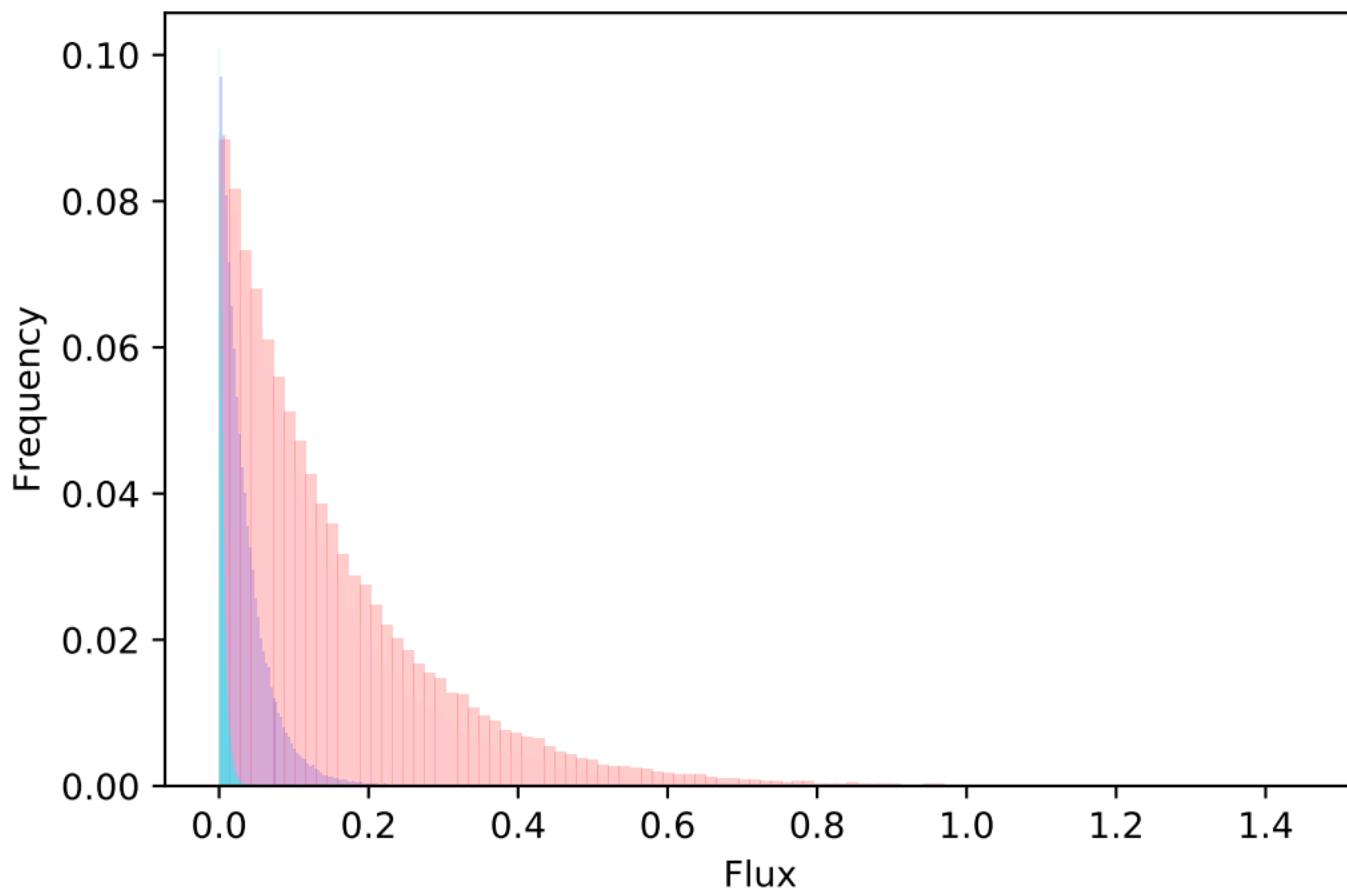
477 : Gln_p -->
['-']



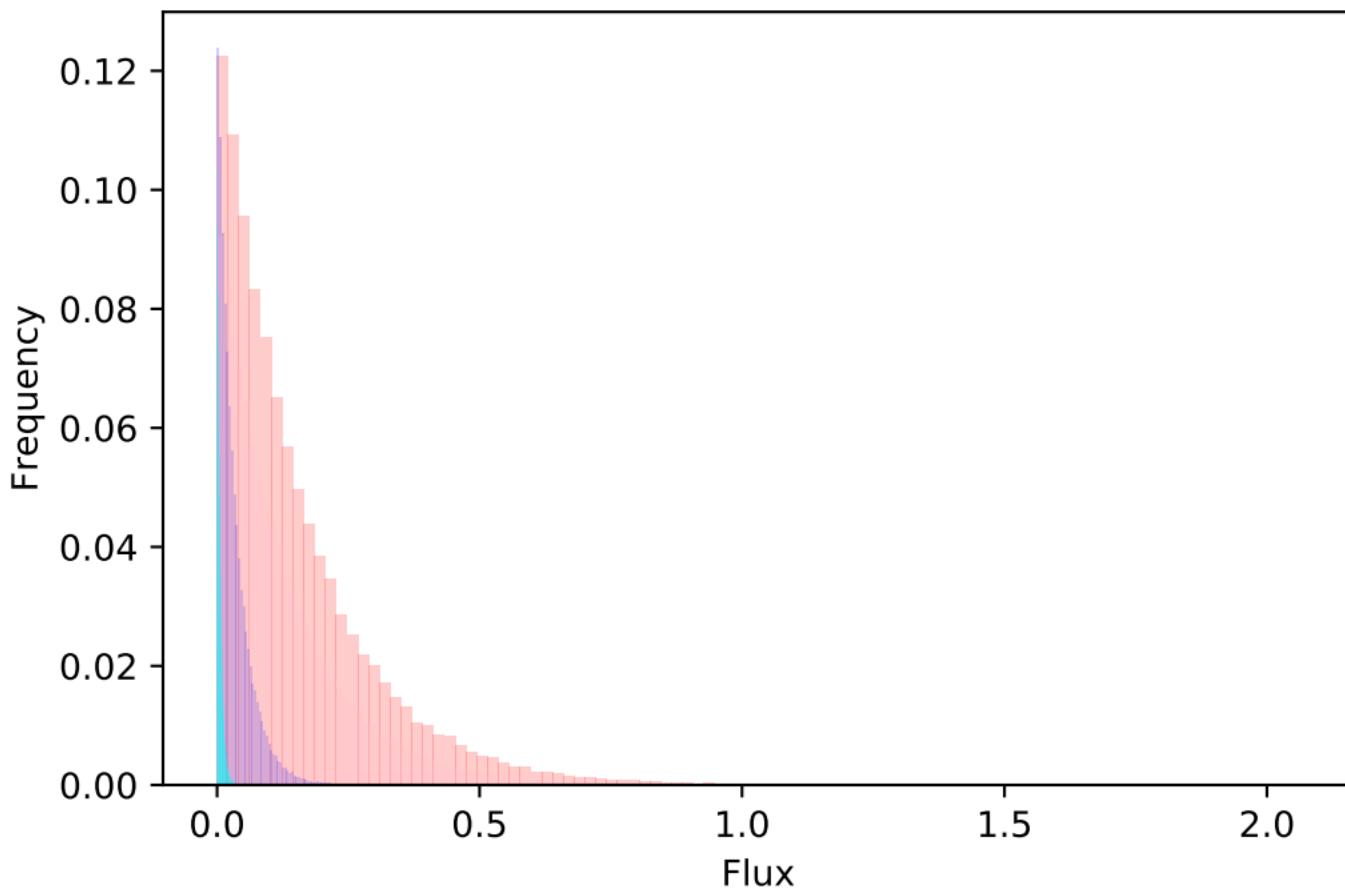
478 : Glu_c -->
[⁻₋]



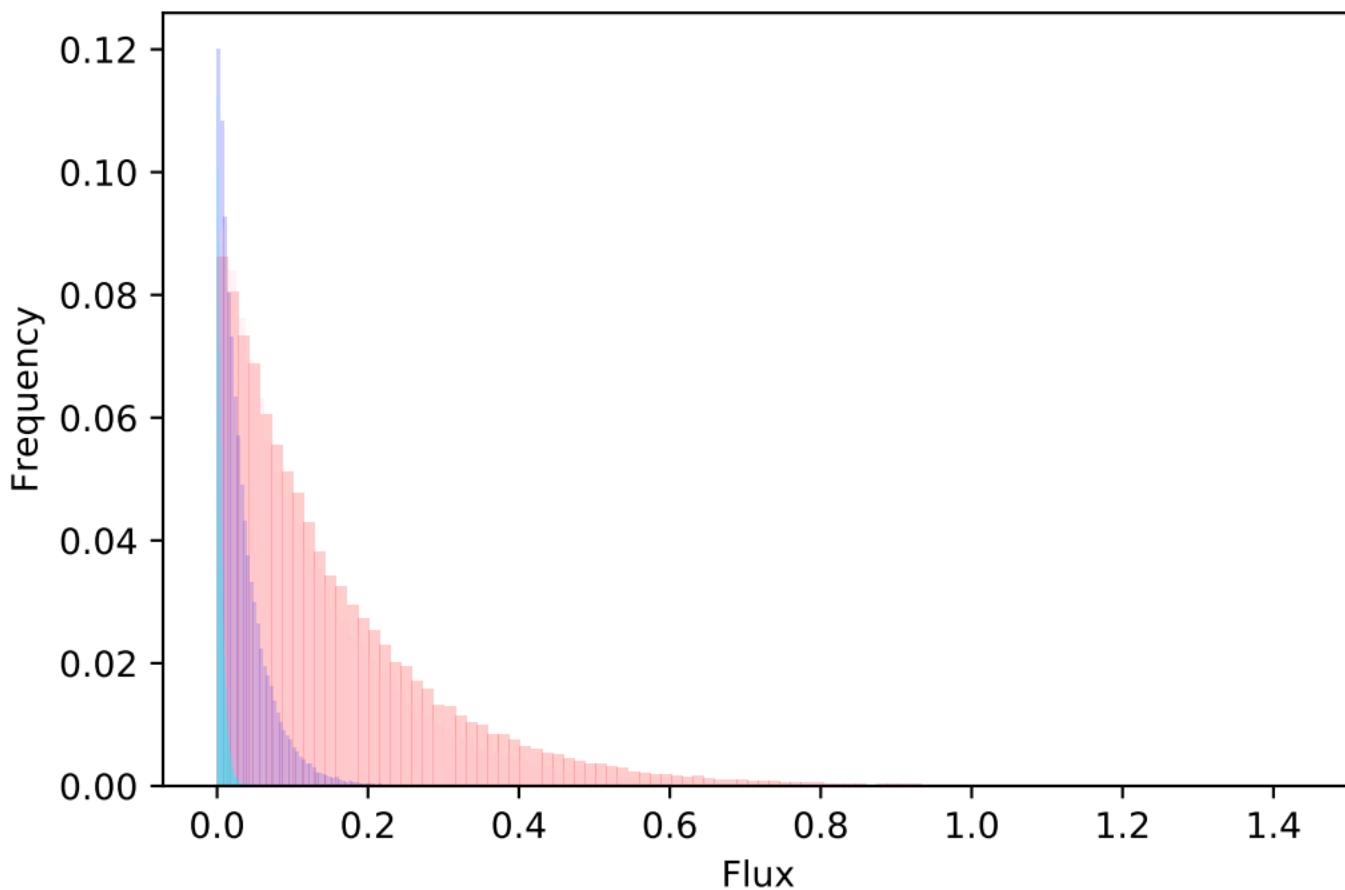
479 : Glu_h -->
[${}^{\prime -} \bar{}$]



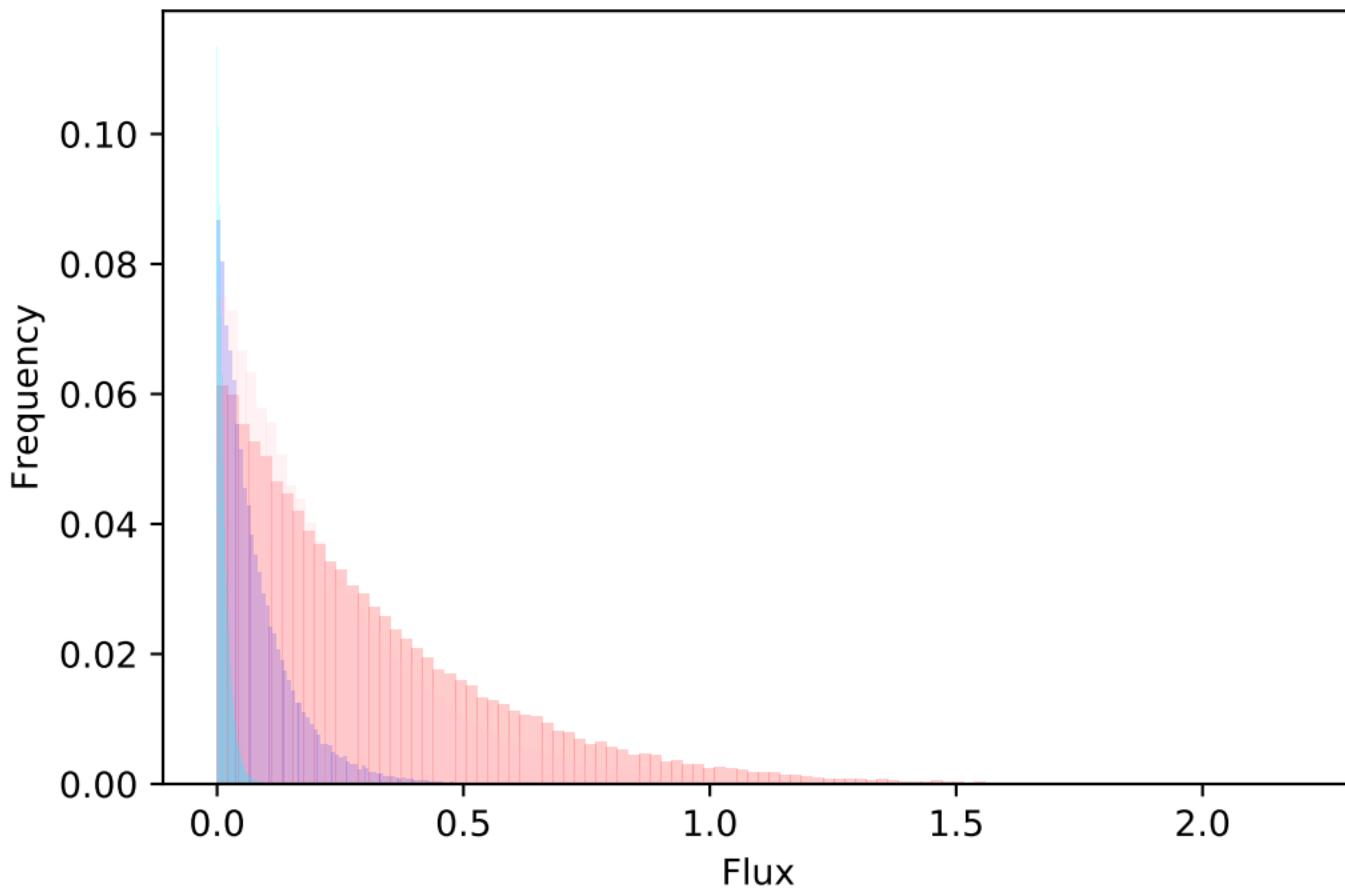
480 : Glu_m -->
[*t⁻¹*]



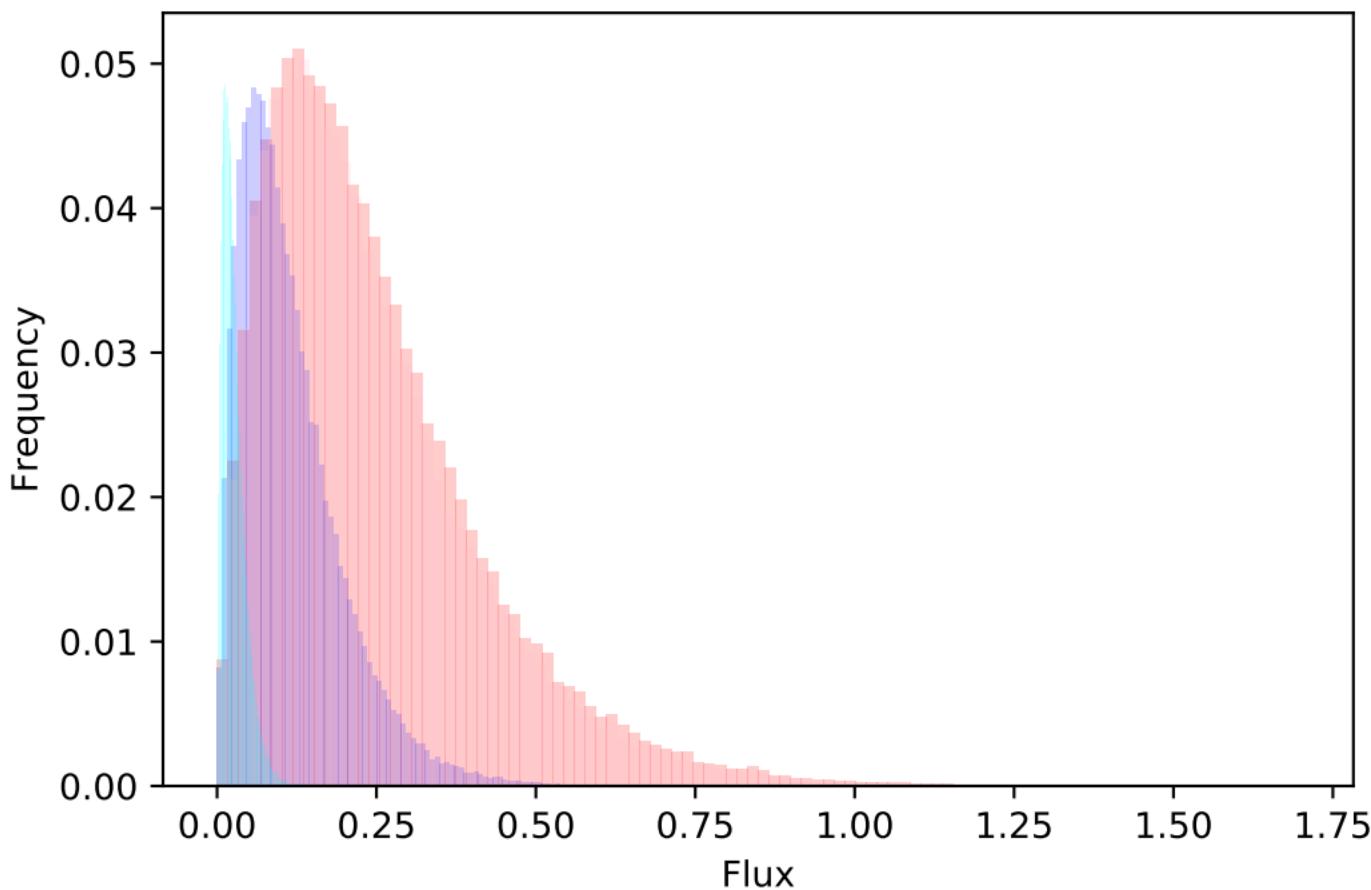
481 : Glu_p -->
['-']



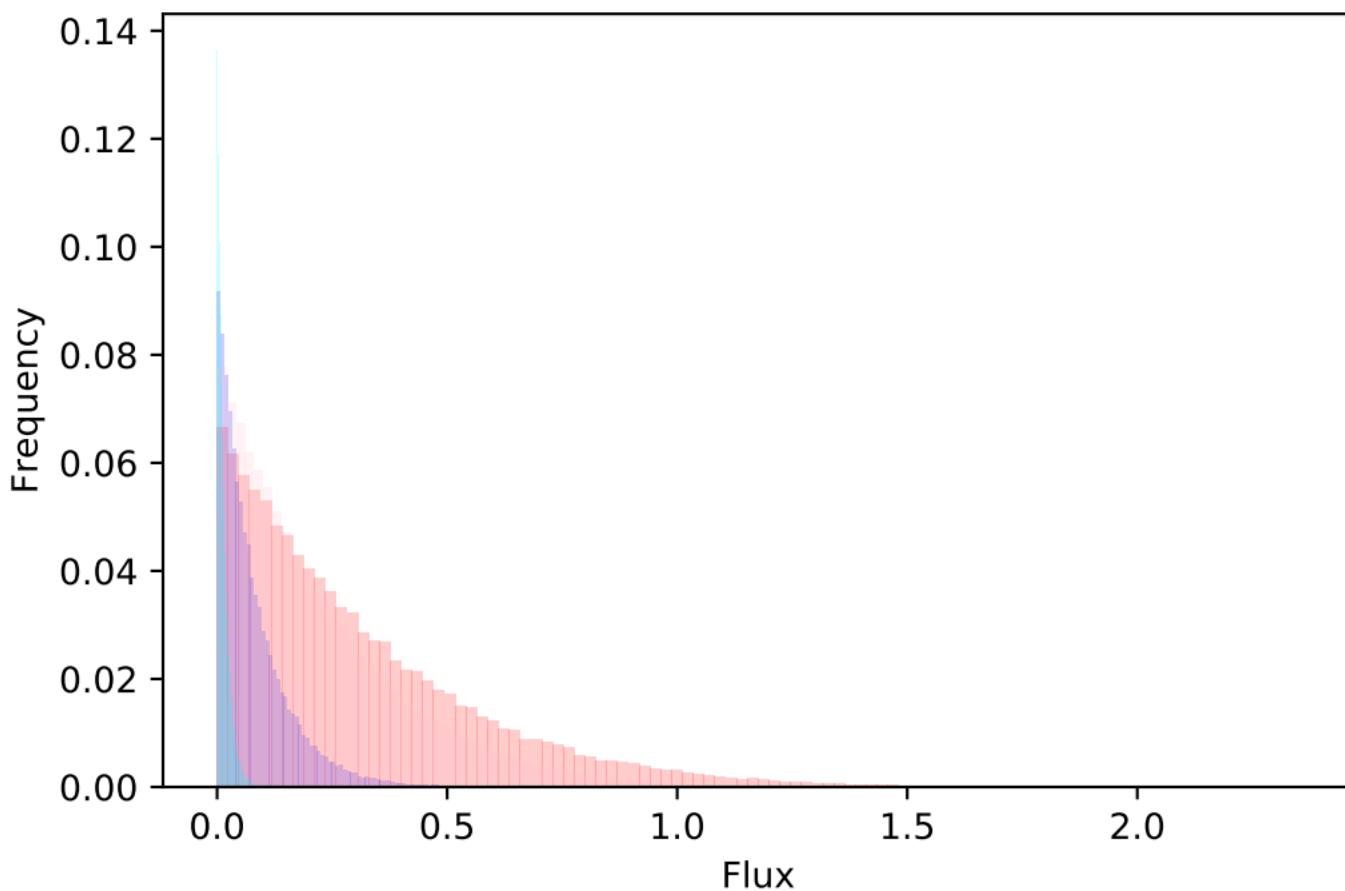
482 : Gly_c -->
['-']



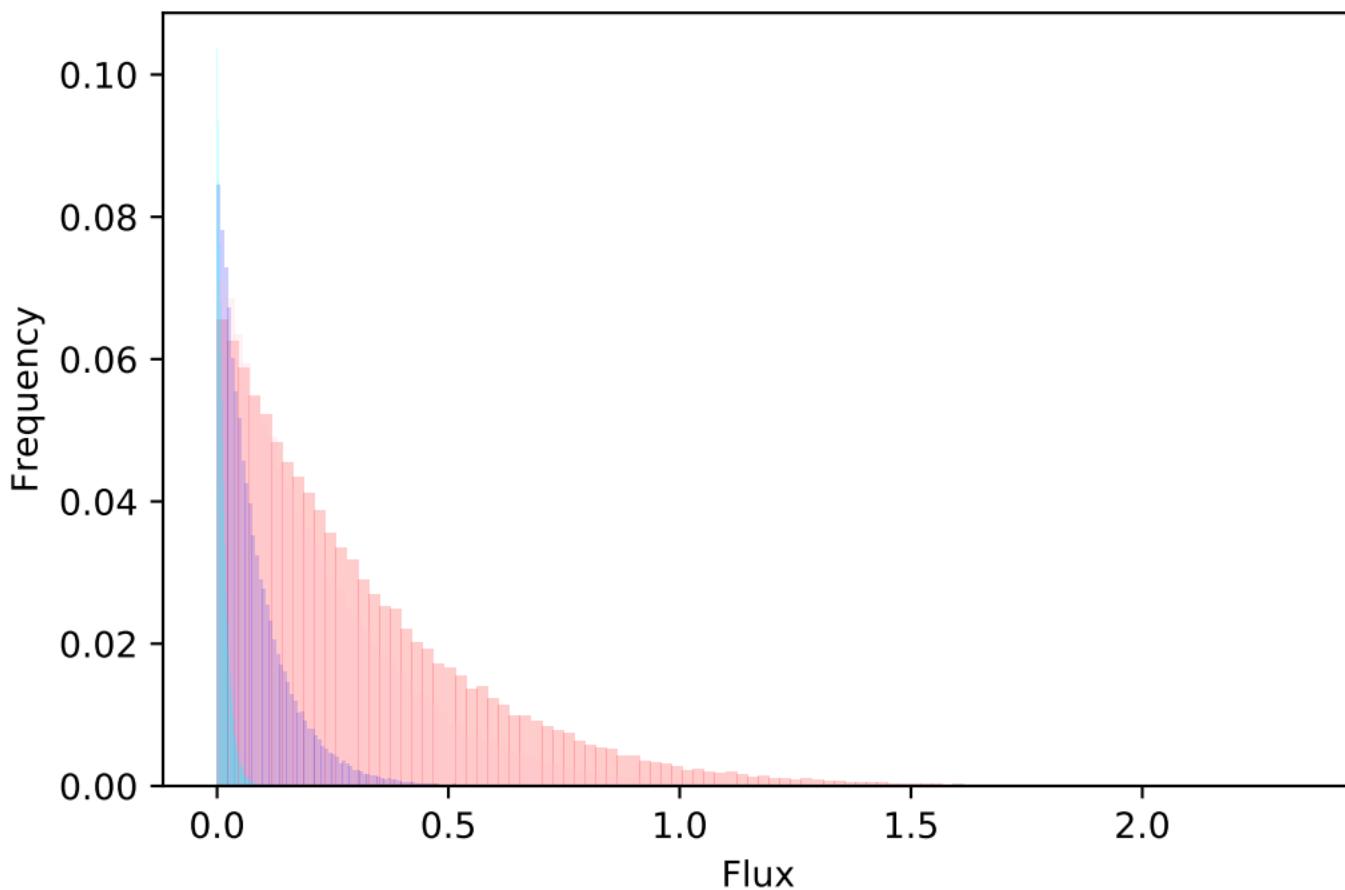
483 : Gly_h -->
['-']



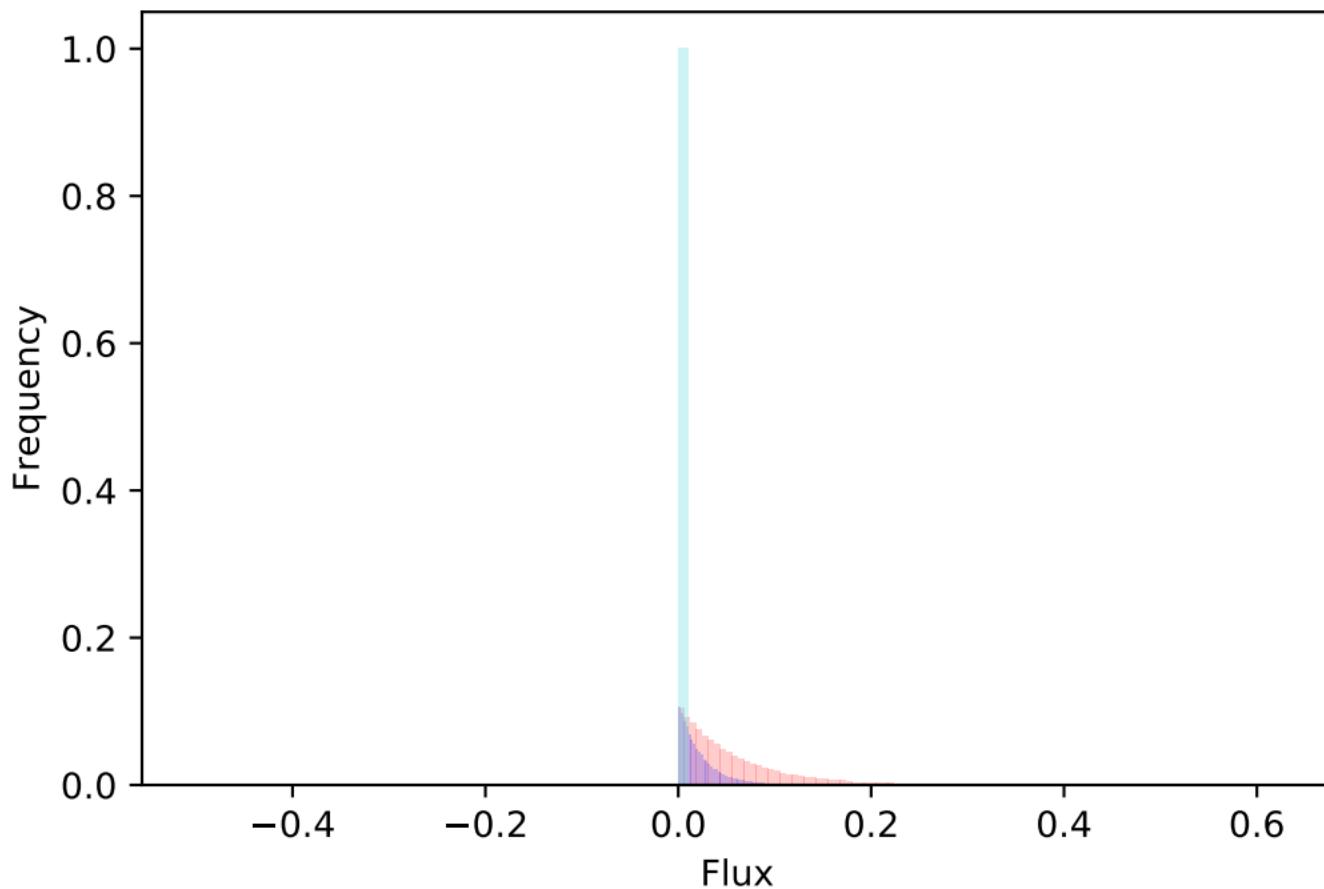
484 : Gly_m -->
[*t'-*]



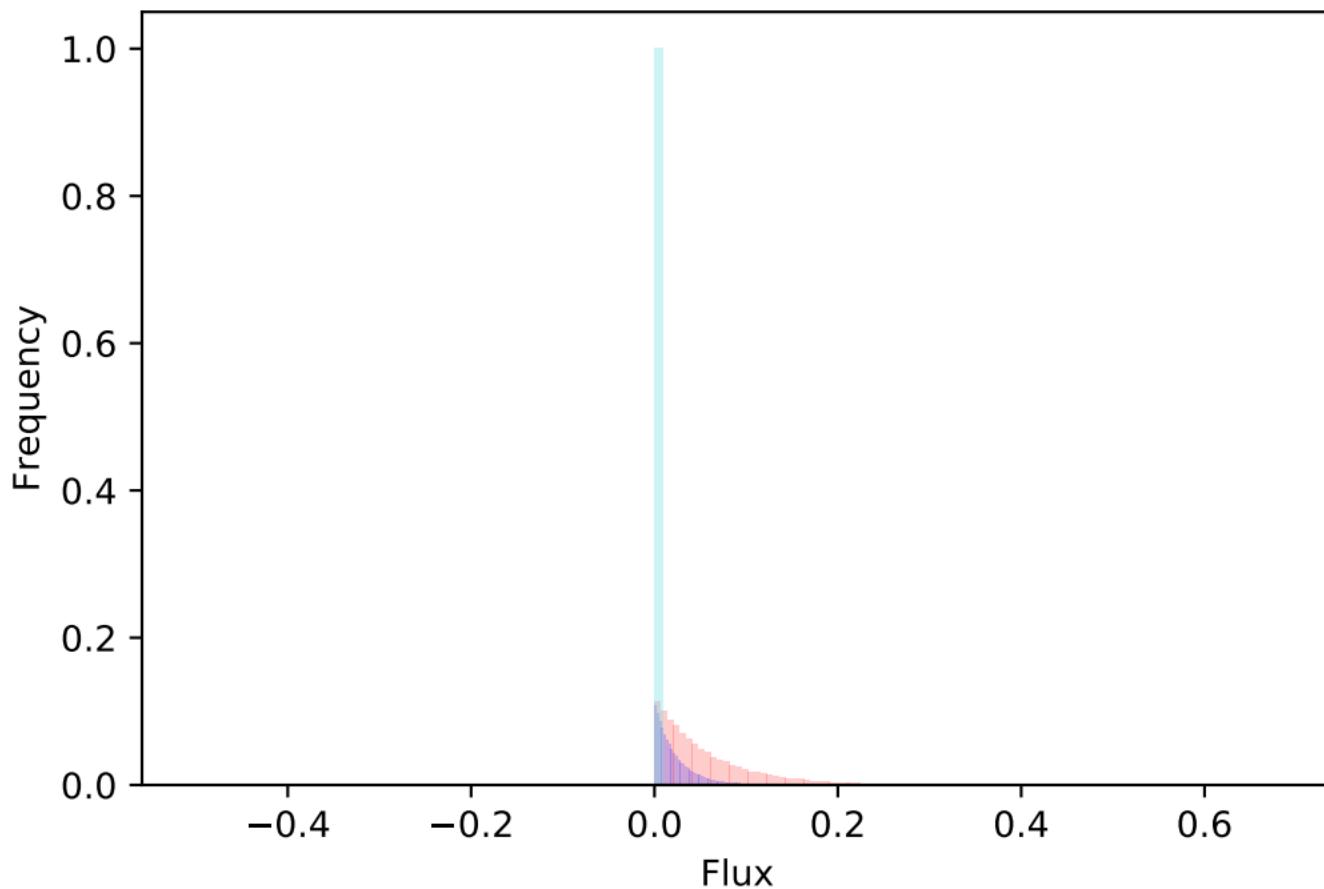
485 : Gly_p -->
['-']



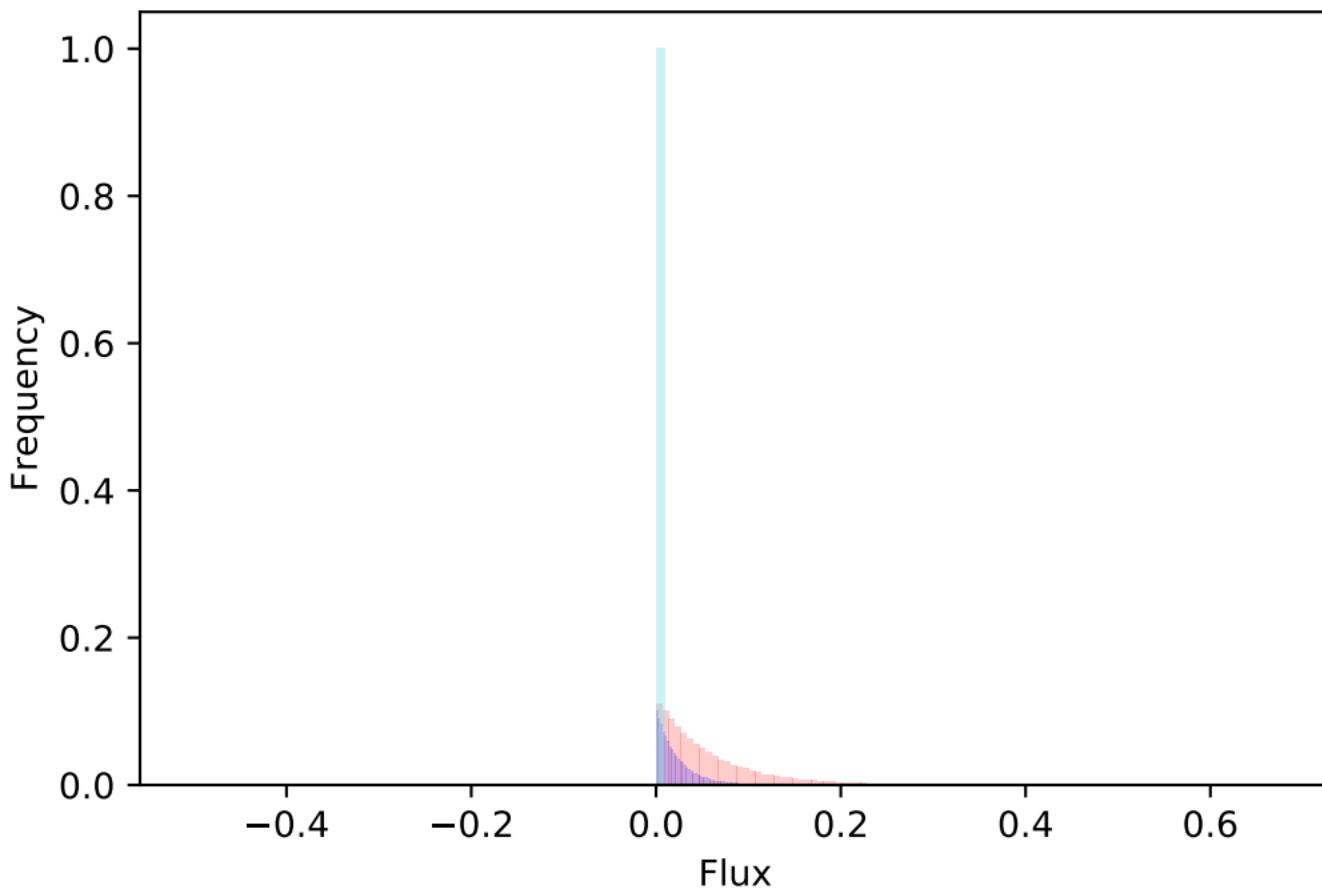
486 : His_c -->
[⁻]₋



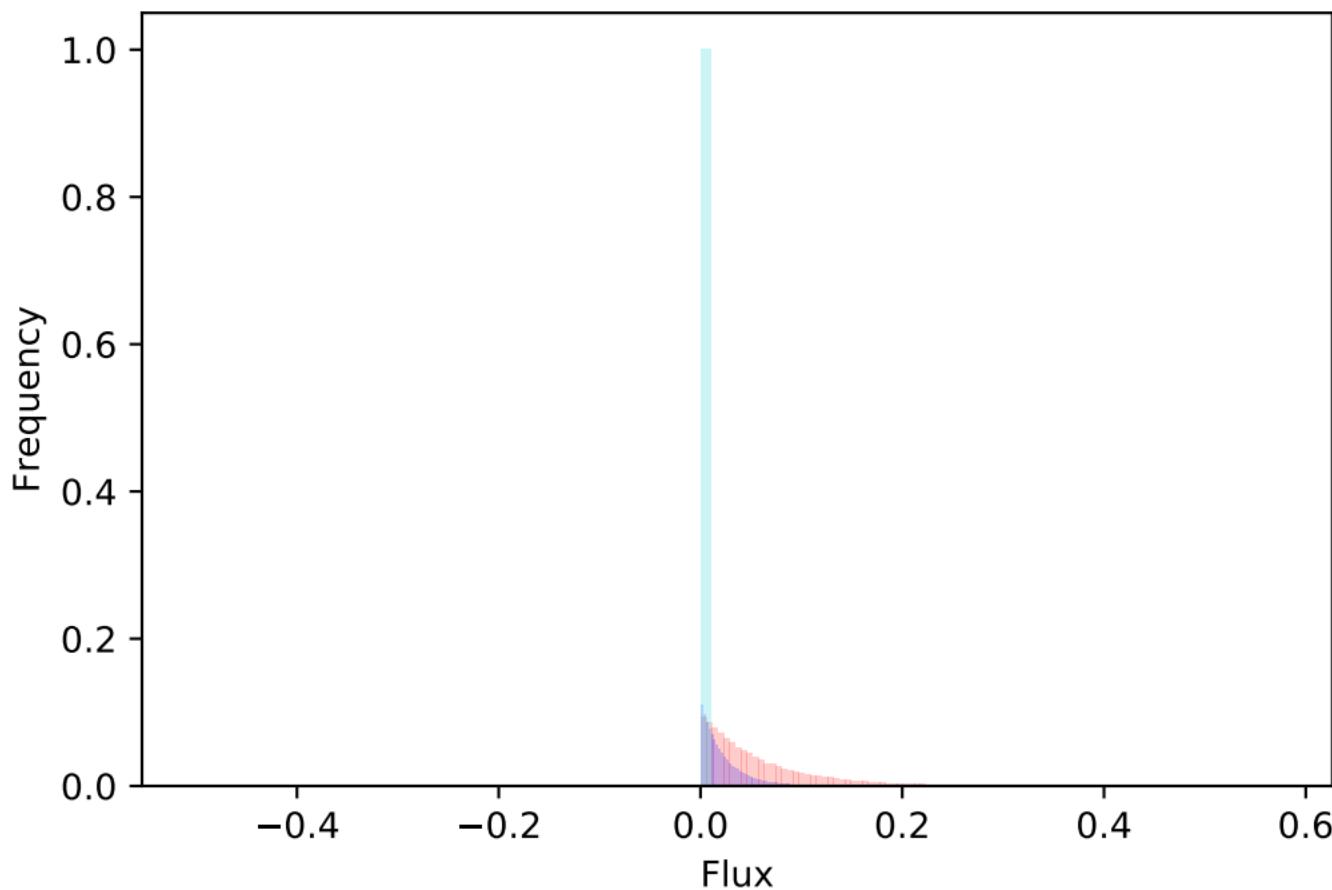
487 : His h -->
[${}^{\prime -} \overline{}$]



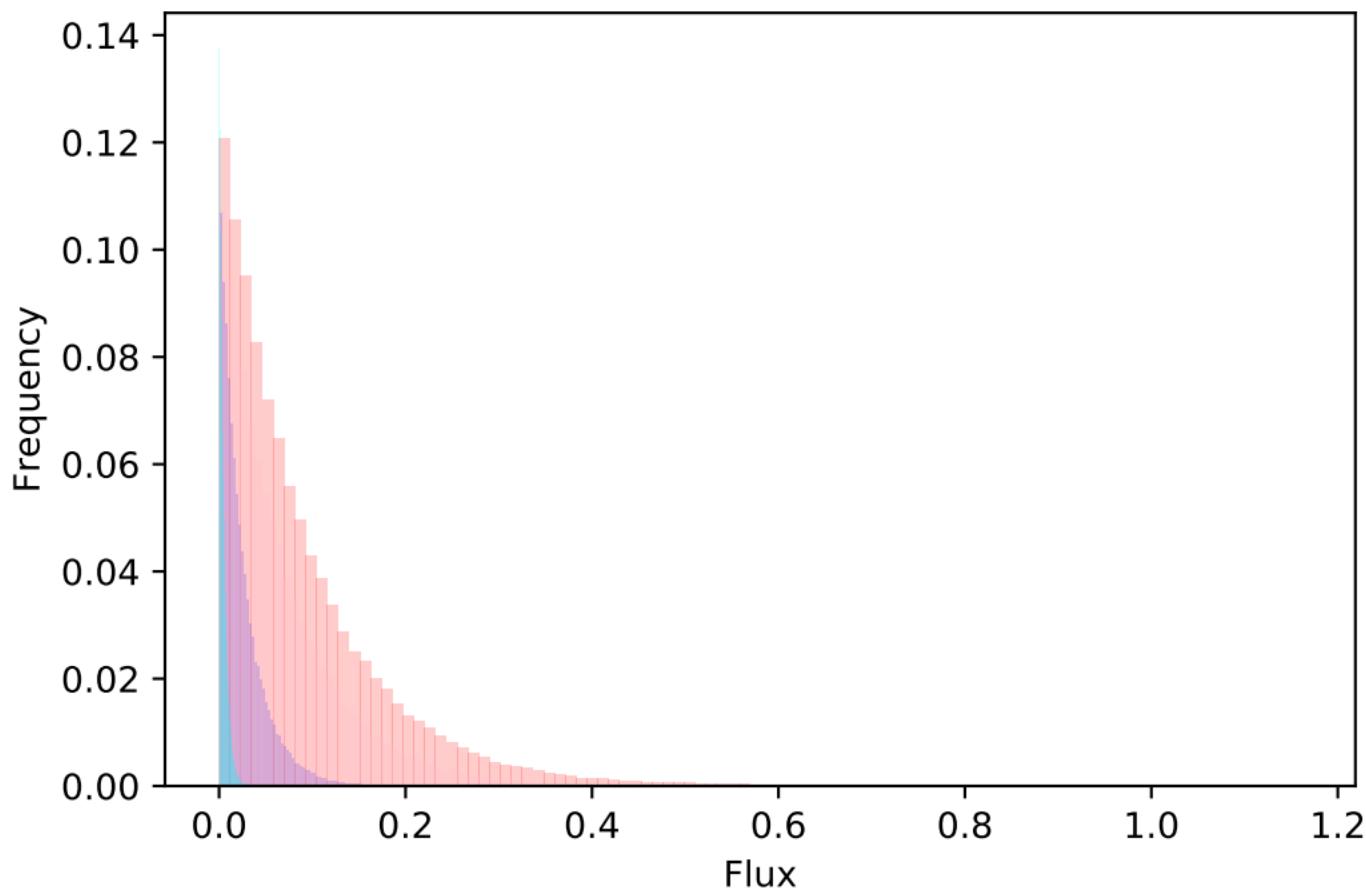
488 : His_m -->
[${}^{\prime -} \bar{v}$]



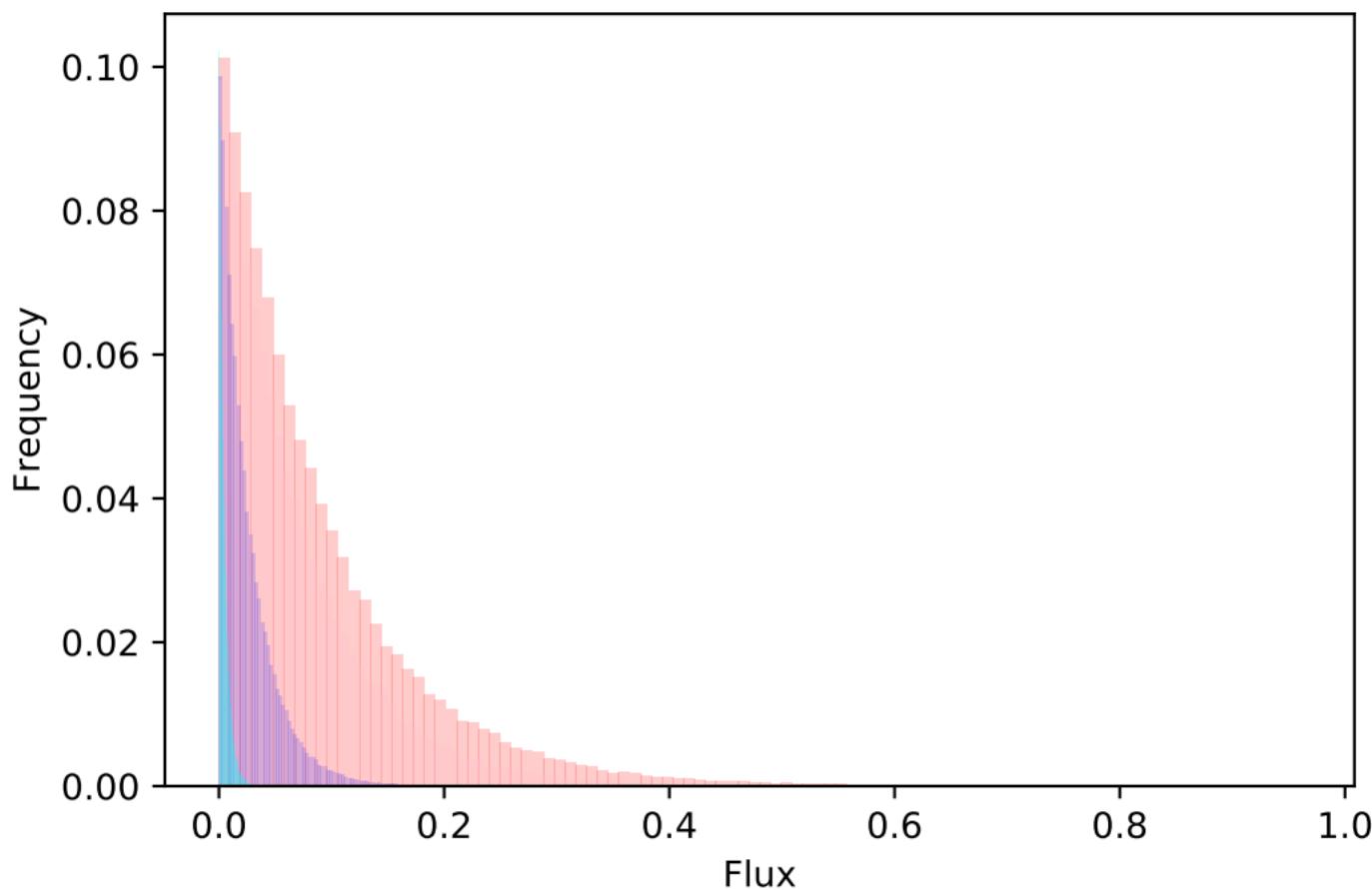
489 : His_p -->
['-']



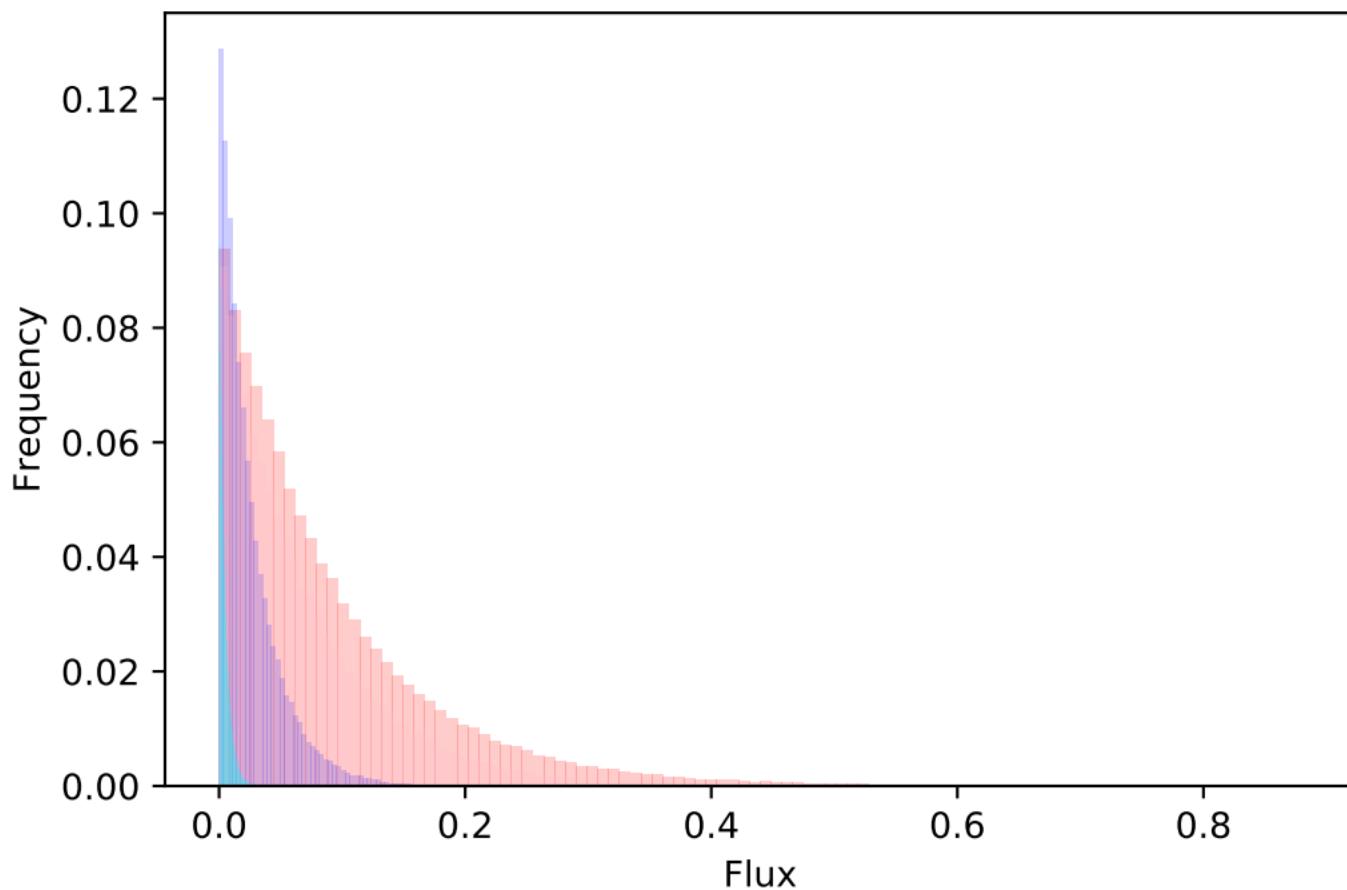
490 : lle_c -->
[⁻¹]



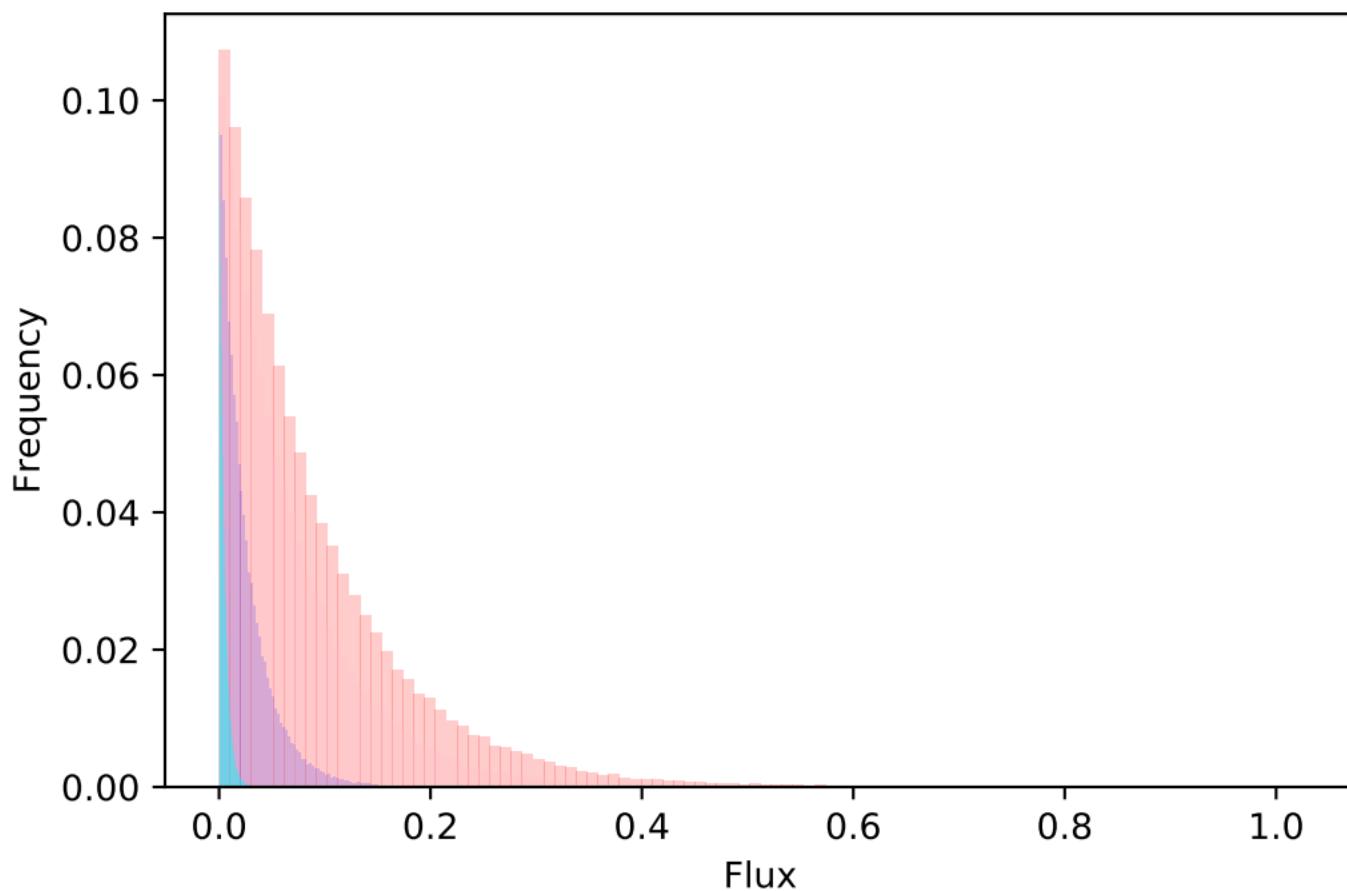
491 : lle_h -->
[-]



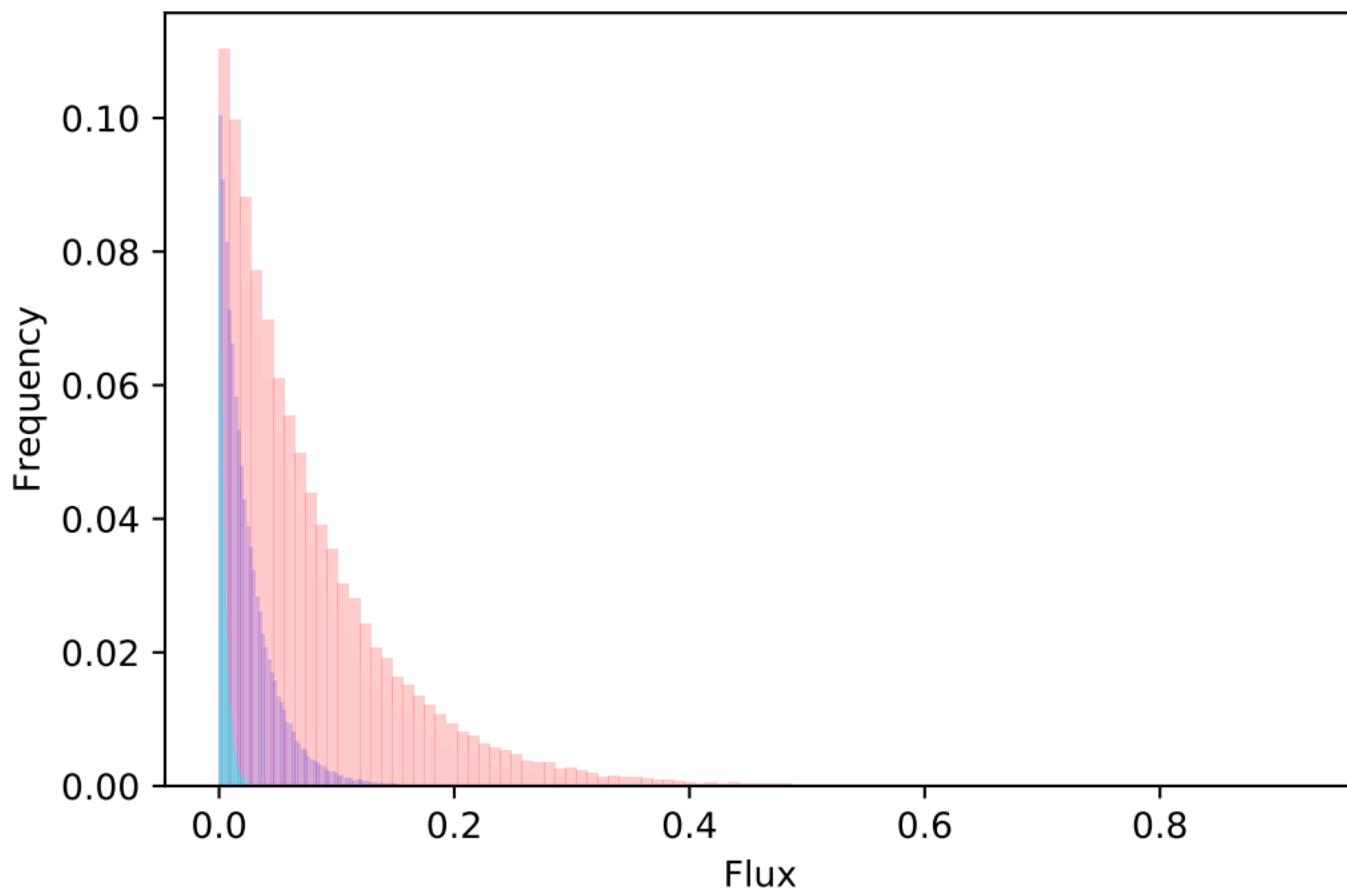
492 : Ile_m -->
[I-]



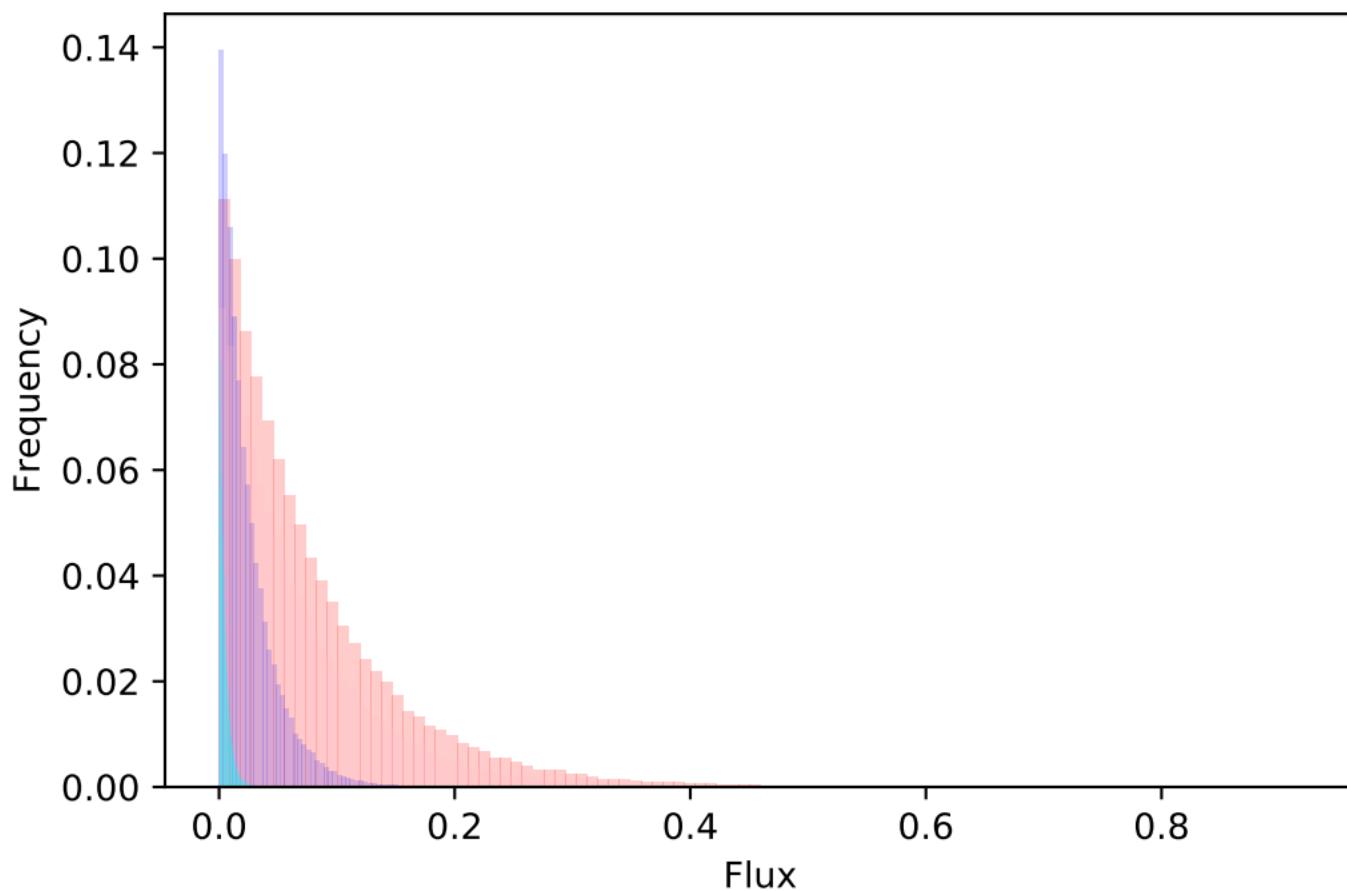
493 : lle_p -->
[*t⁻¹*]



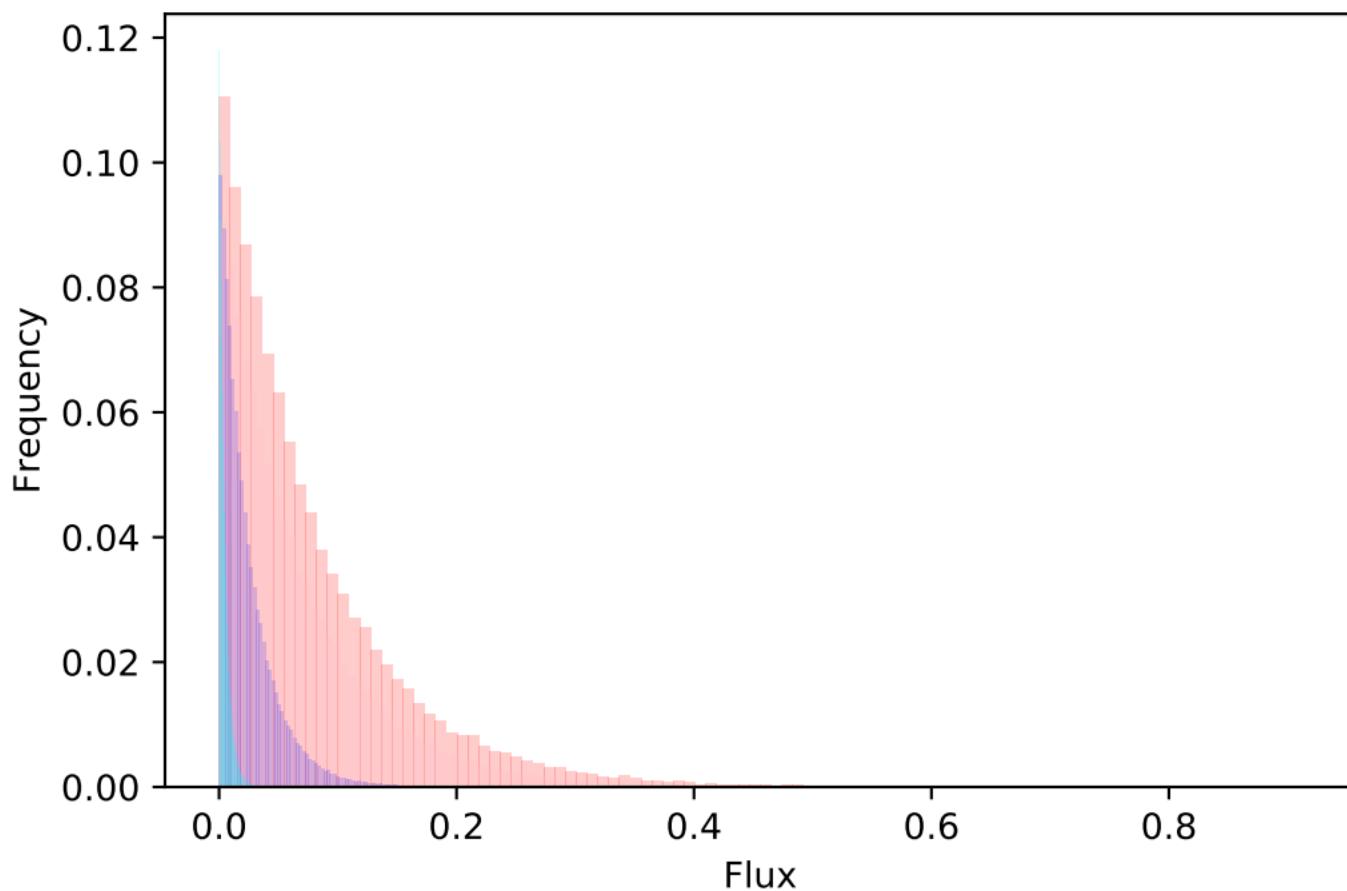
494 : Leu_c -->
[¹⁴N]⁻



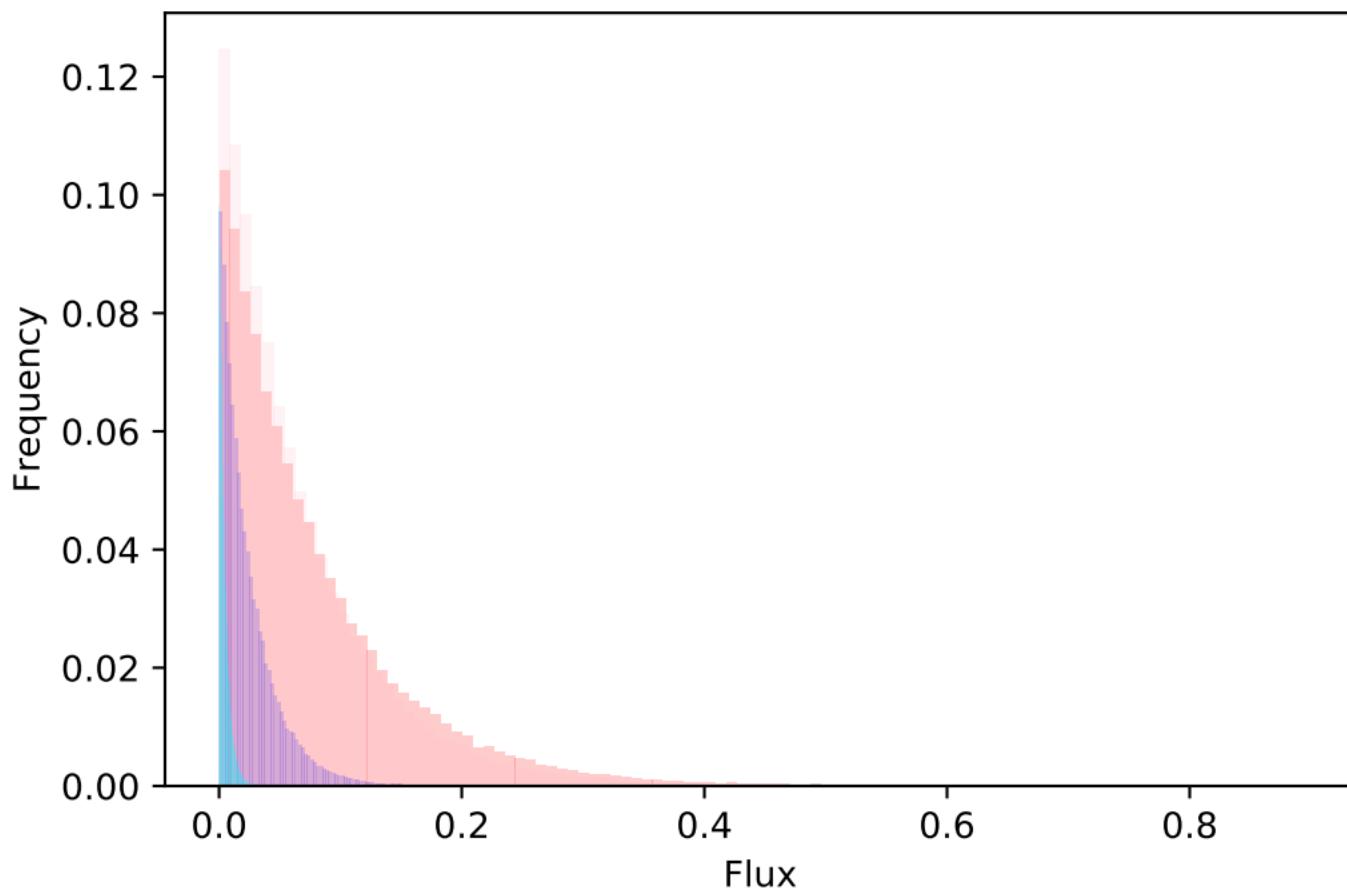
495 : Leu_h -->
['-']



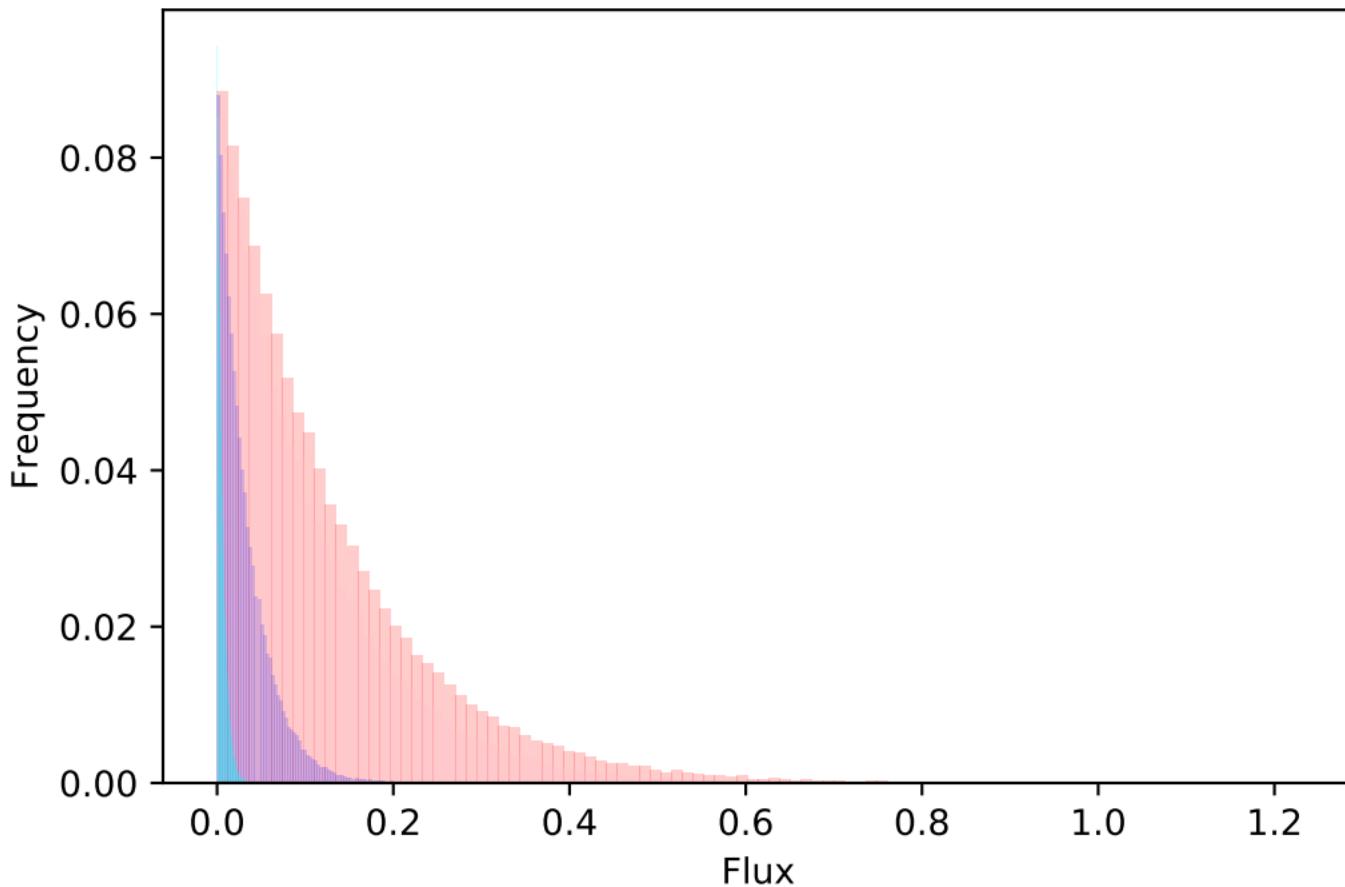
496 : Leu_m -->
[${}^1\text{H}$]



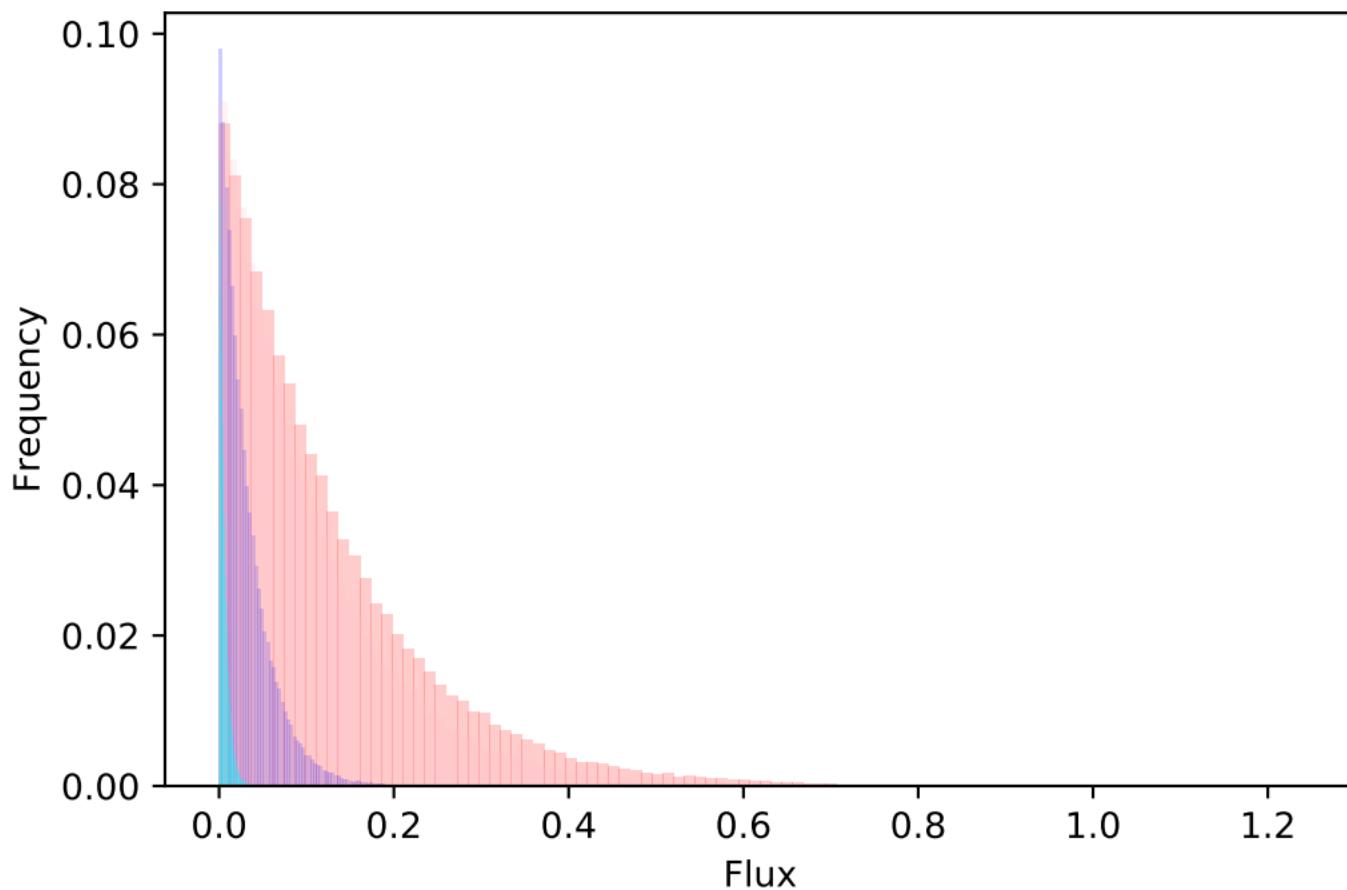
497 : Leu_p -->
['-']



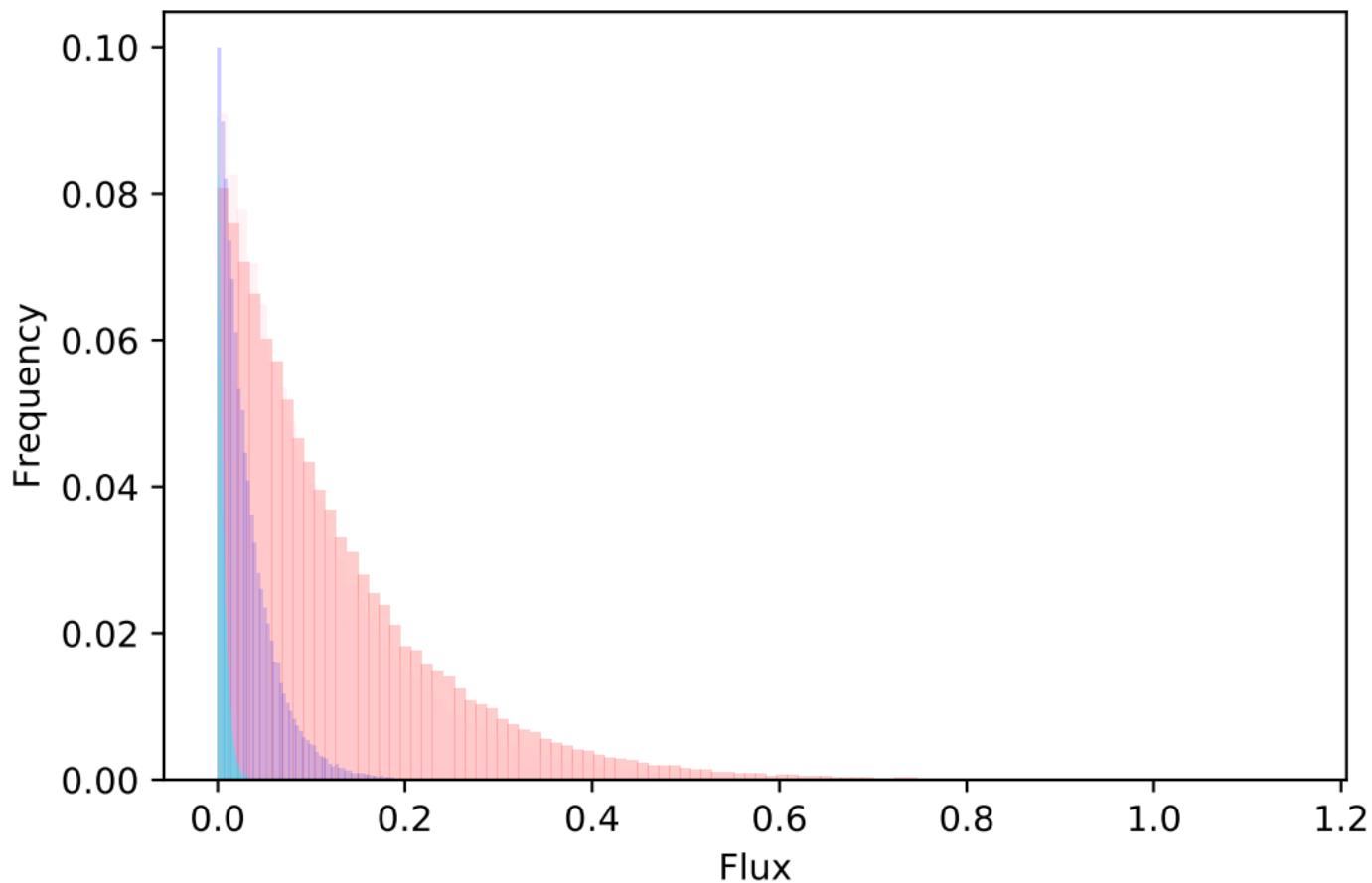
498 : Lys_c -->
[⁻₋]



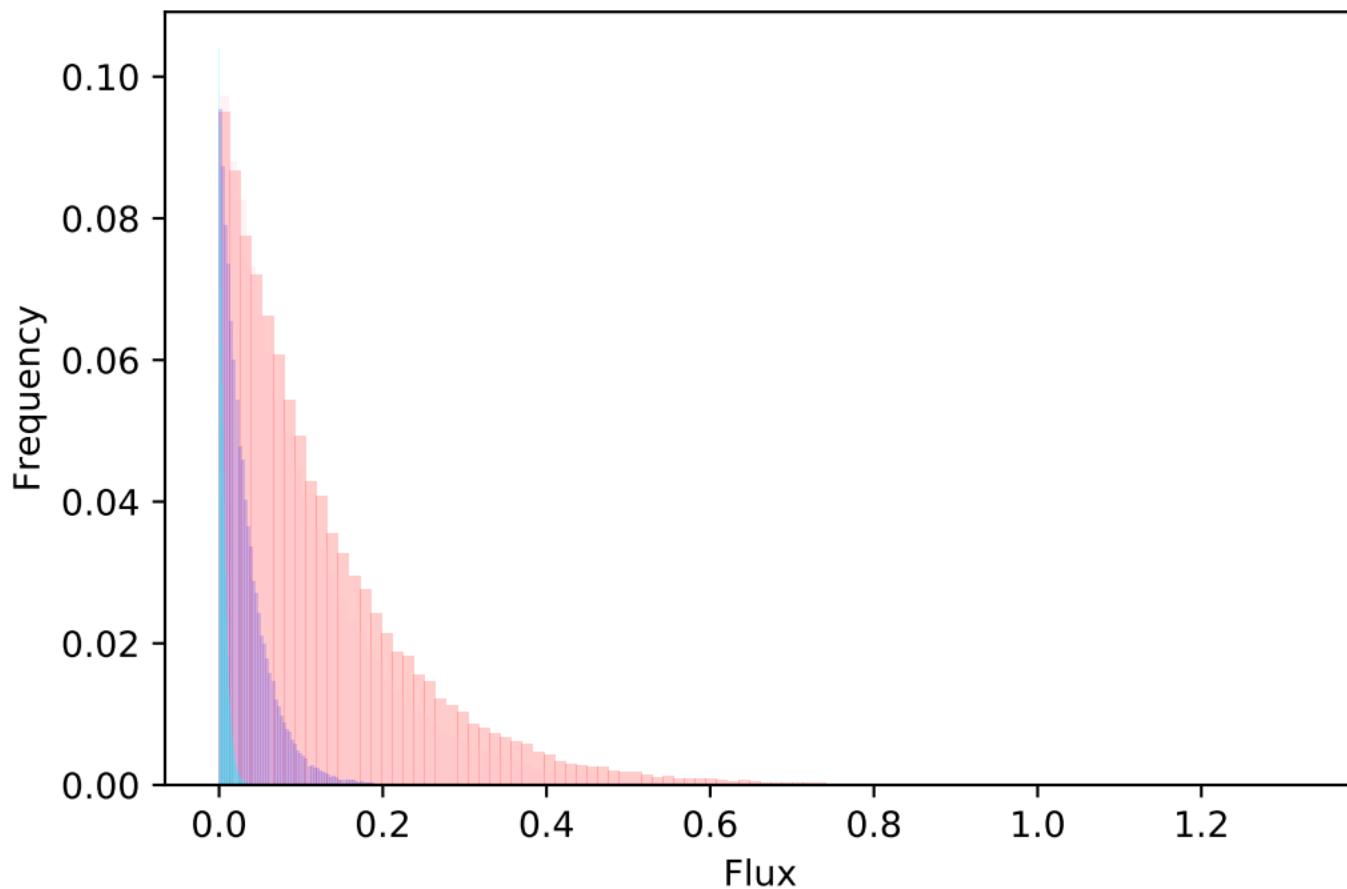
499 : Lys_h -->
[${}^{\prime -} \bar{}$]



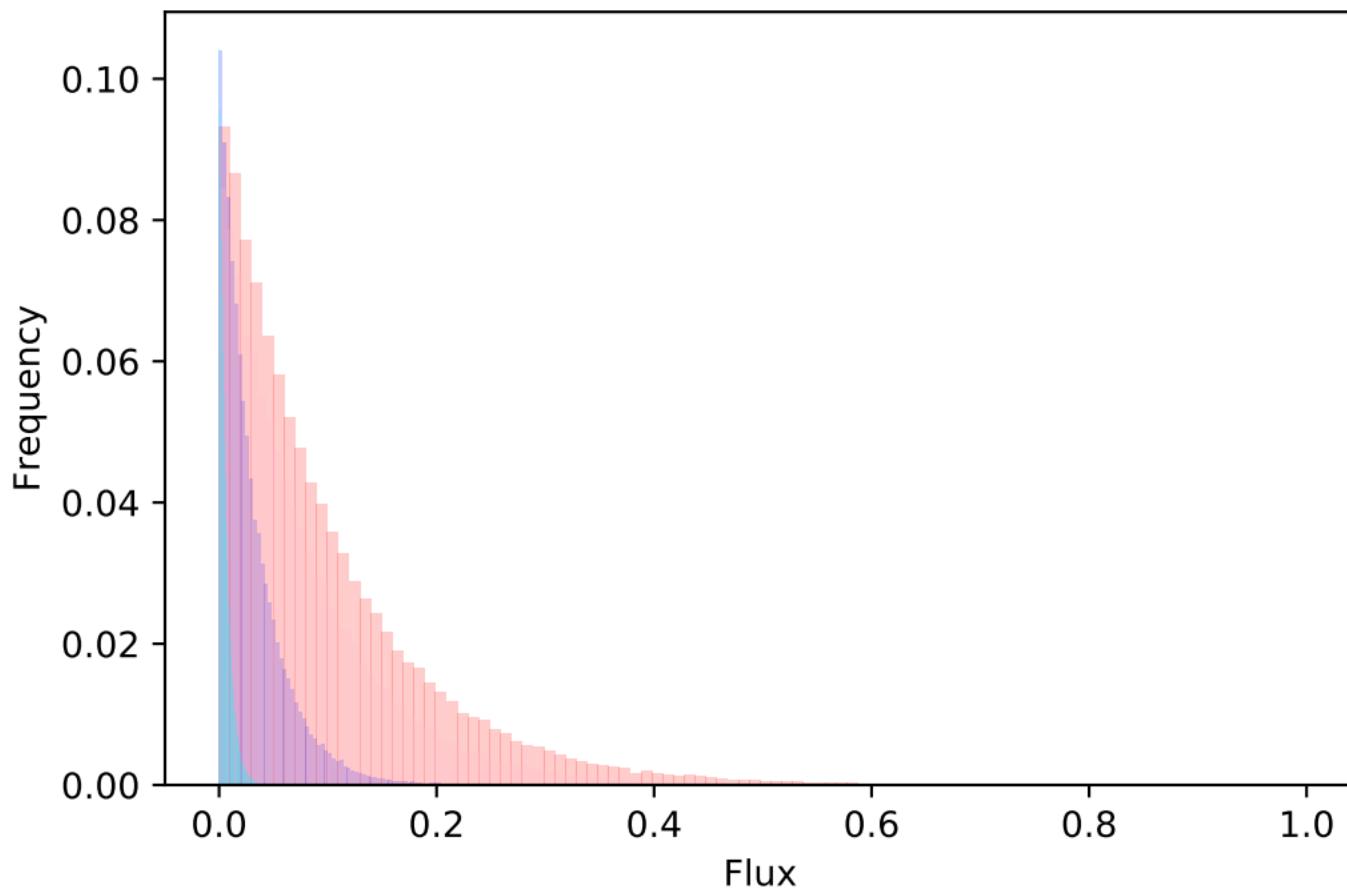
500 : Lys_m -->
[*t*-*t'*]



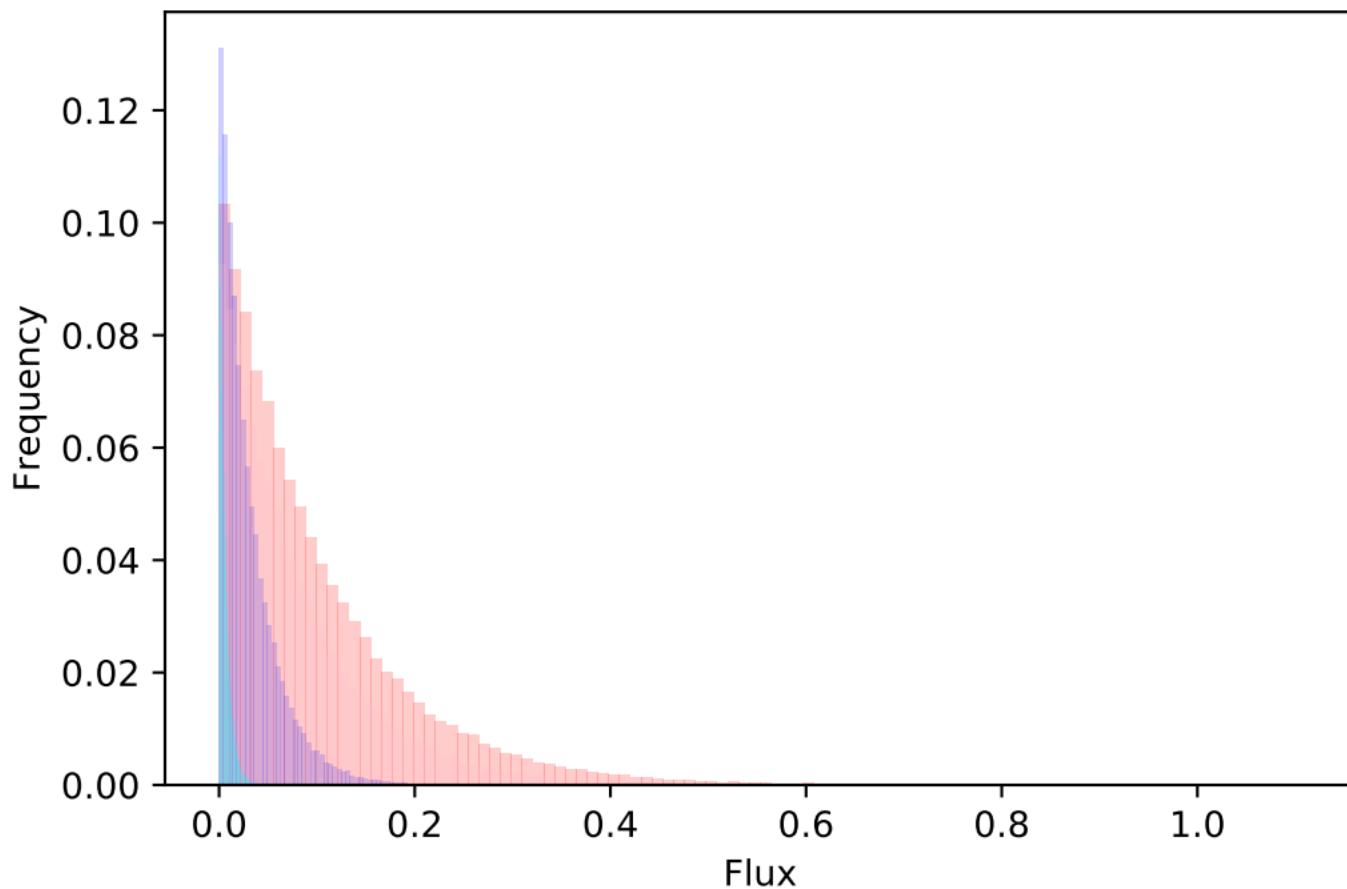
501 : Lys₋p -->
[₋⁻]



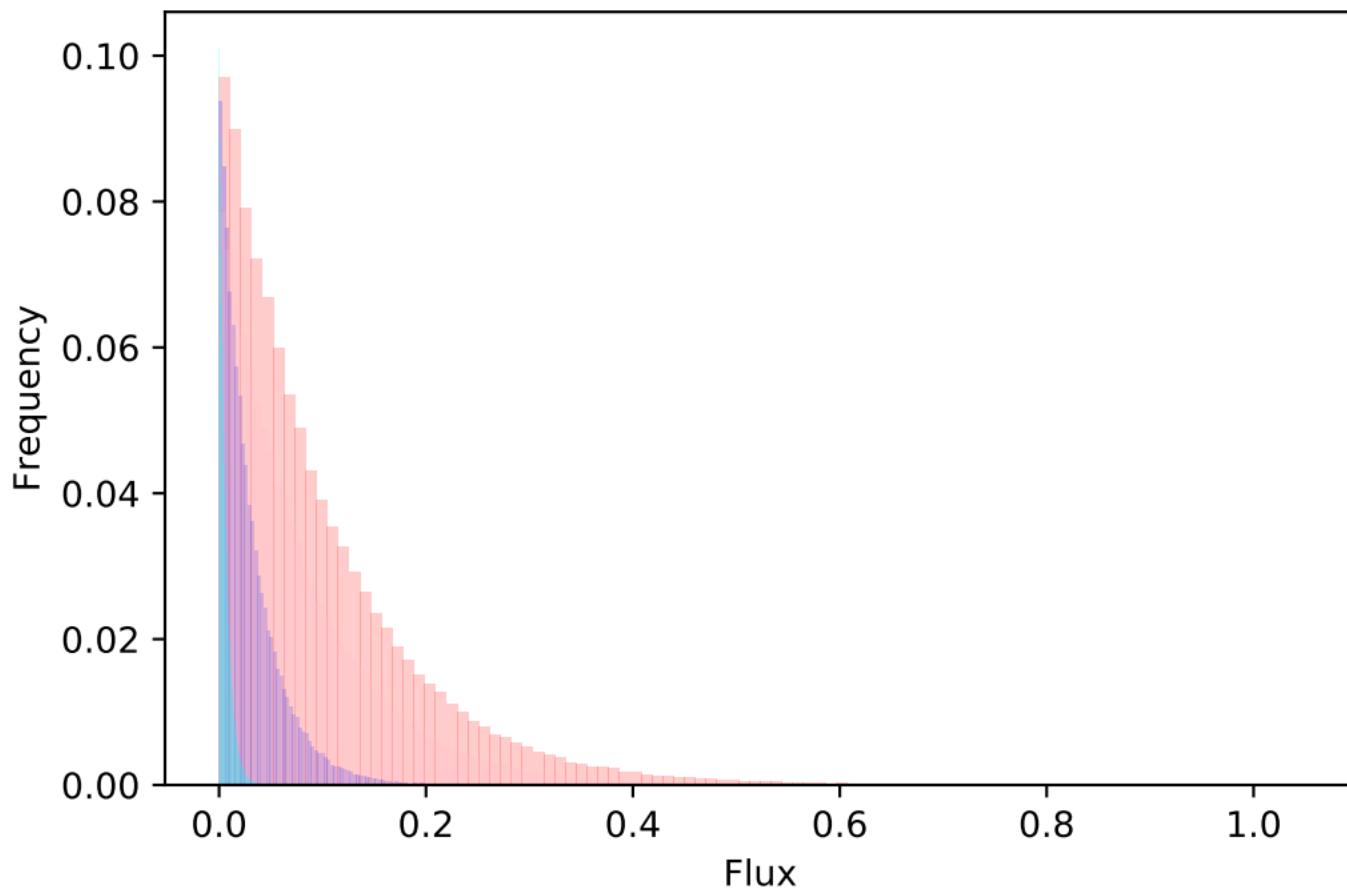
502 : Met_c -->
[⁻₋]



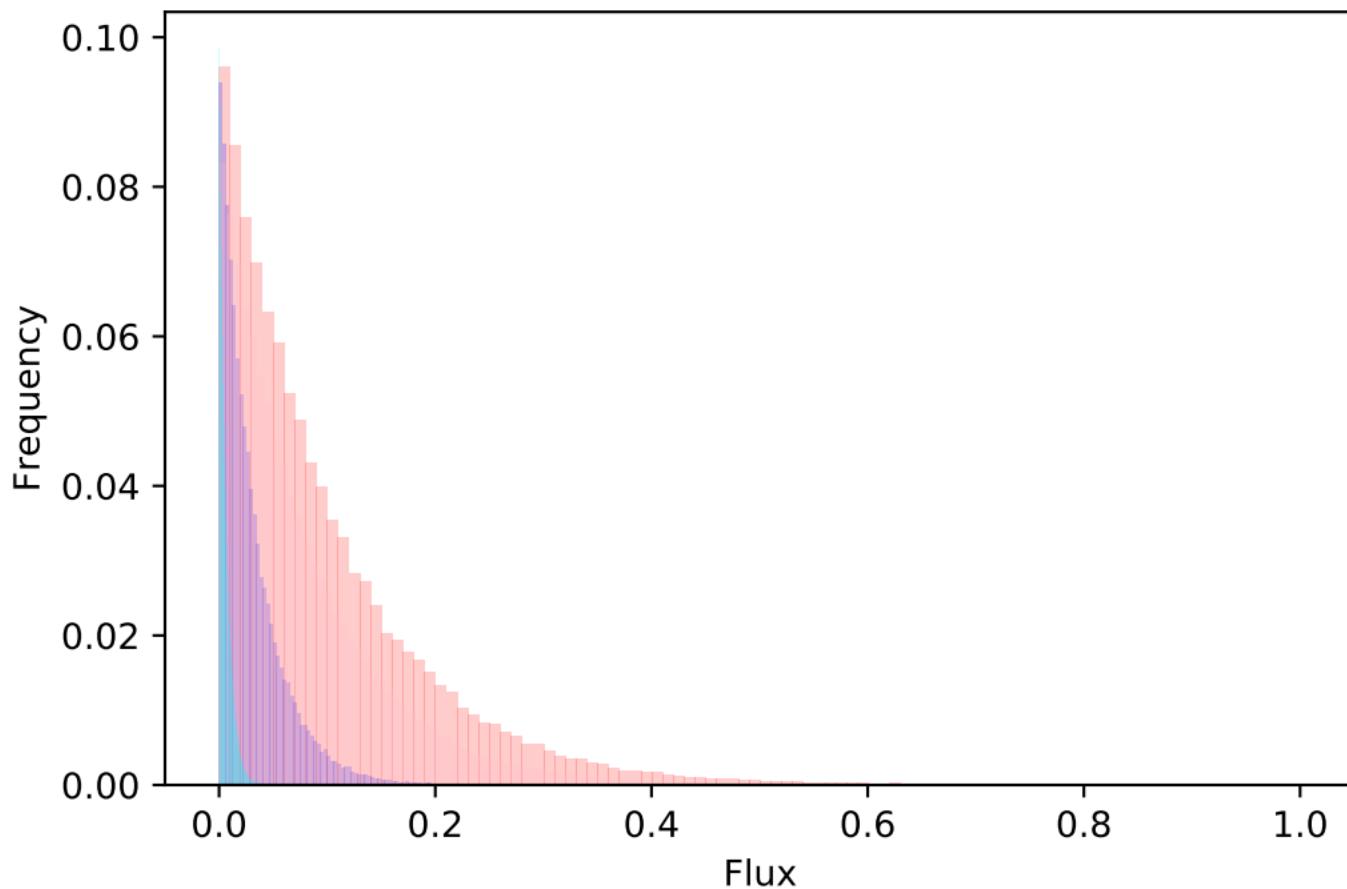
503 : Met_h -->
['-']



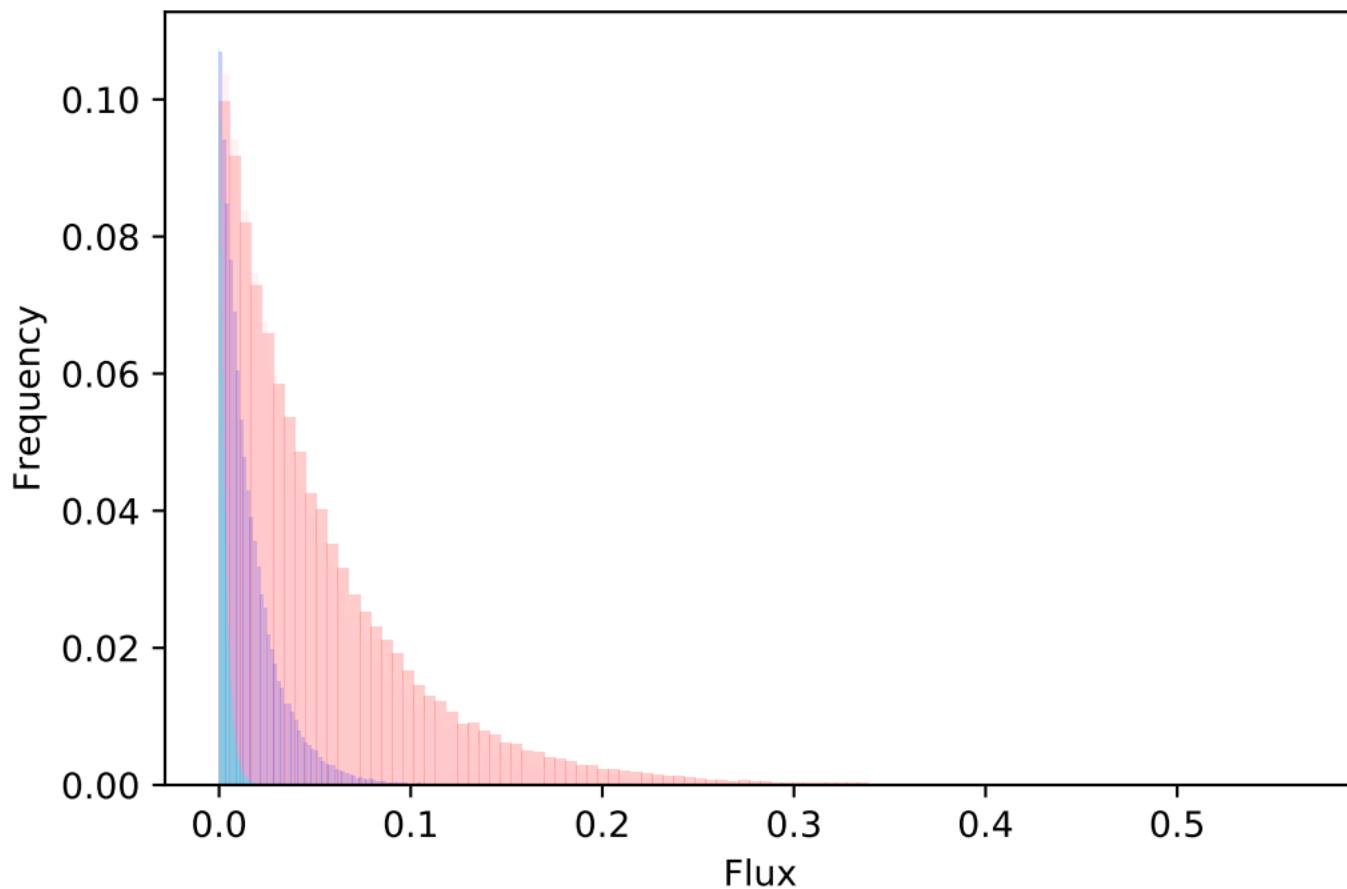
504 : Met_m -->
[${}^{\prime} \prime$]



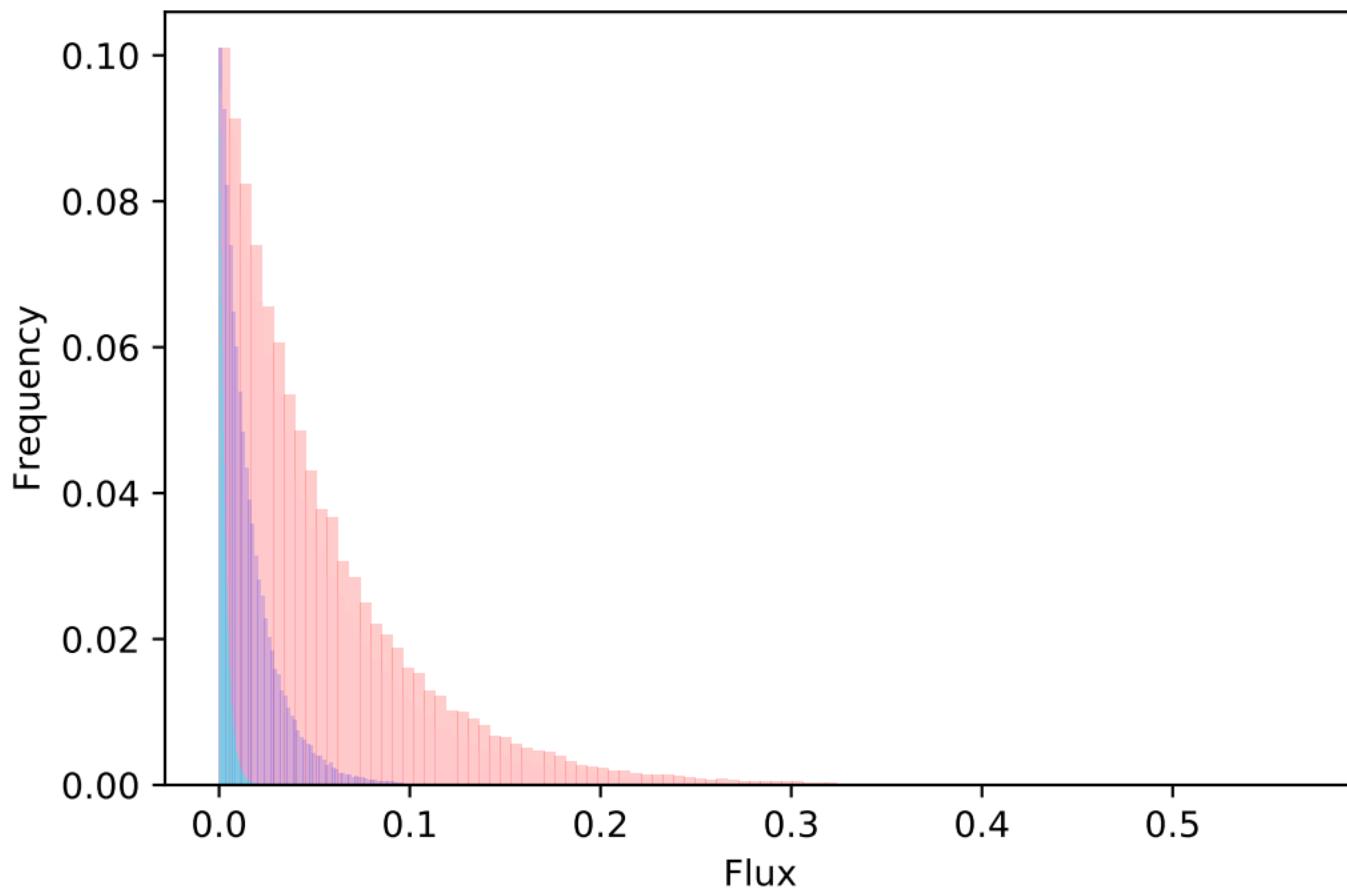
505 : Met_p -->
['-']



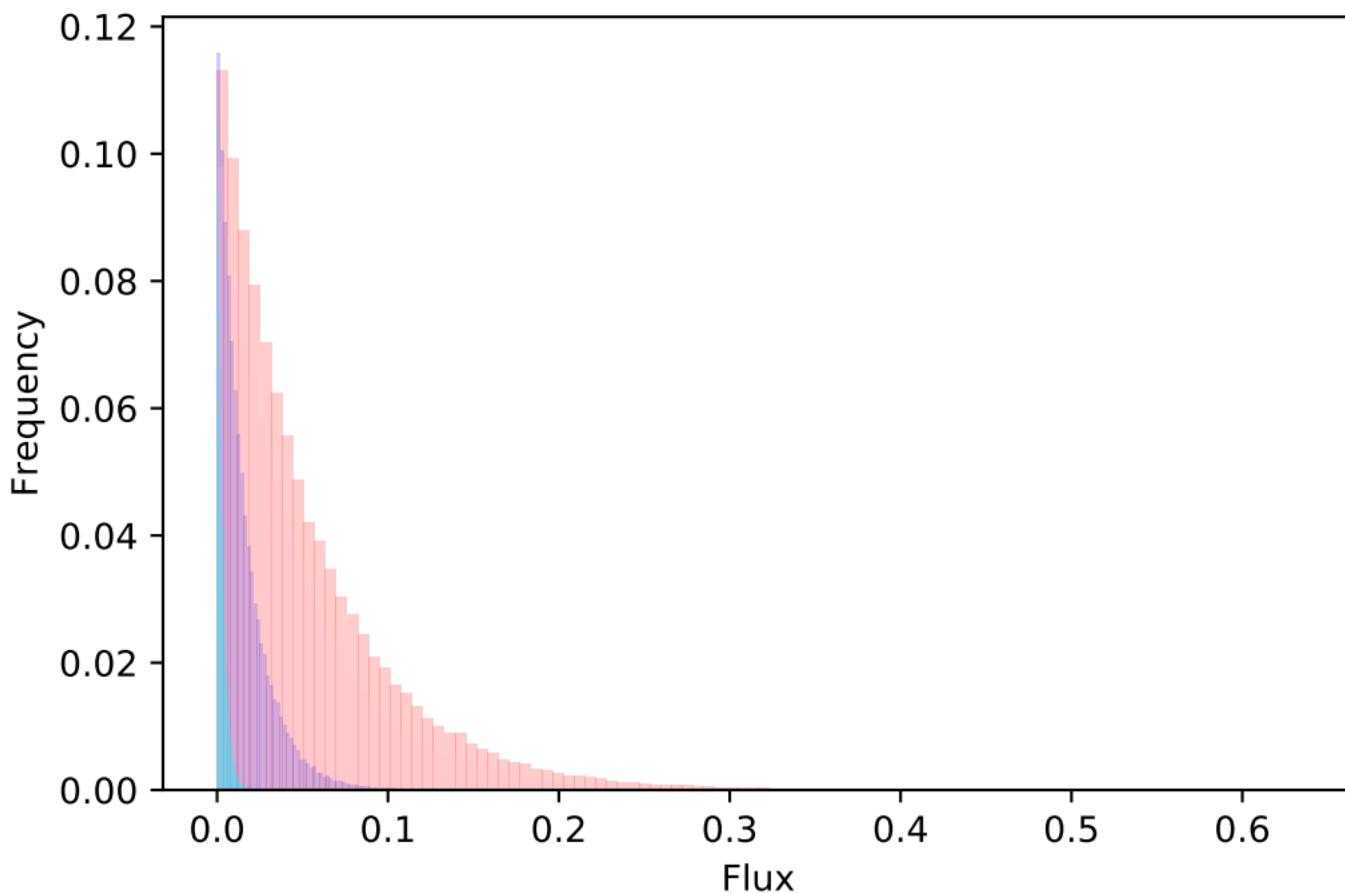
506 : Phe_c -->
['-']



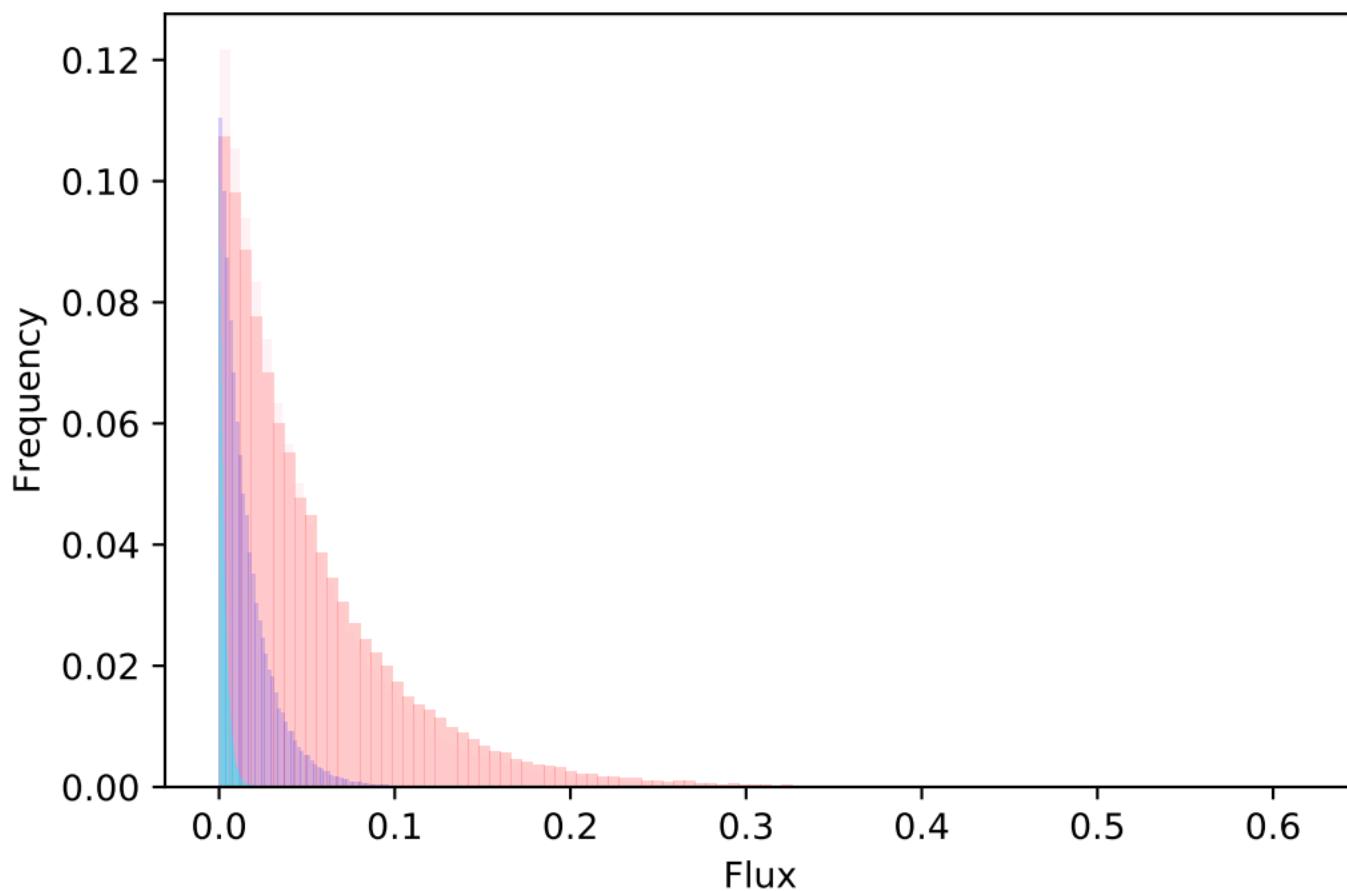
507 : Phe_h -->
[⁻]₋



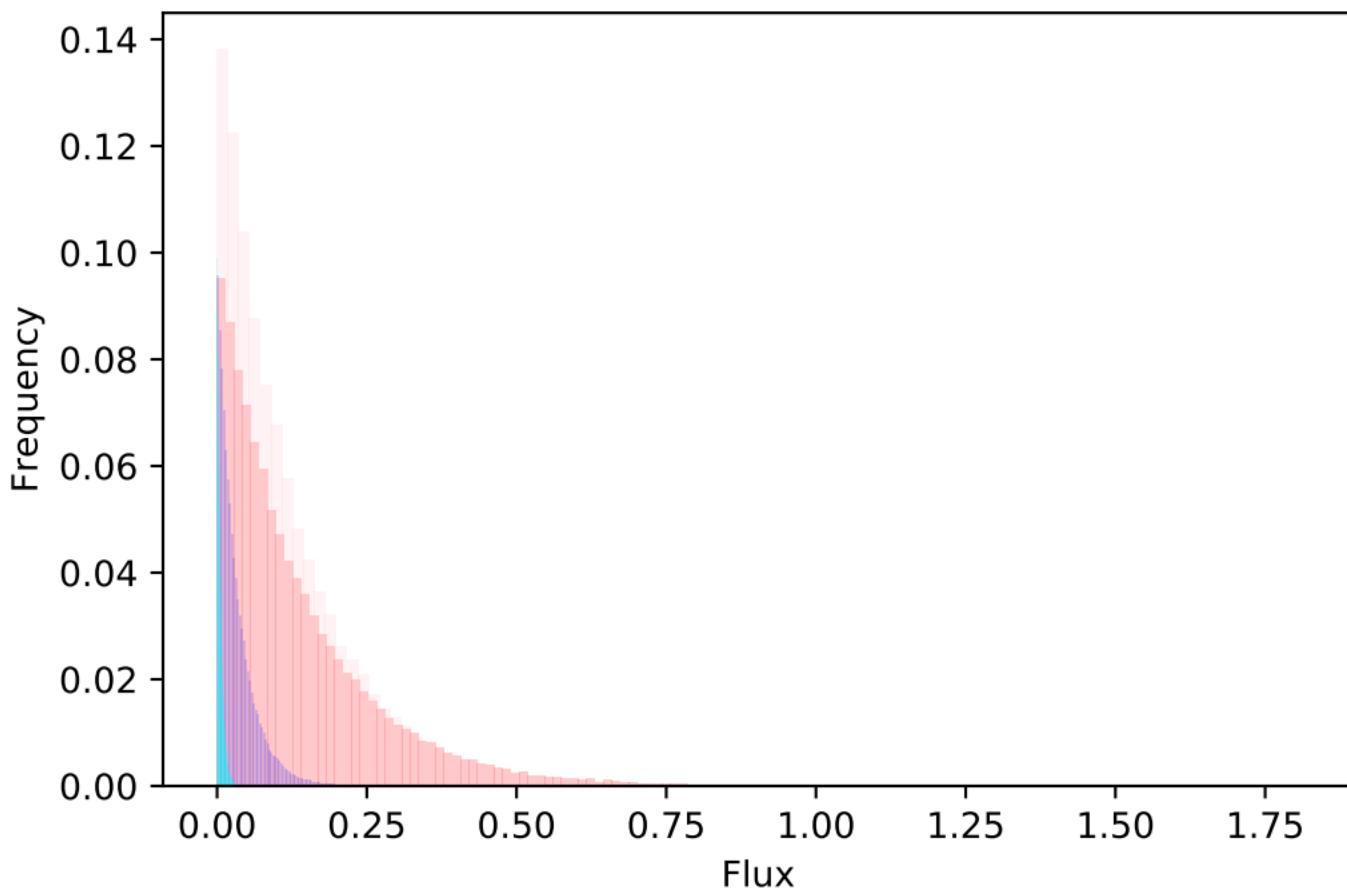
508 : Phe_m -->
[${}^1\text{H}$]



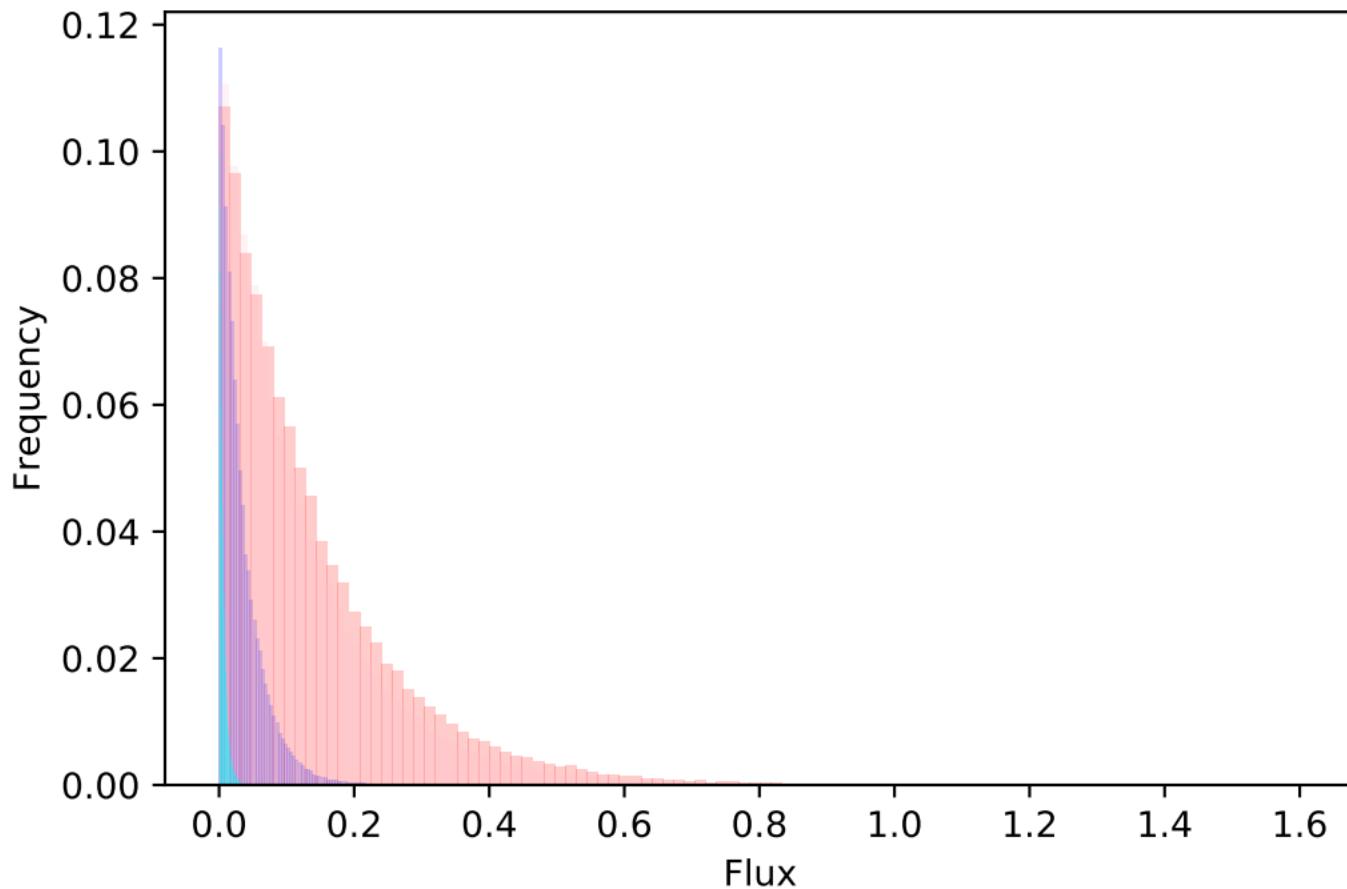
509 : Phe_p -->
['-']



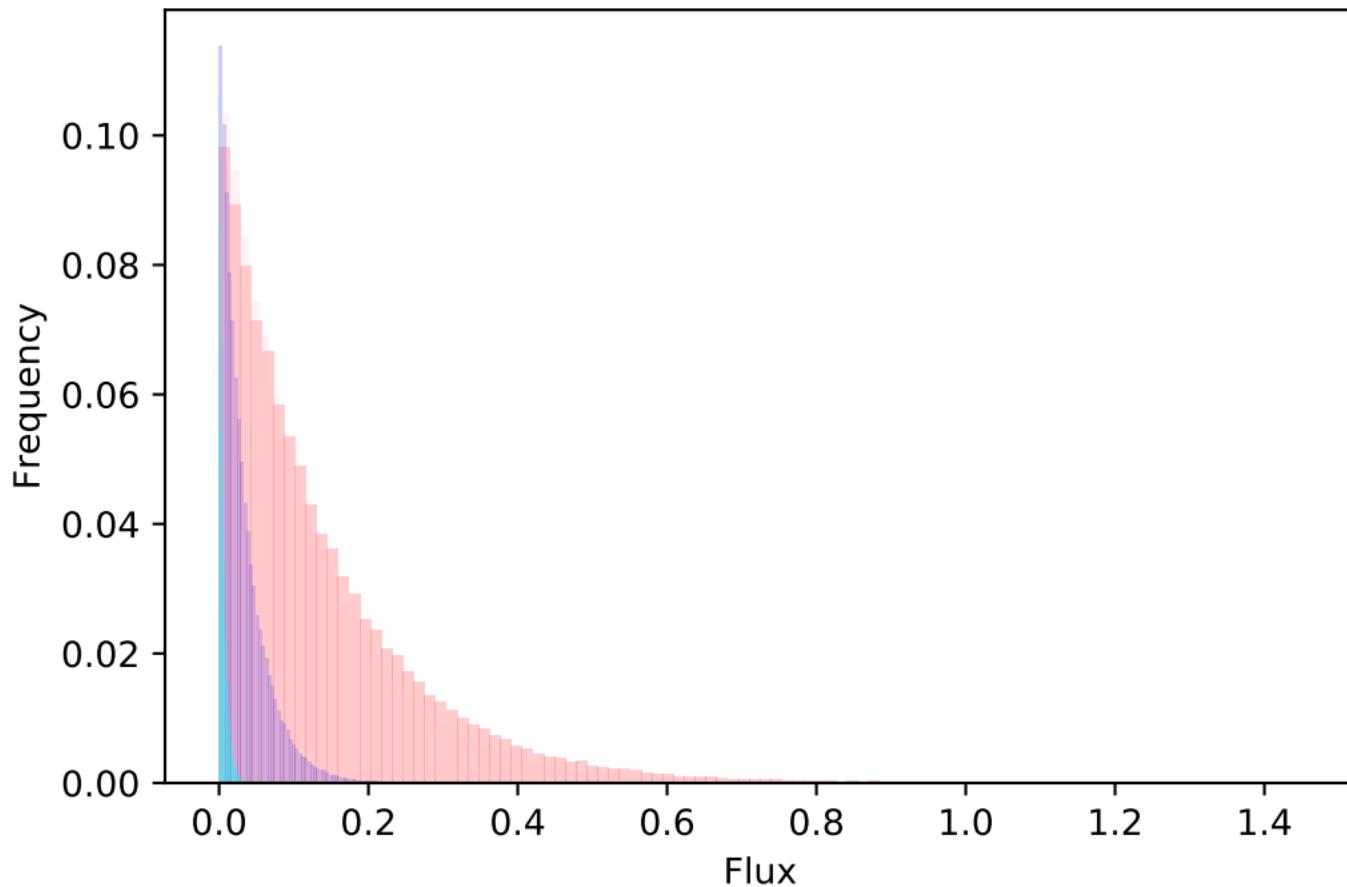
510 : Pro_c -->
[${}^{\prime -} \bar{}$]



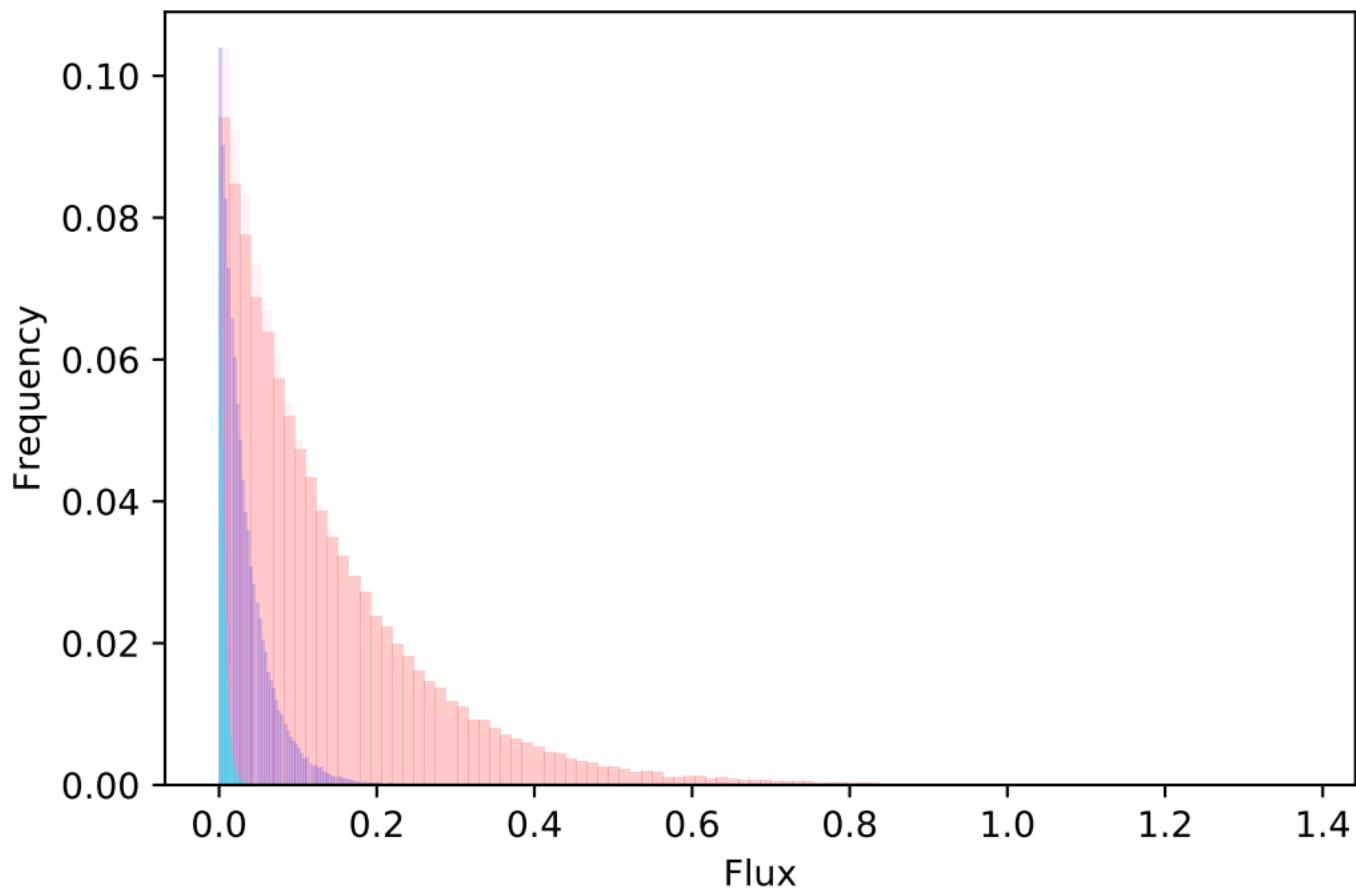
511 : Pro_h -->
[${}^{\prime -} \bar{}$]



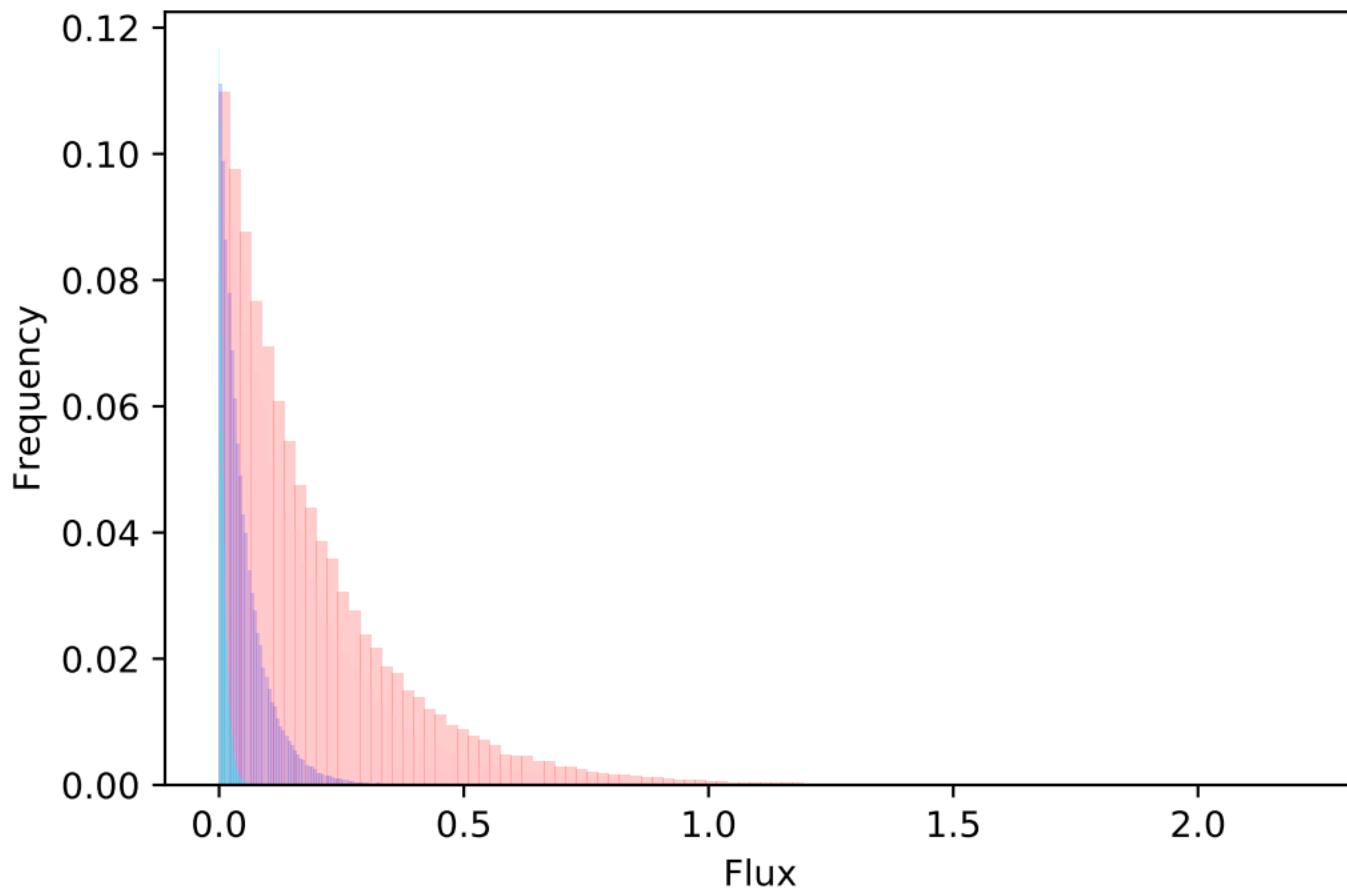
512 : Pro_m -->
[${}^t \bar{v}$]



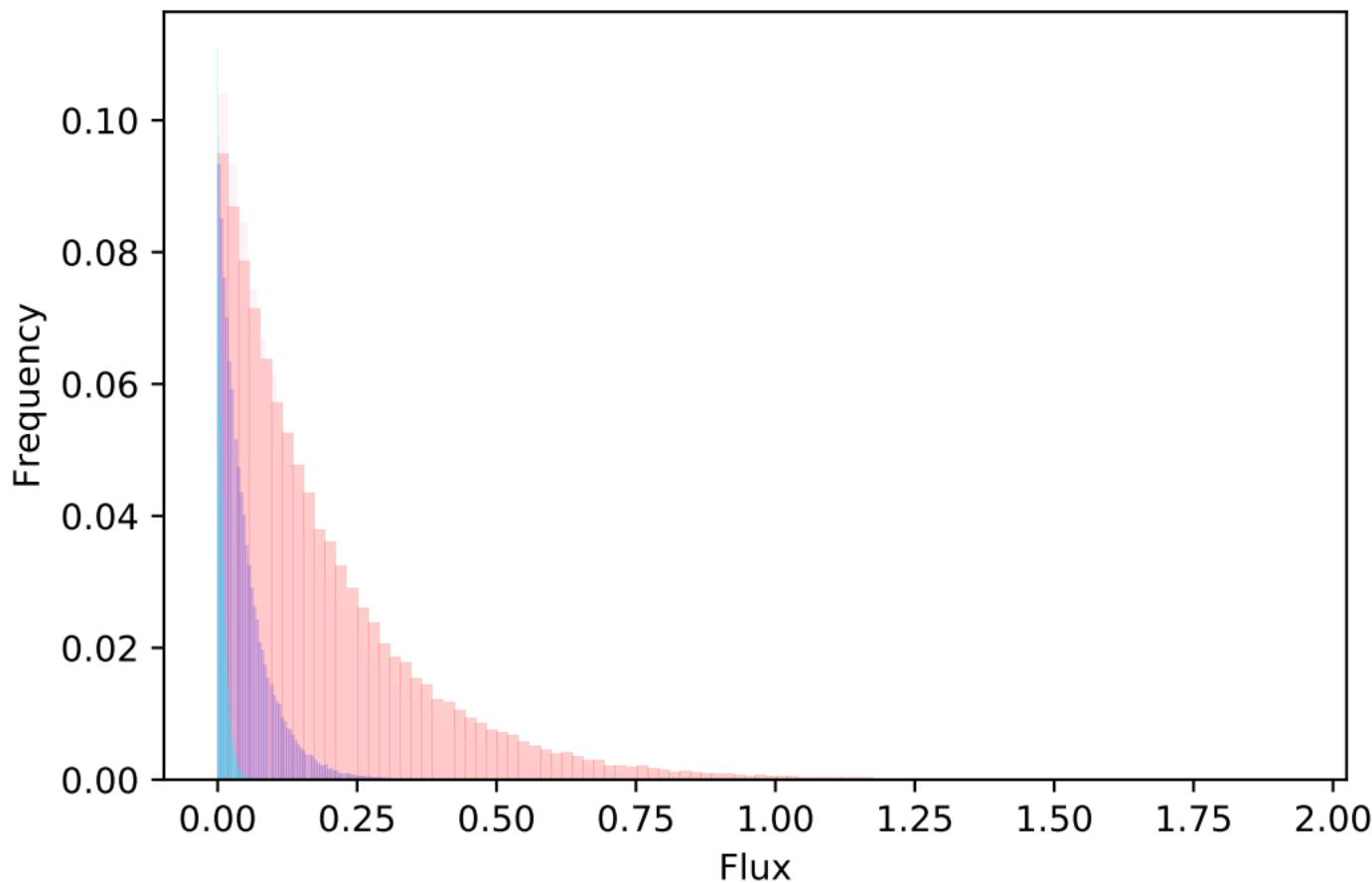
513 : Pro_p -->
['-']



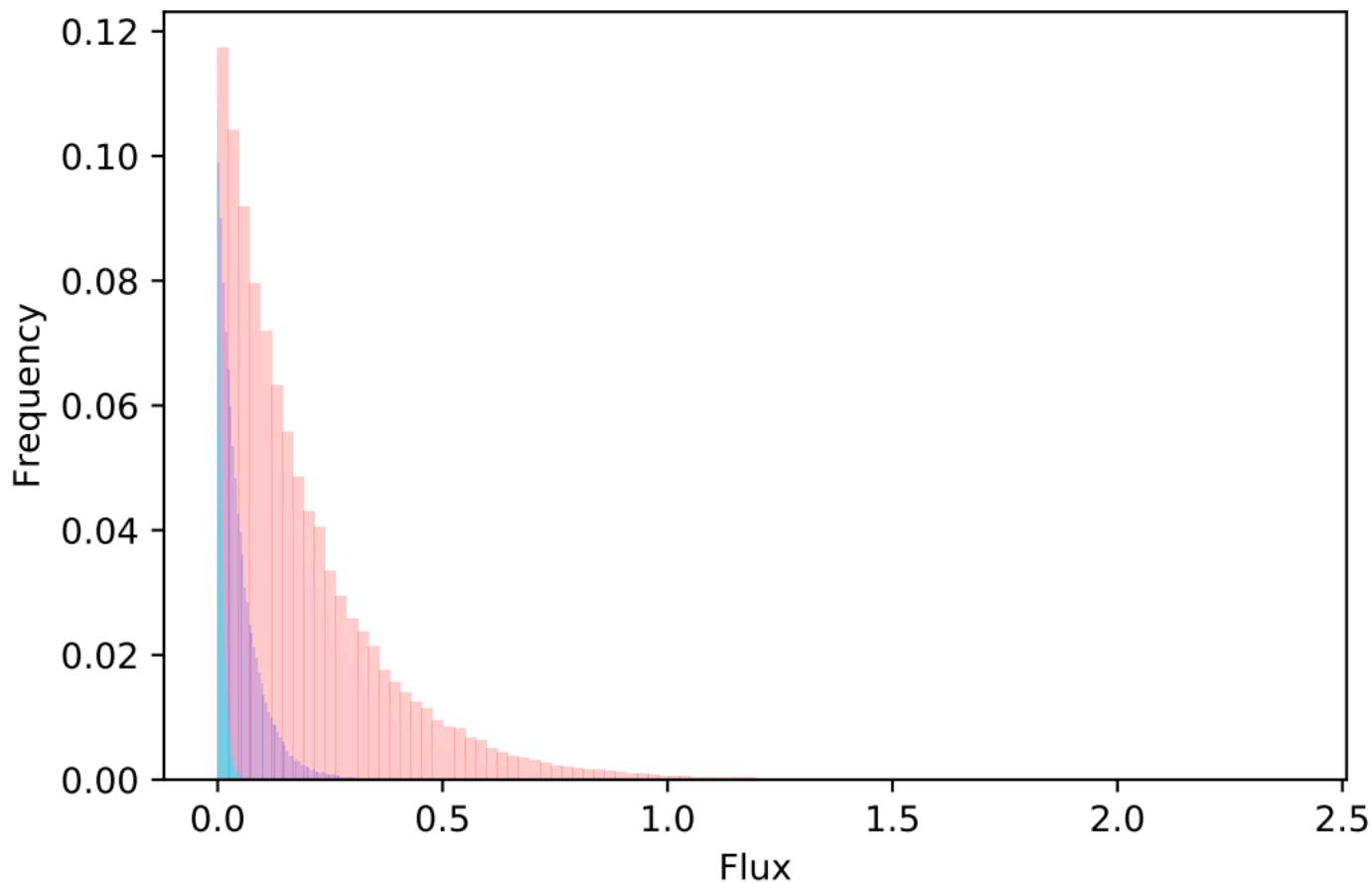
514 : Ser c -->
['-']



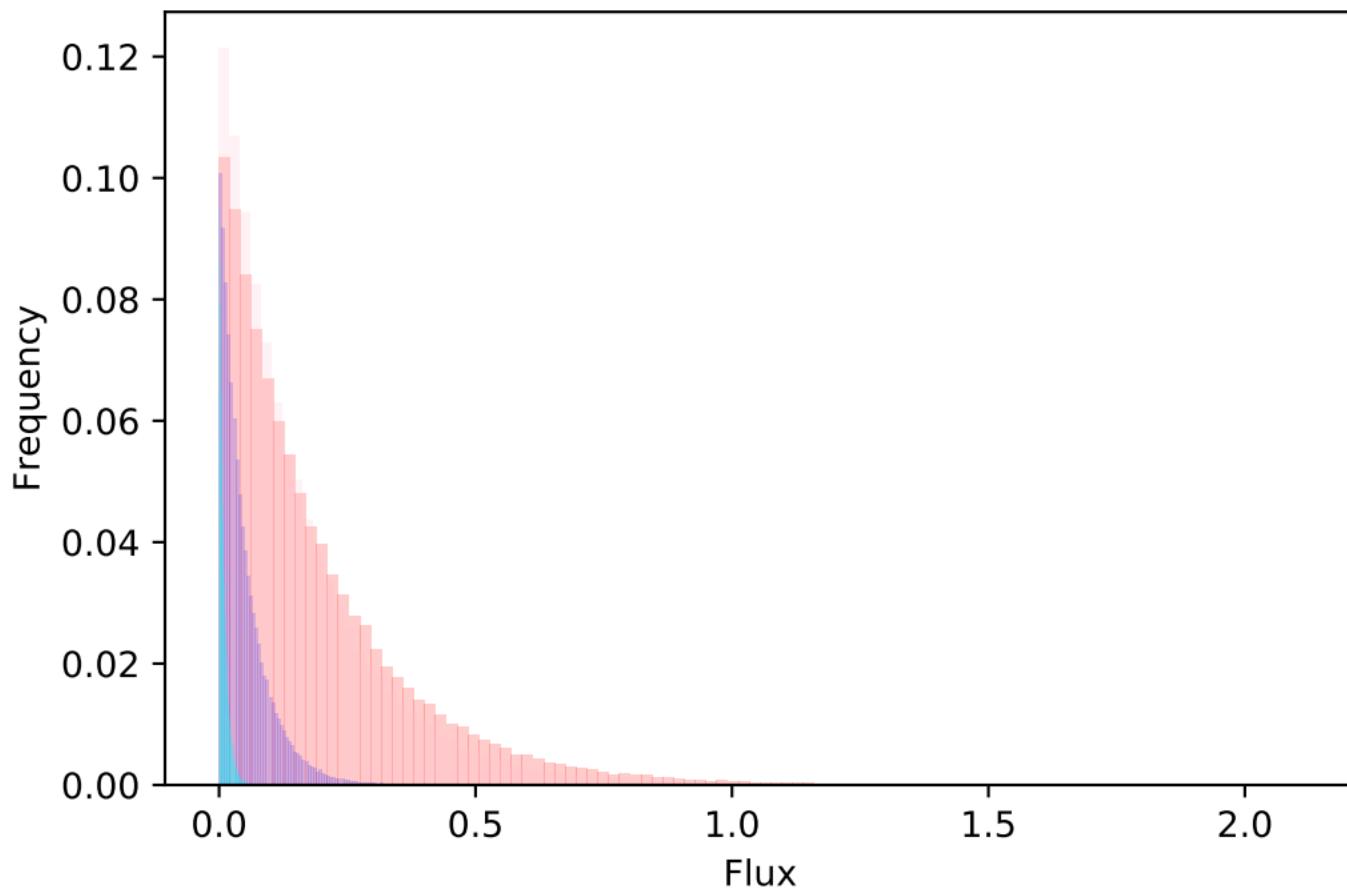
515 : Ser_h -->
[${}^{\prime -} \bar{}$]



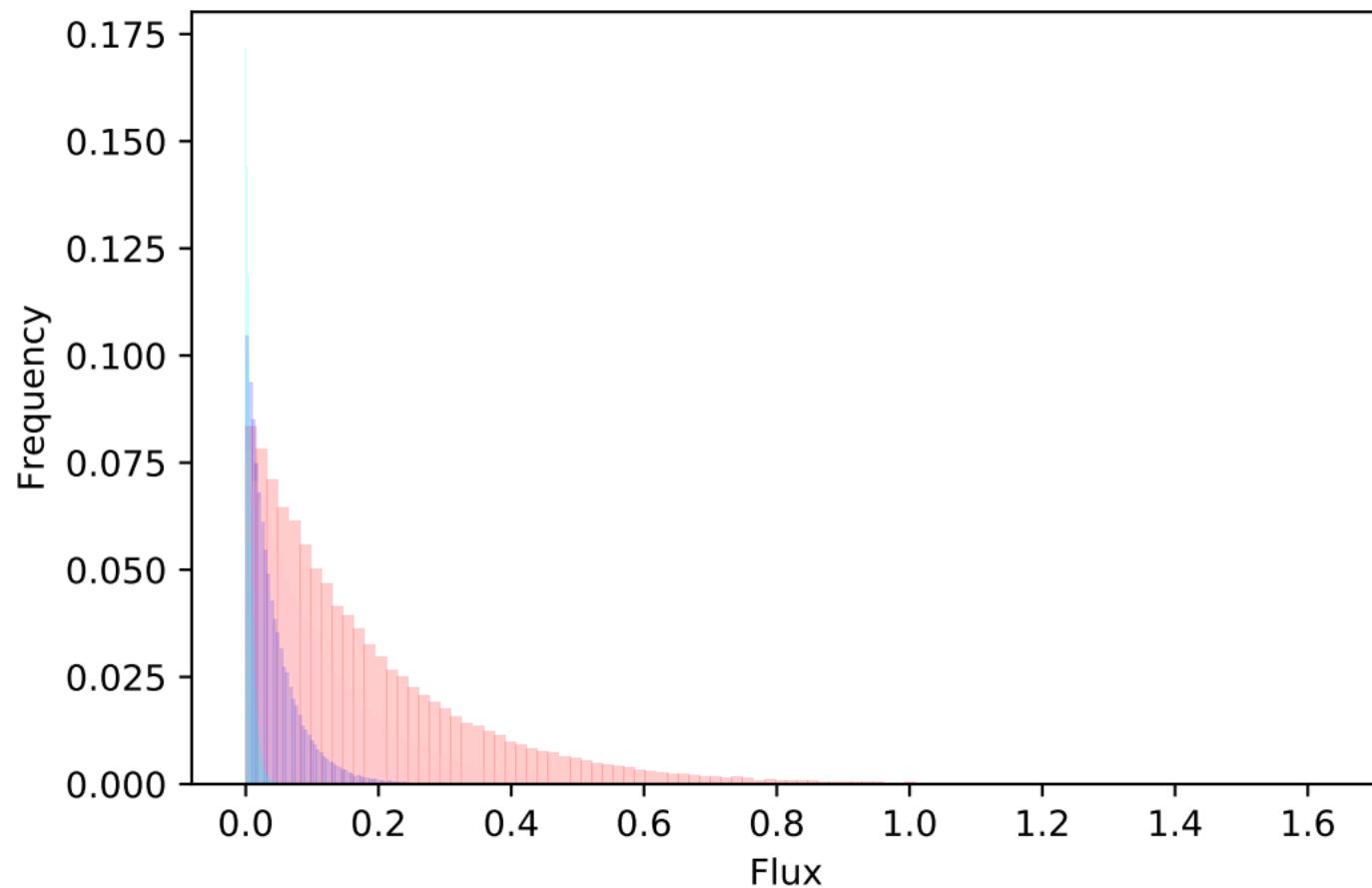
516 : Ser_m -->
[*t*-*t*]



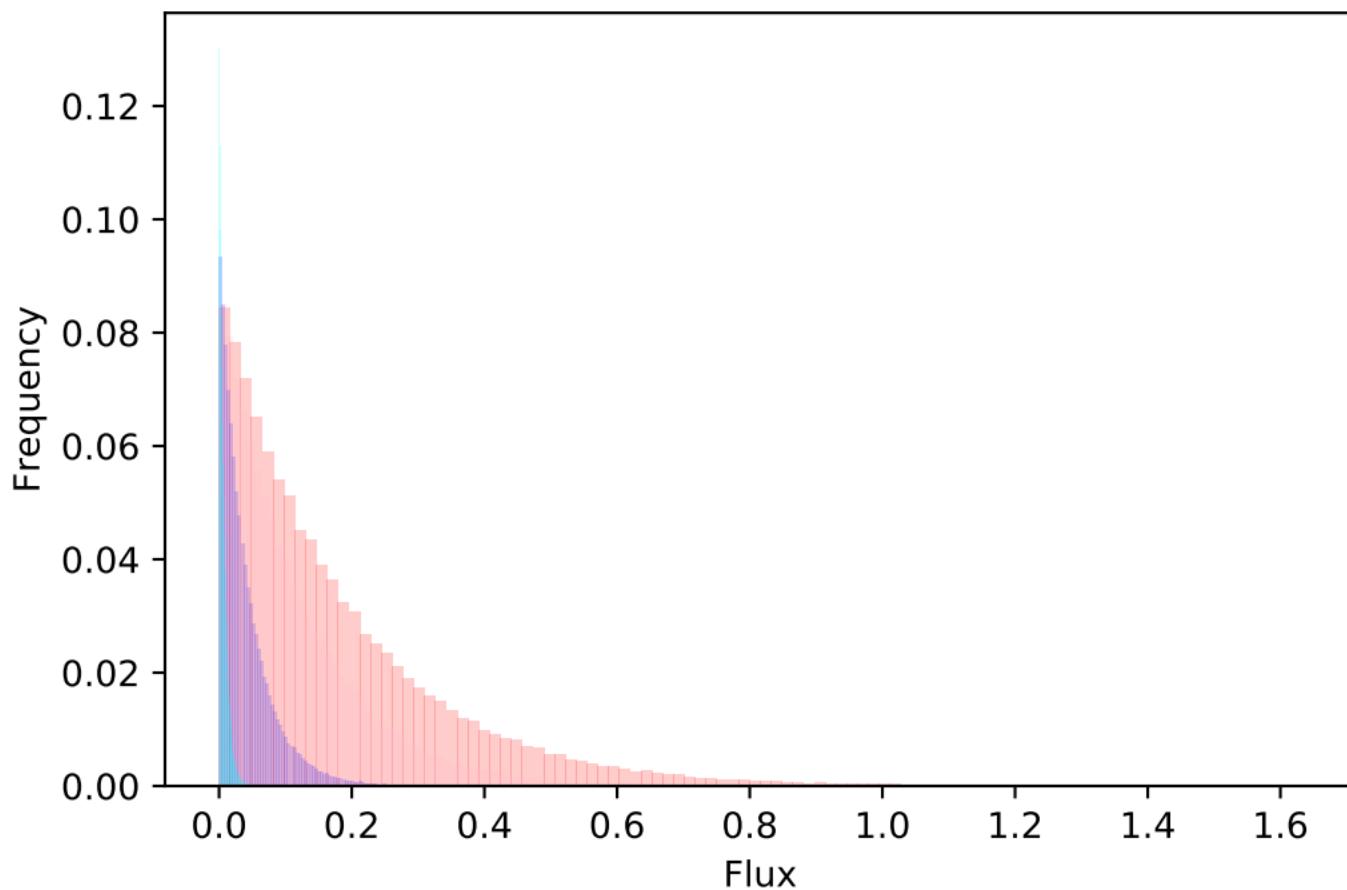
517 : Ser_p -->
['-']



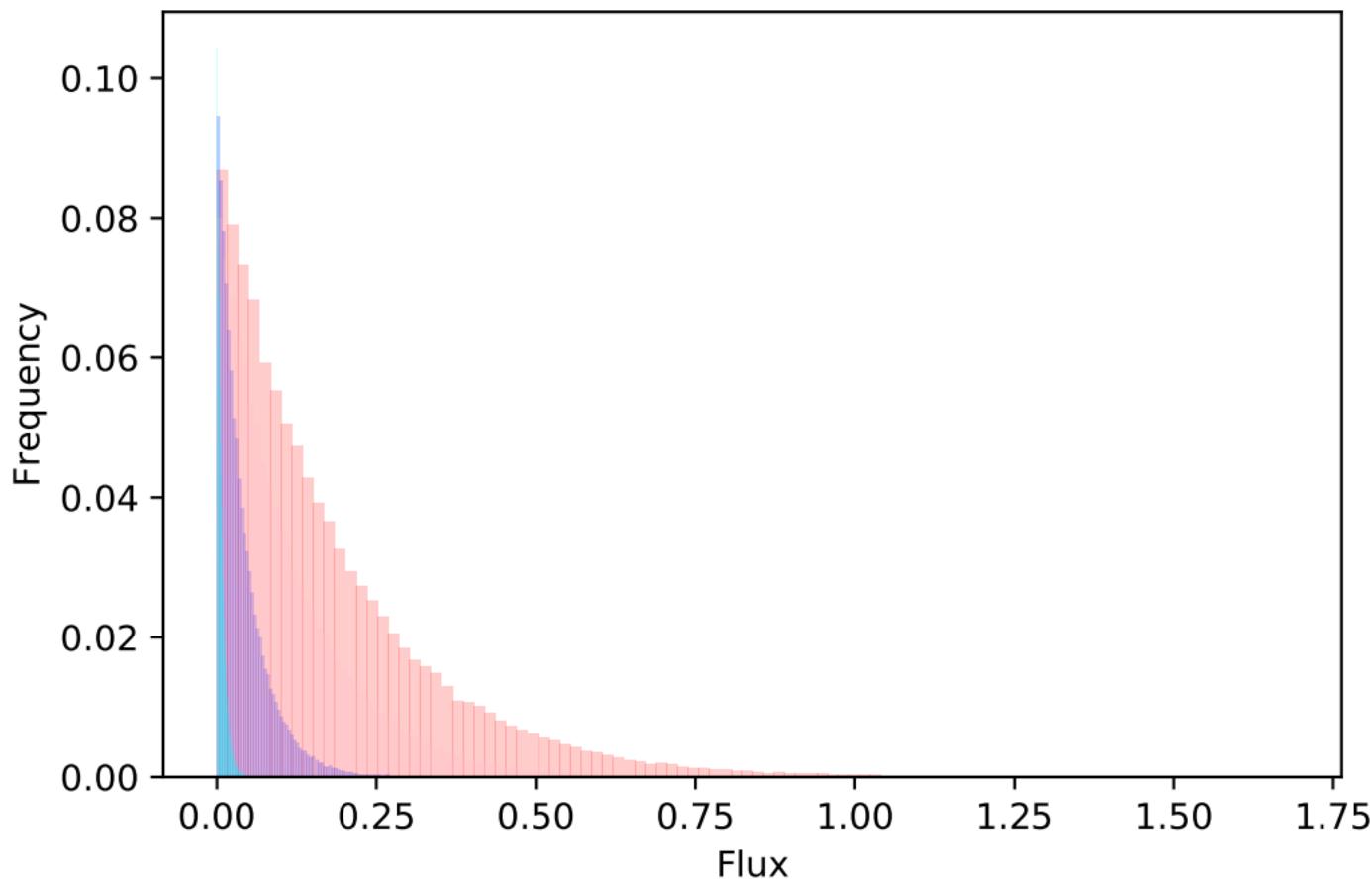
518 : Thr_c -->
['-']



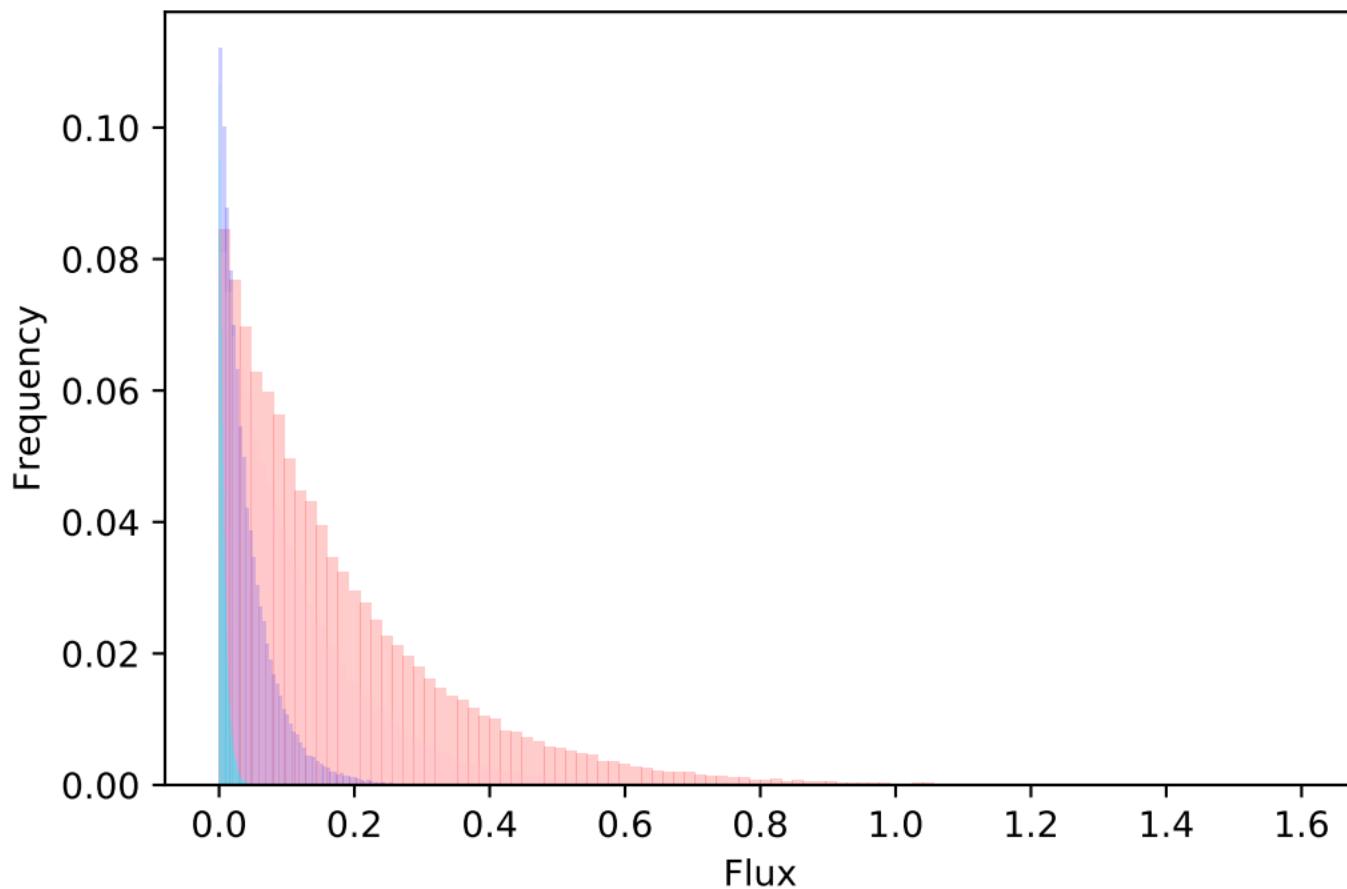
519 : Thr_h -->
['-']



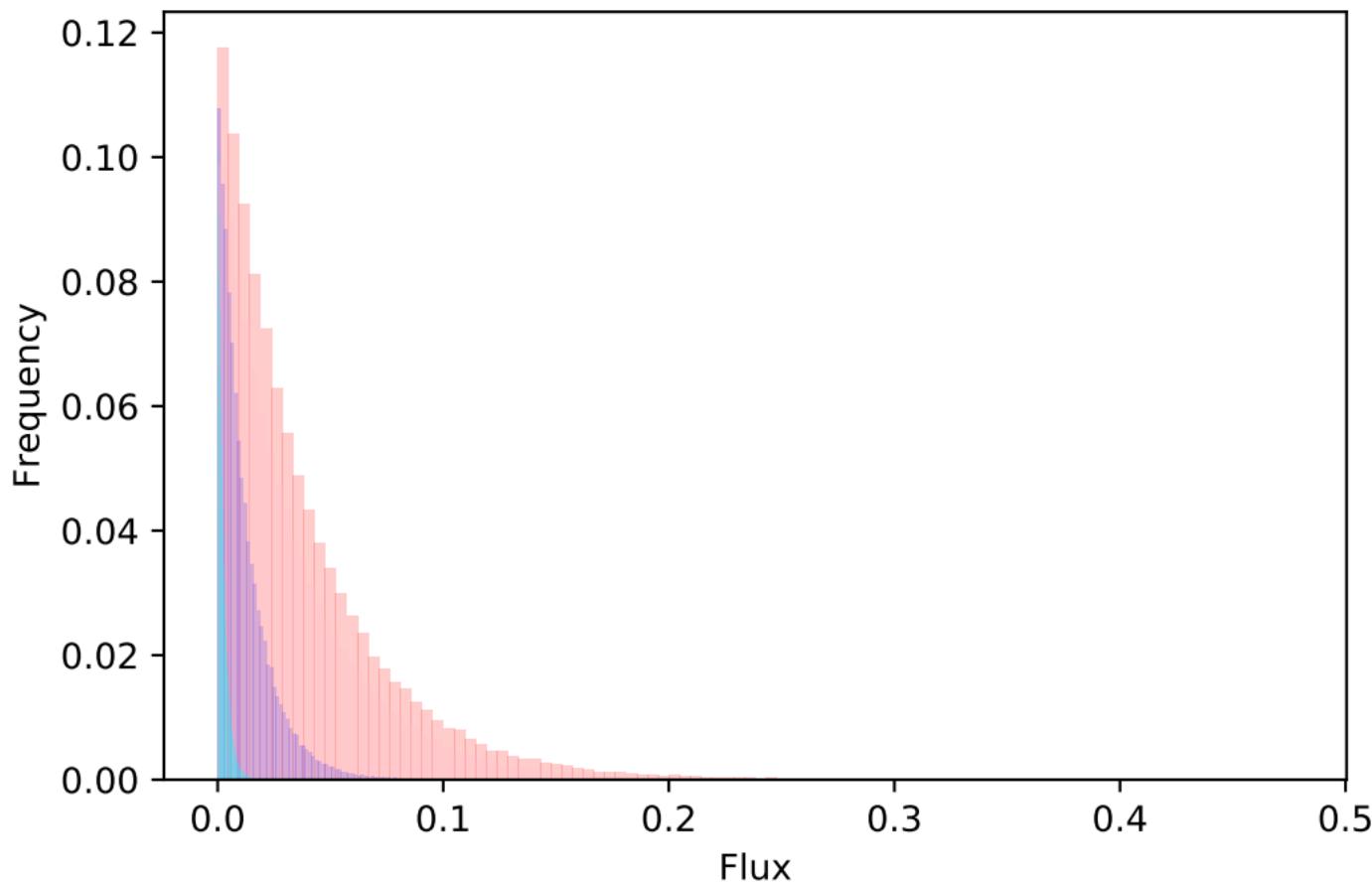
520 : Thr_m -->
[${}^{\prime -} \bar{v}$]



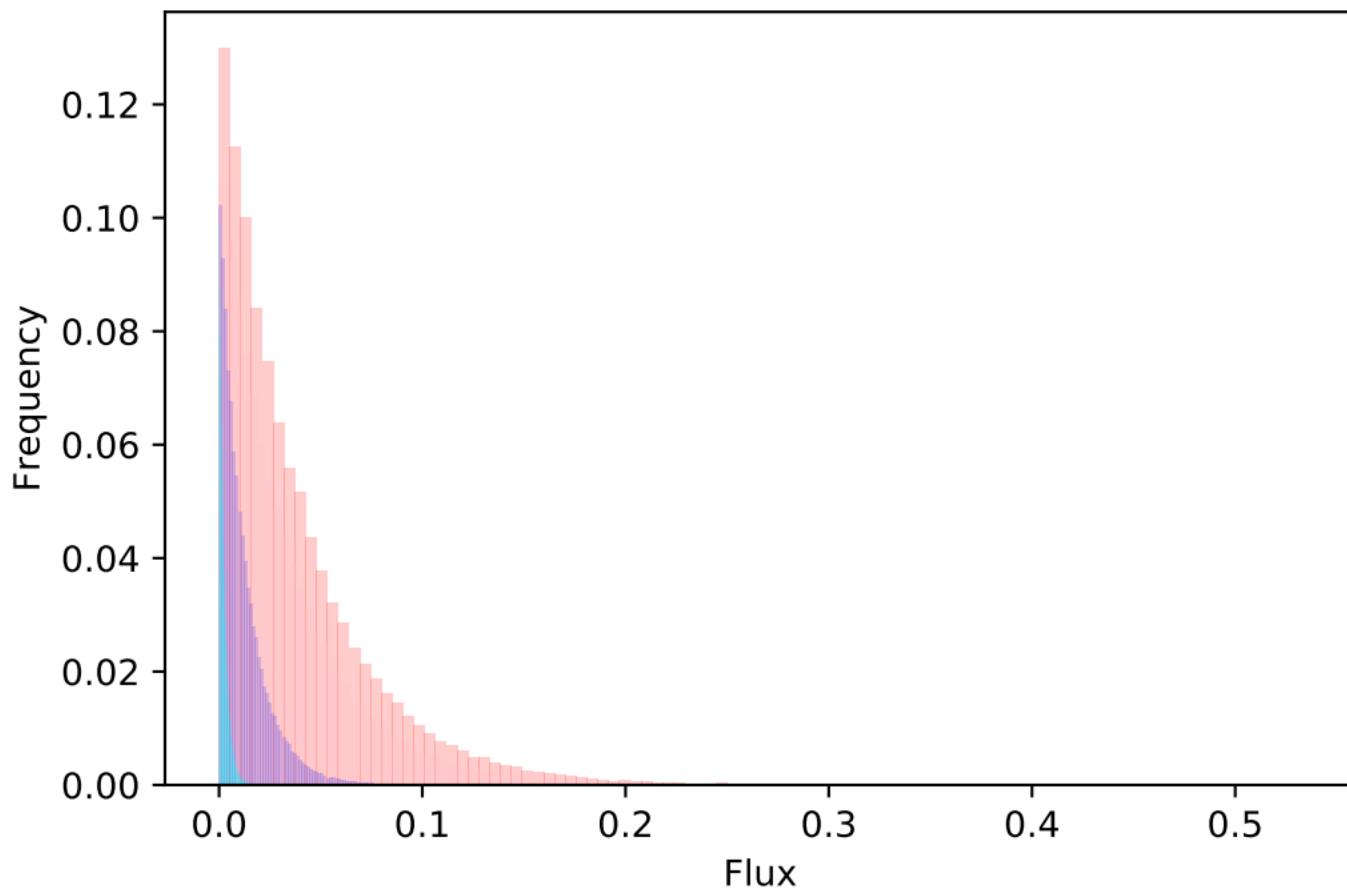
521 : Thr_p -->
['-']



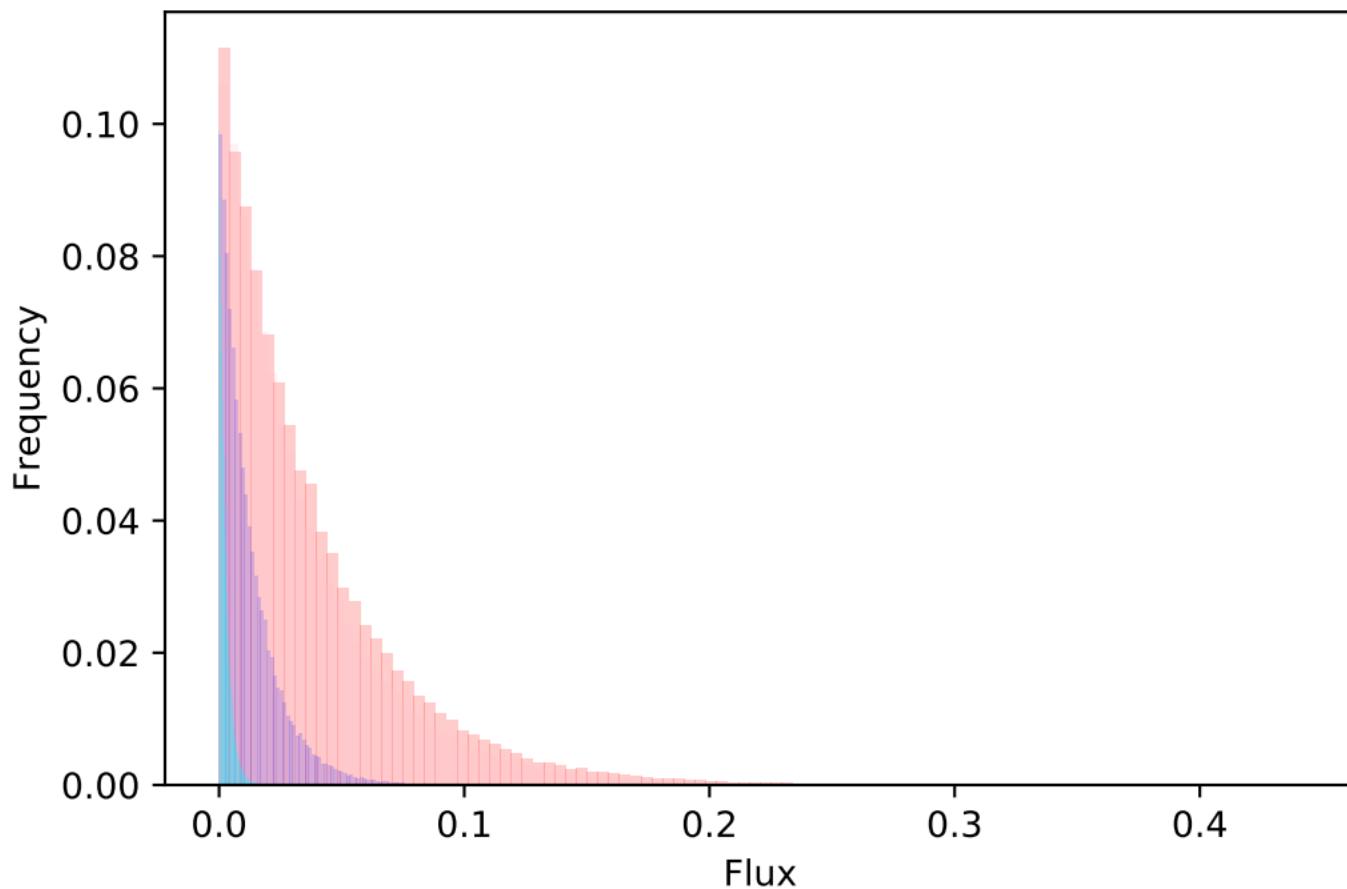
522 : Trp_c -->
[',']



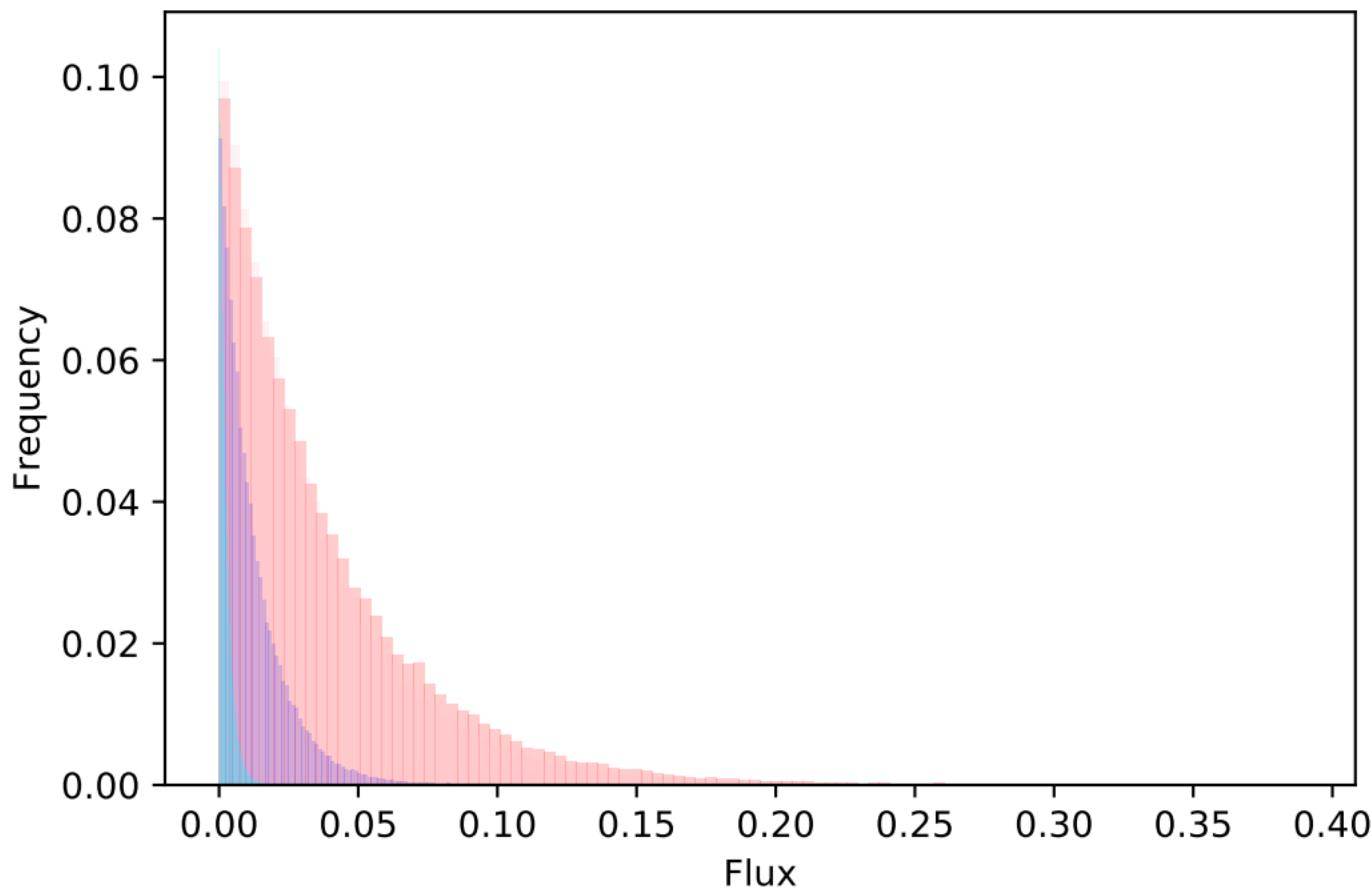
523 : Trp_h -->
['-']



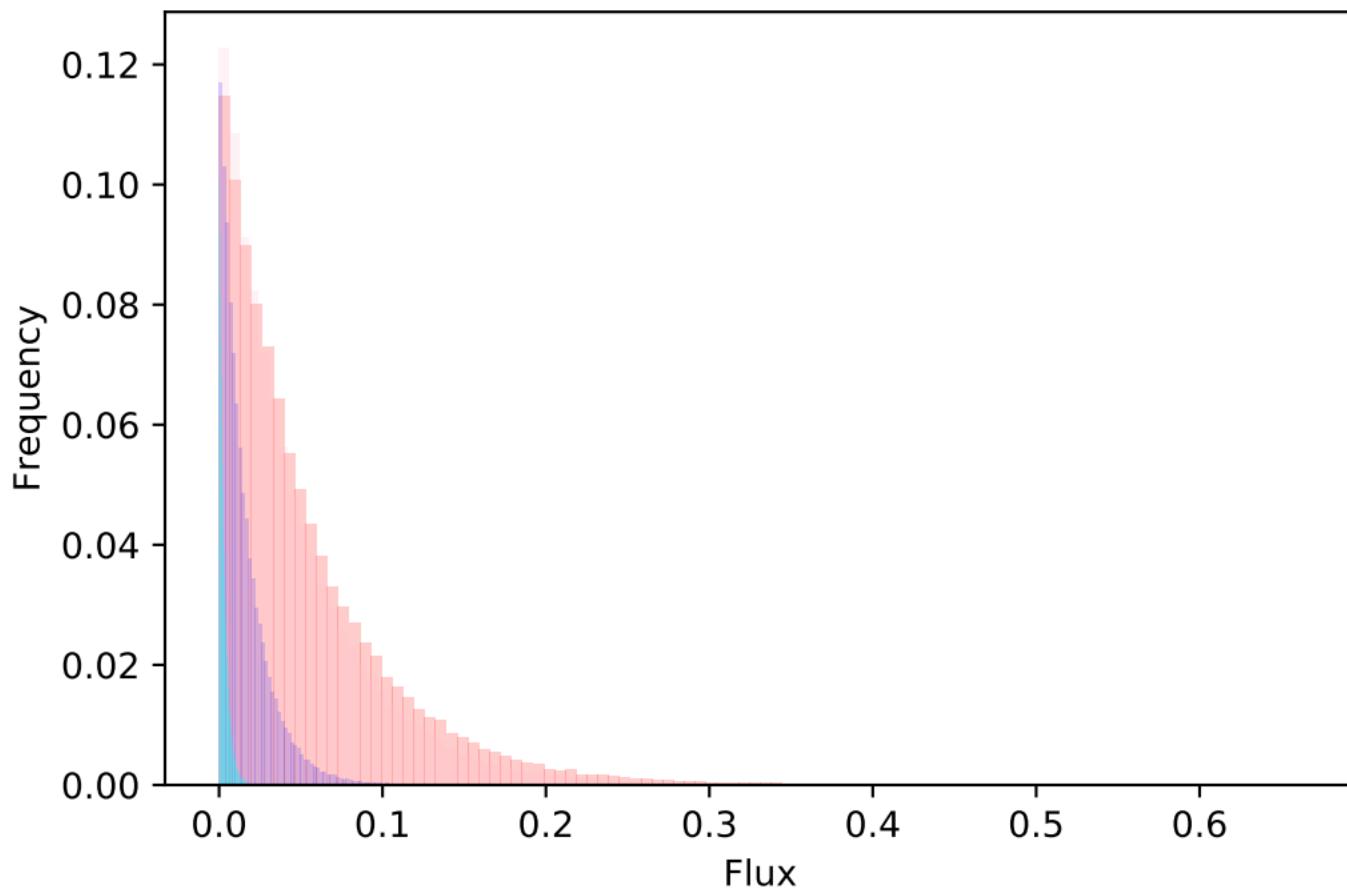
524 : Trp_m -->
[t^{-i}]



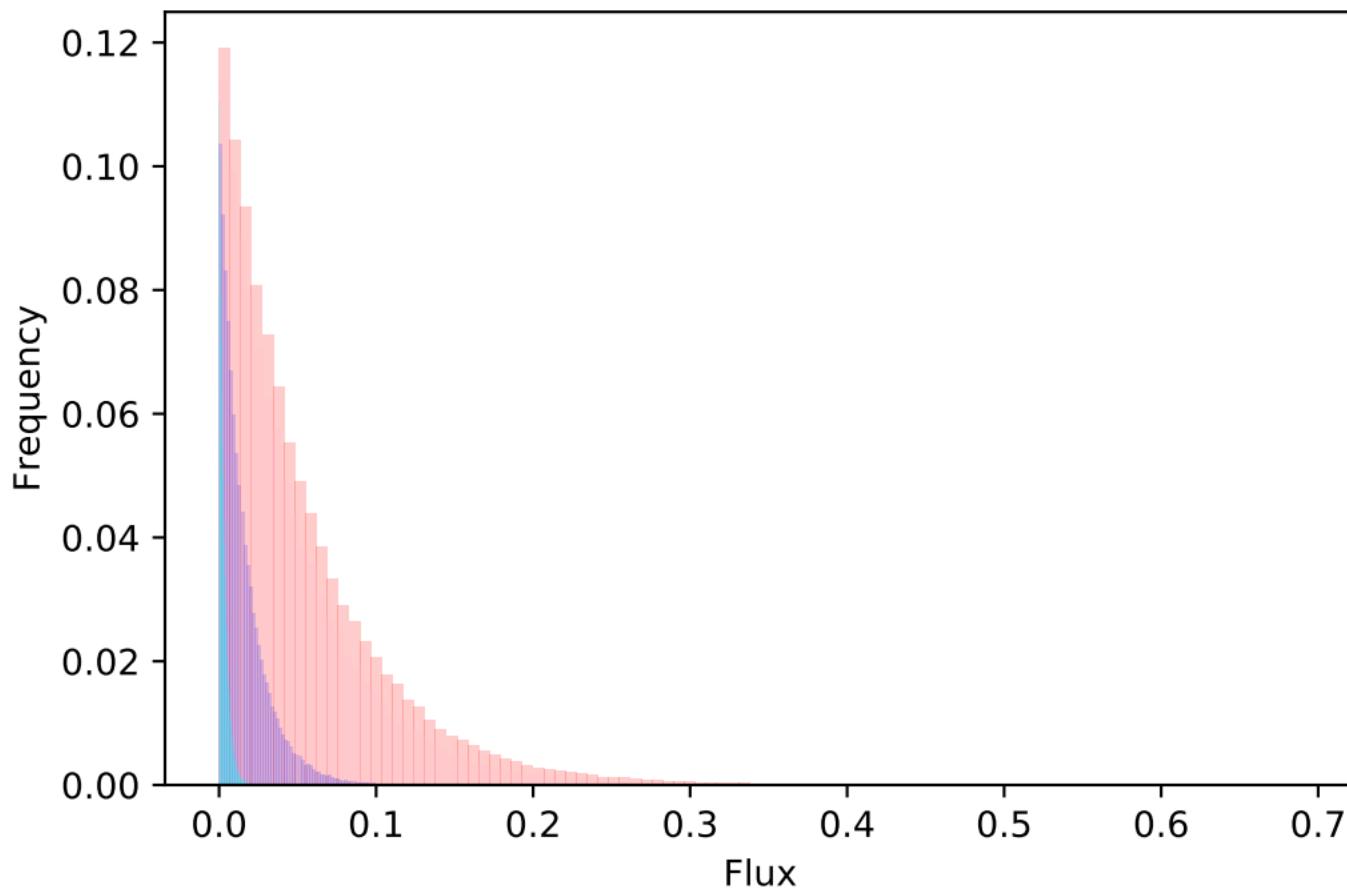
525 : Trp_p -->
['-']



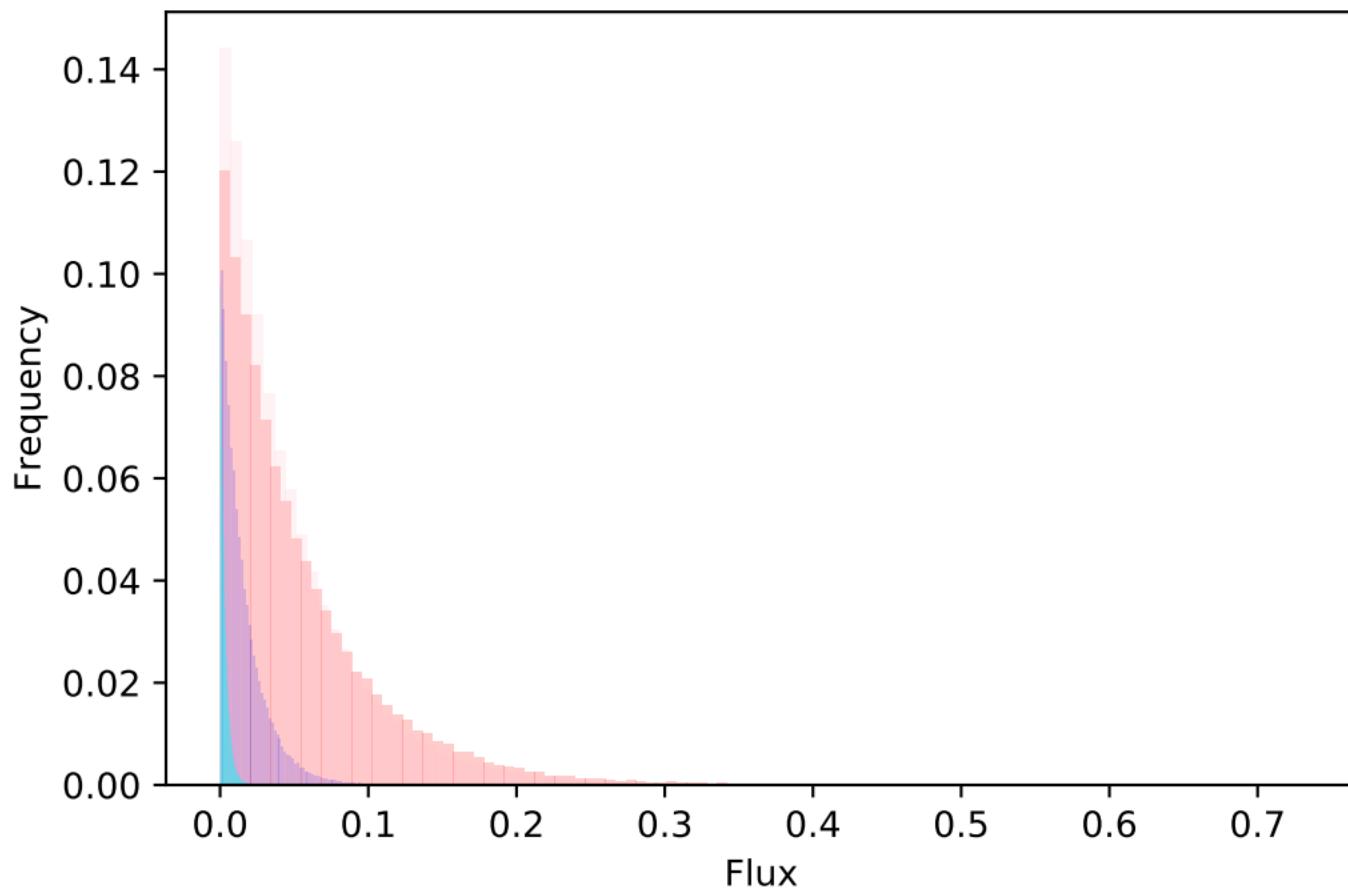
526 : Tyr_c -->
['-']



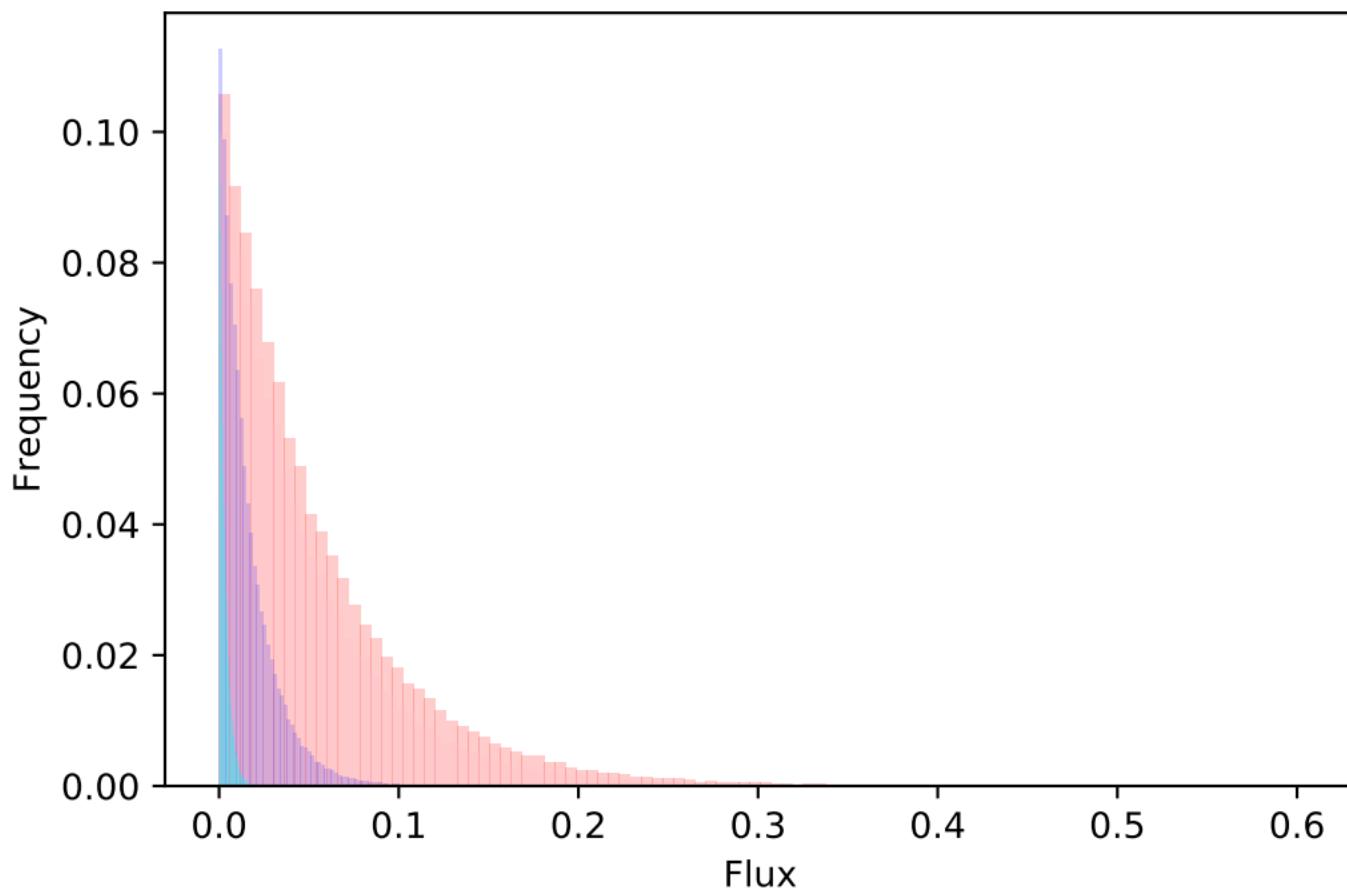
527 : Tyr h -->
['-']



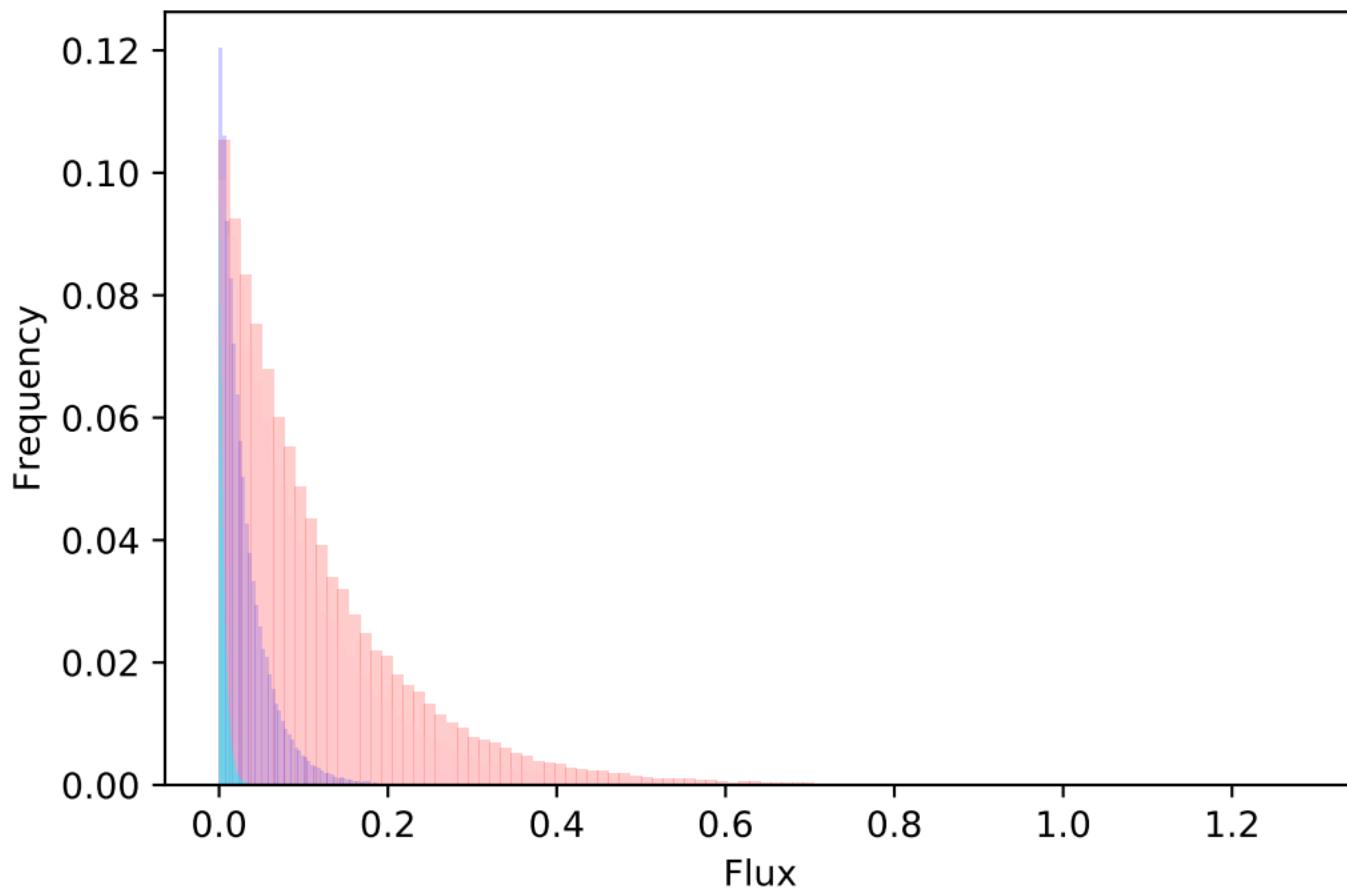
528 : Tyr_m -->
[t^{-r}]



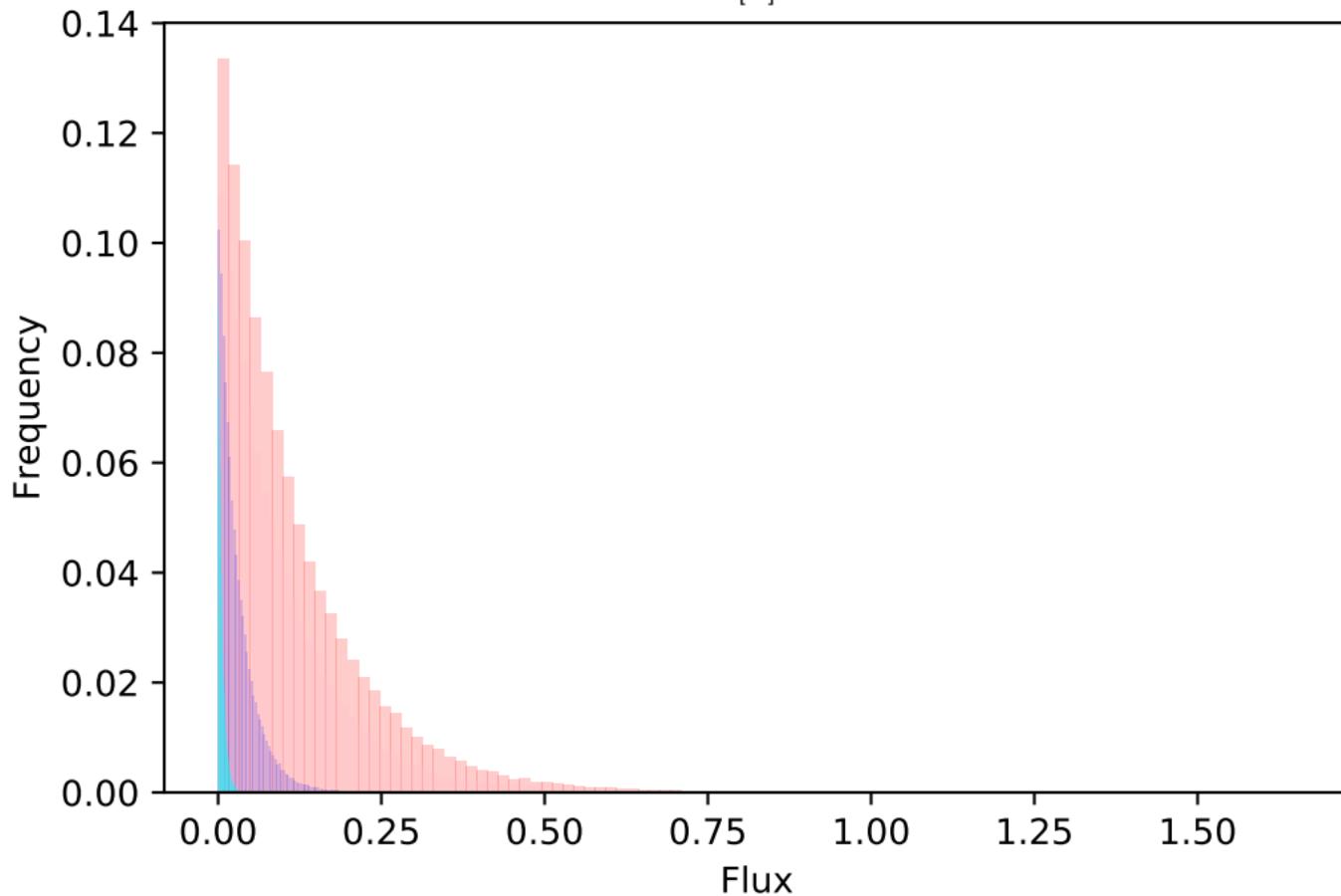
529 : Tyr_p -->
[⁻₋]



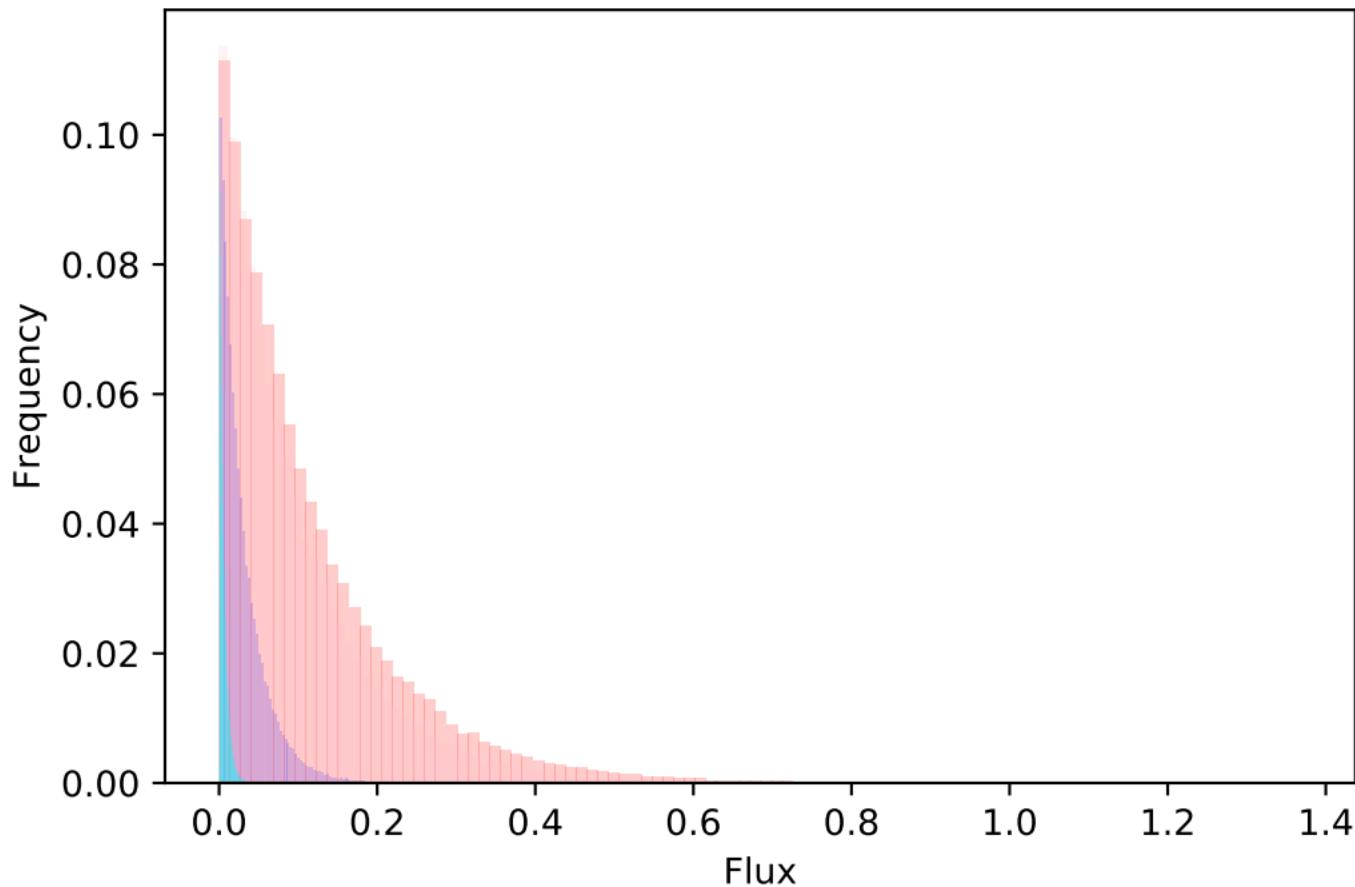
530 : Val_c -->
[${}^{\prime -} \overline{}$]



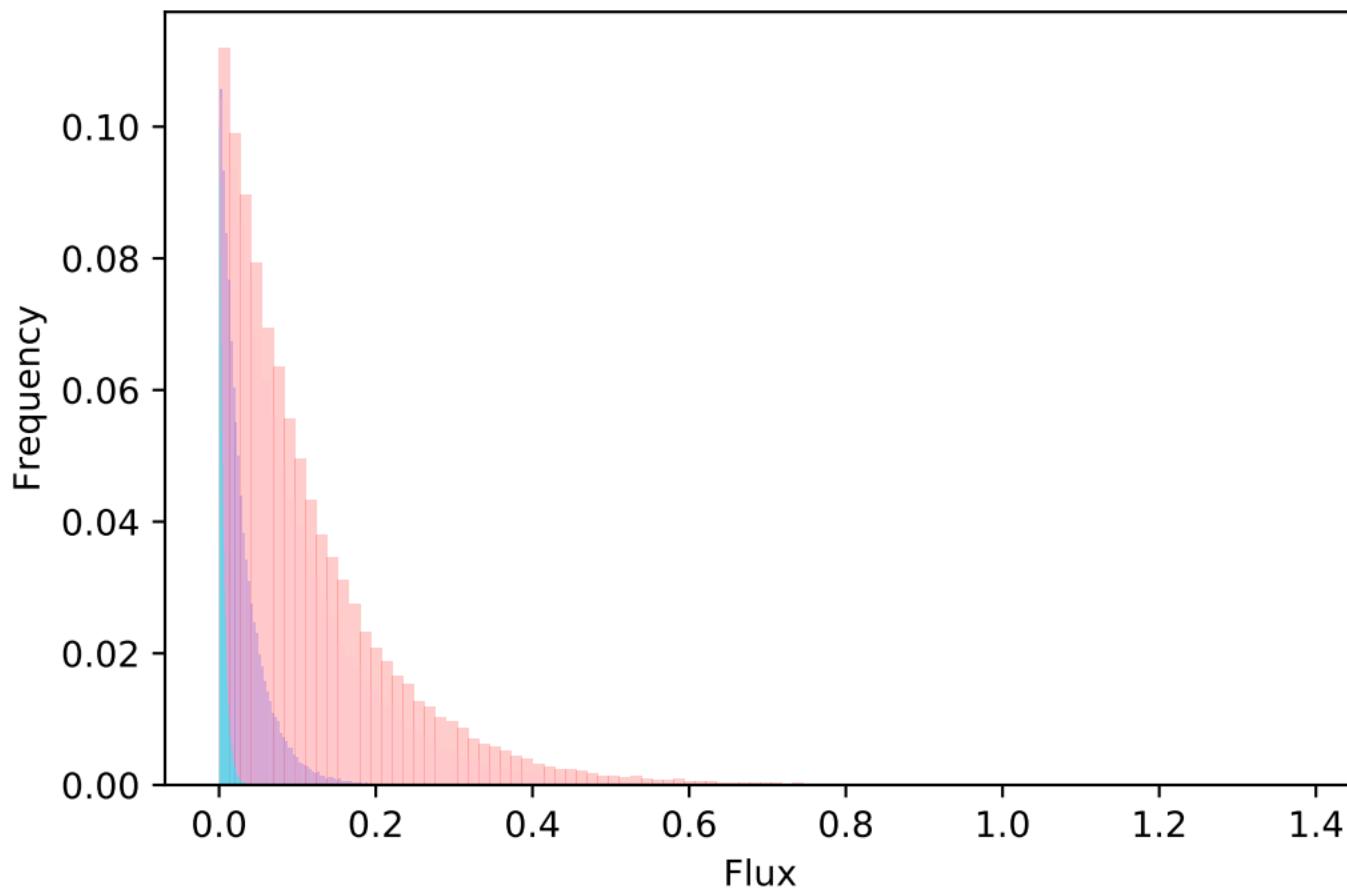
531 : Val h -->
['-']



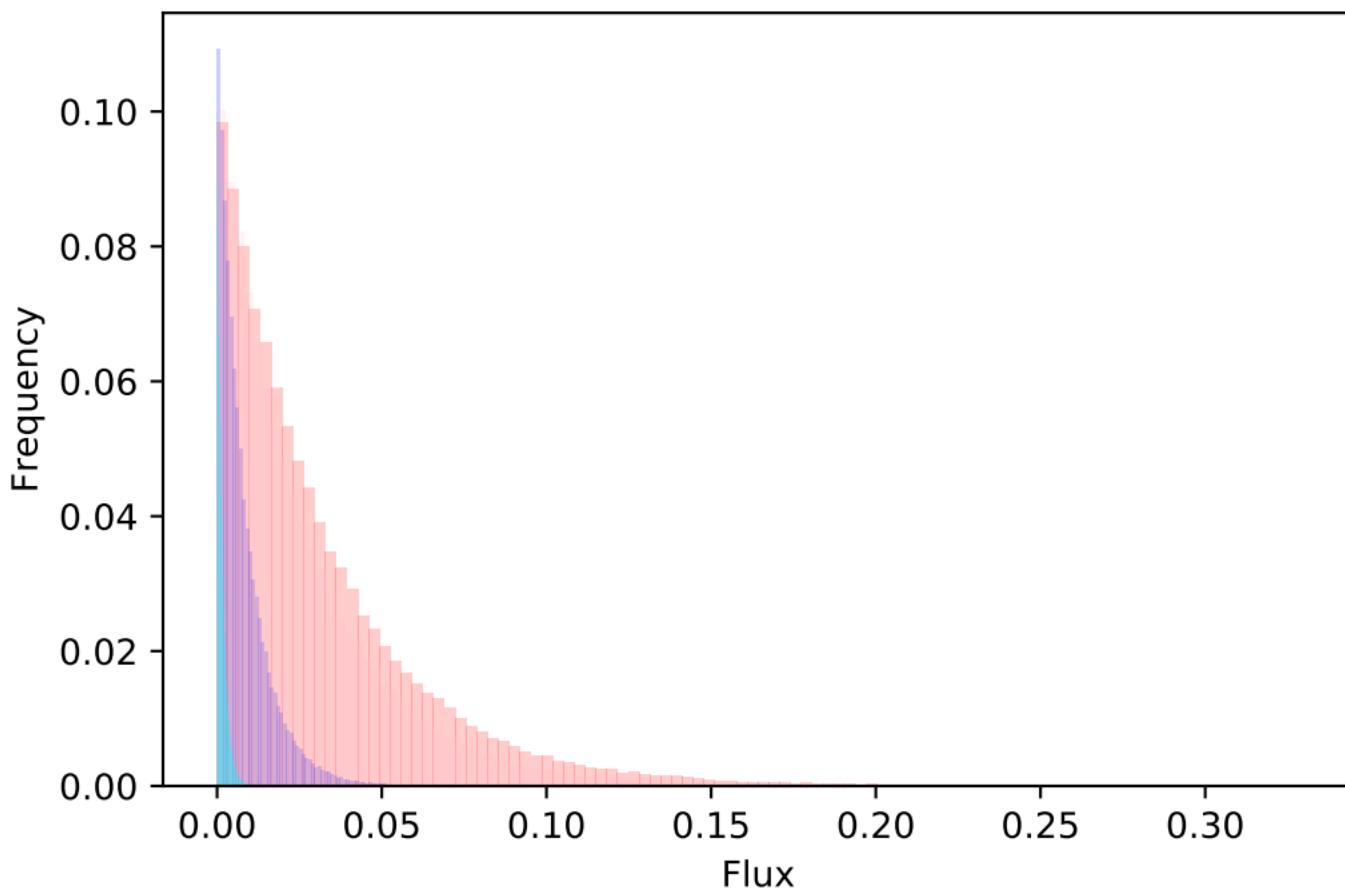
532 : Val_m -->
[t^{-1}]



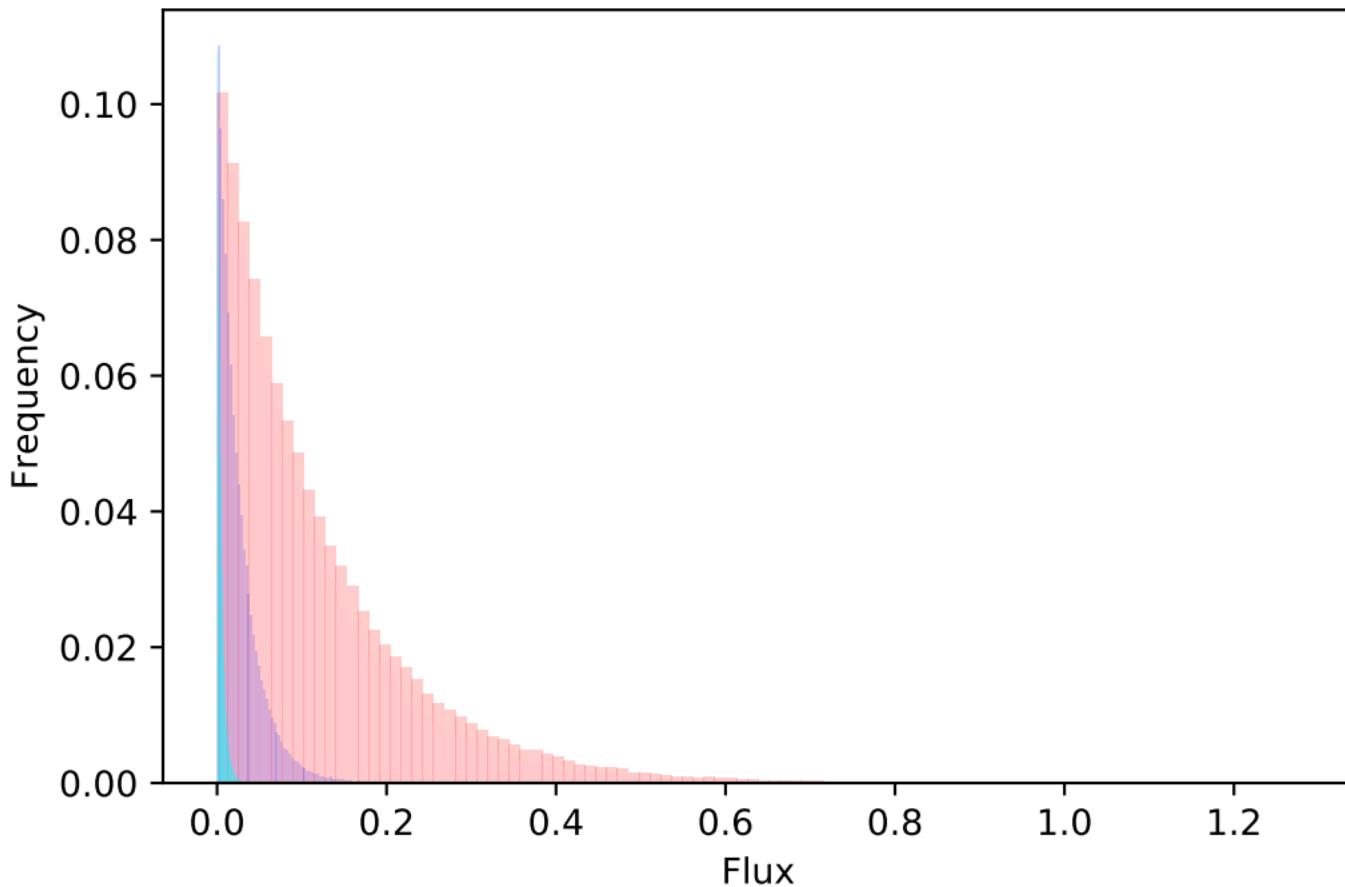
533 : Val_p -->
['-']



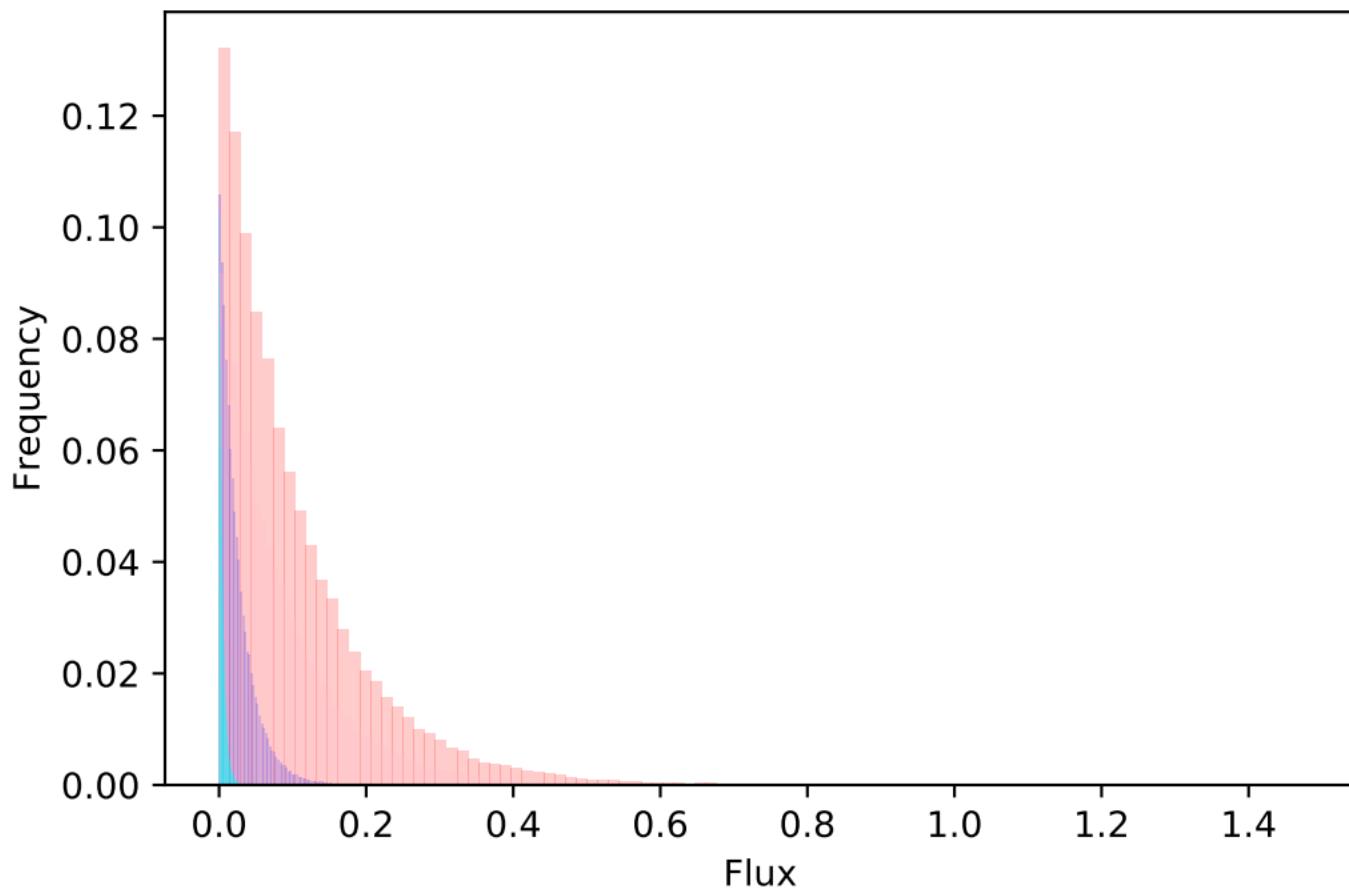
534 : starch3_h -->
['-']



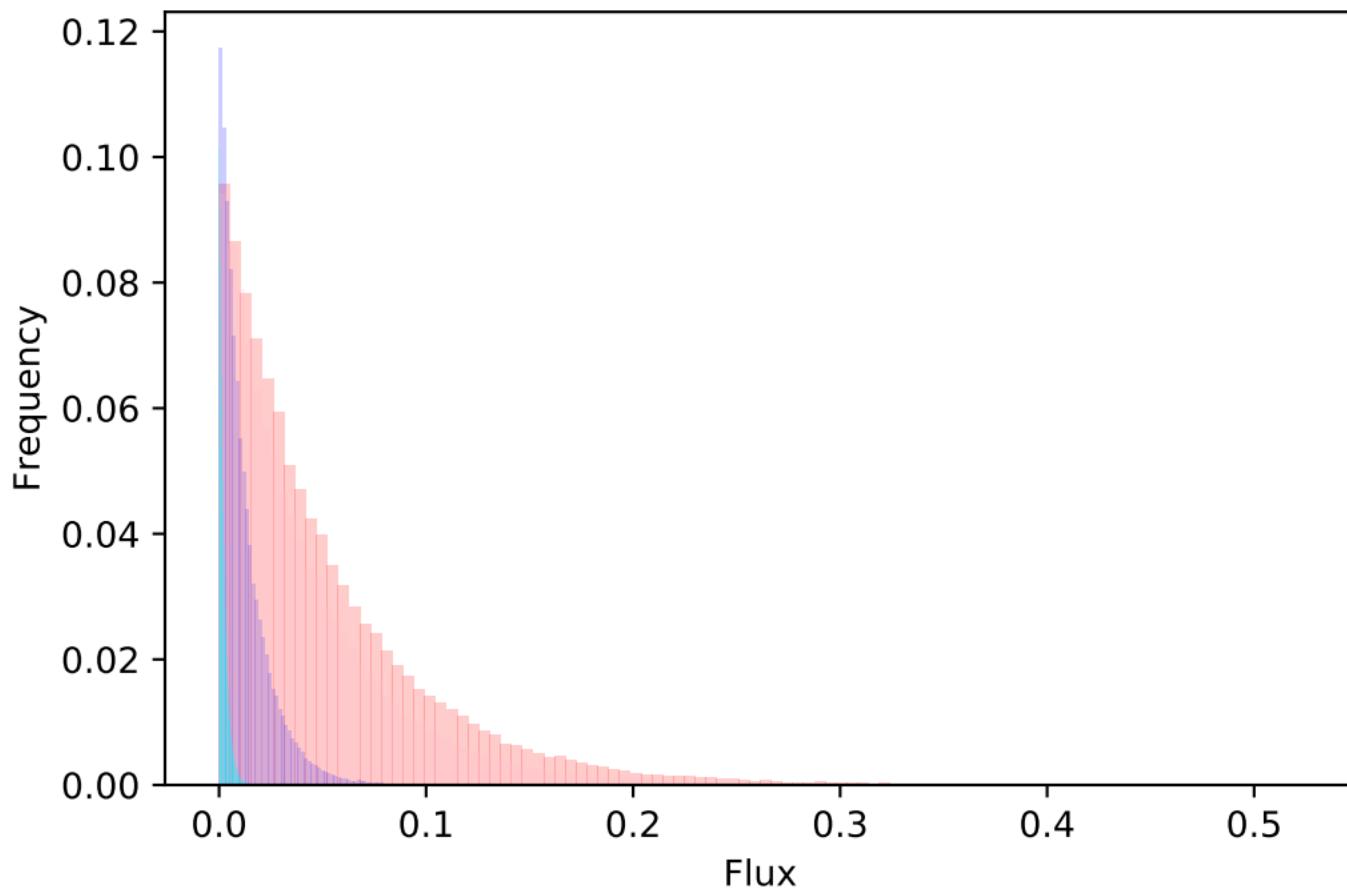
535 : Glc_c -->
['-']



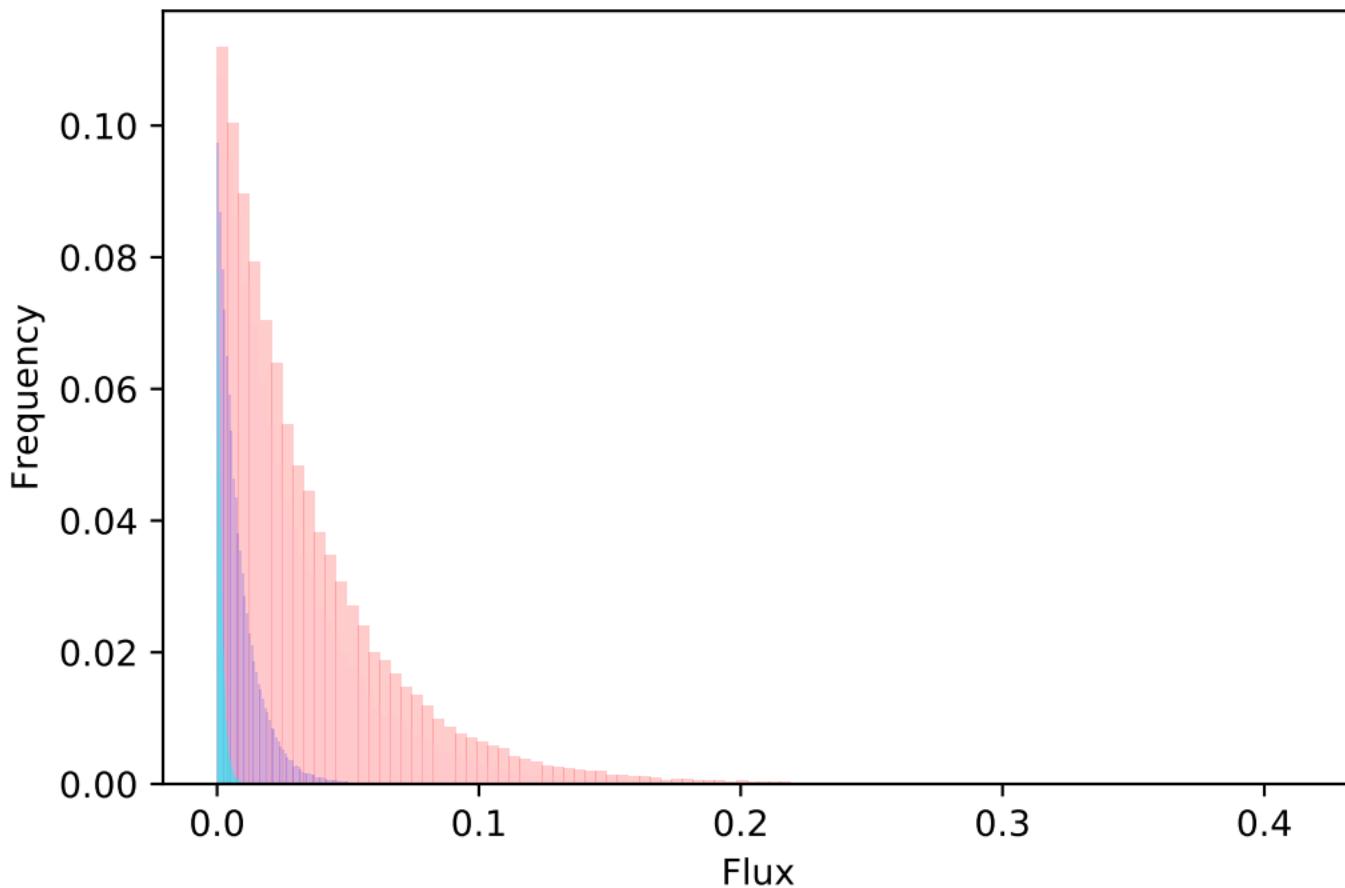
536 : FrC_c -->
['-']



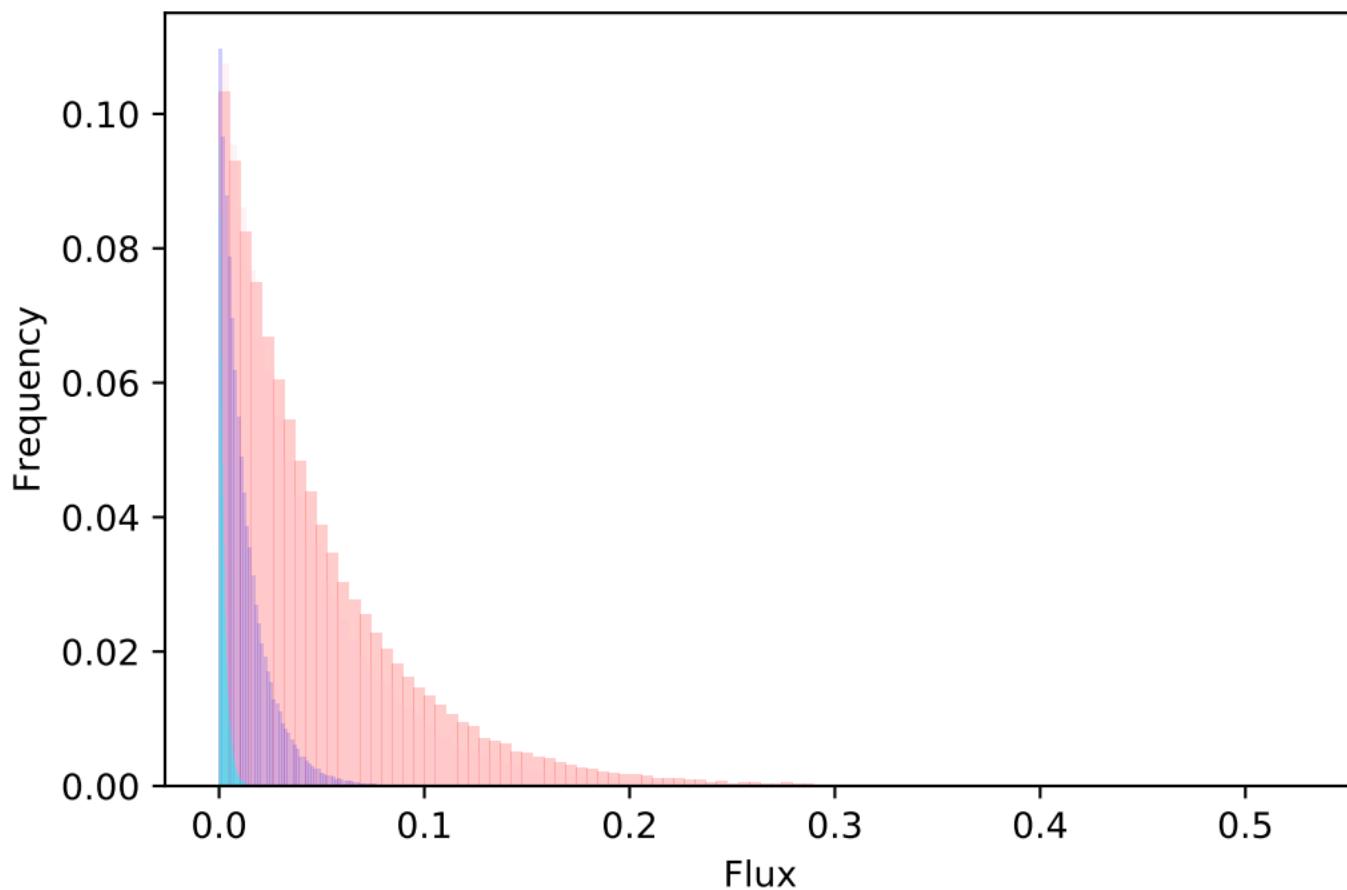
537 : Suc_c -->
[⁻]₋



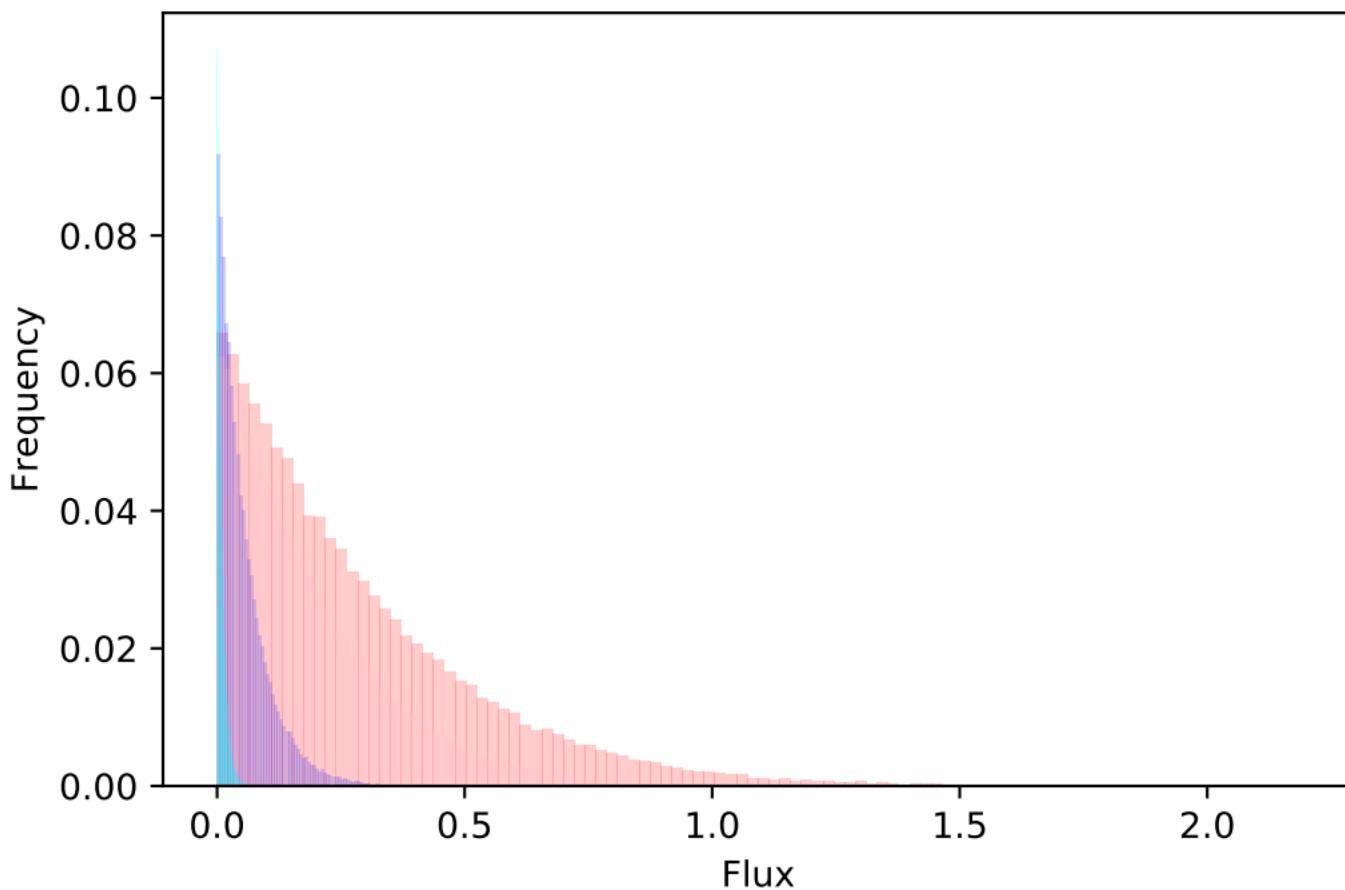
538 : cellulose3_c -->
['-']



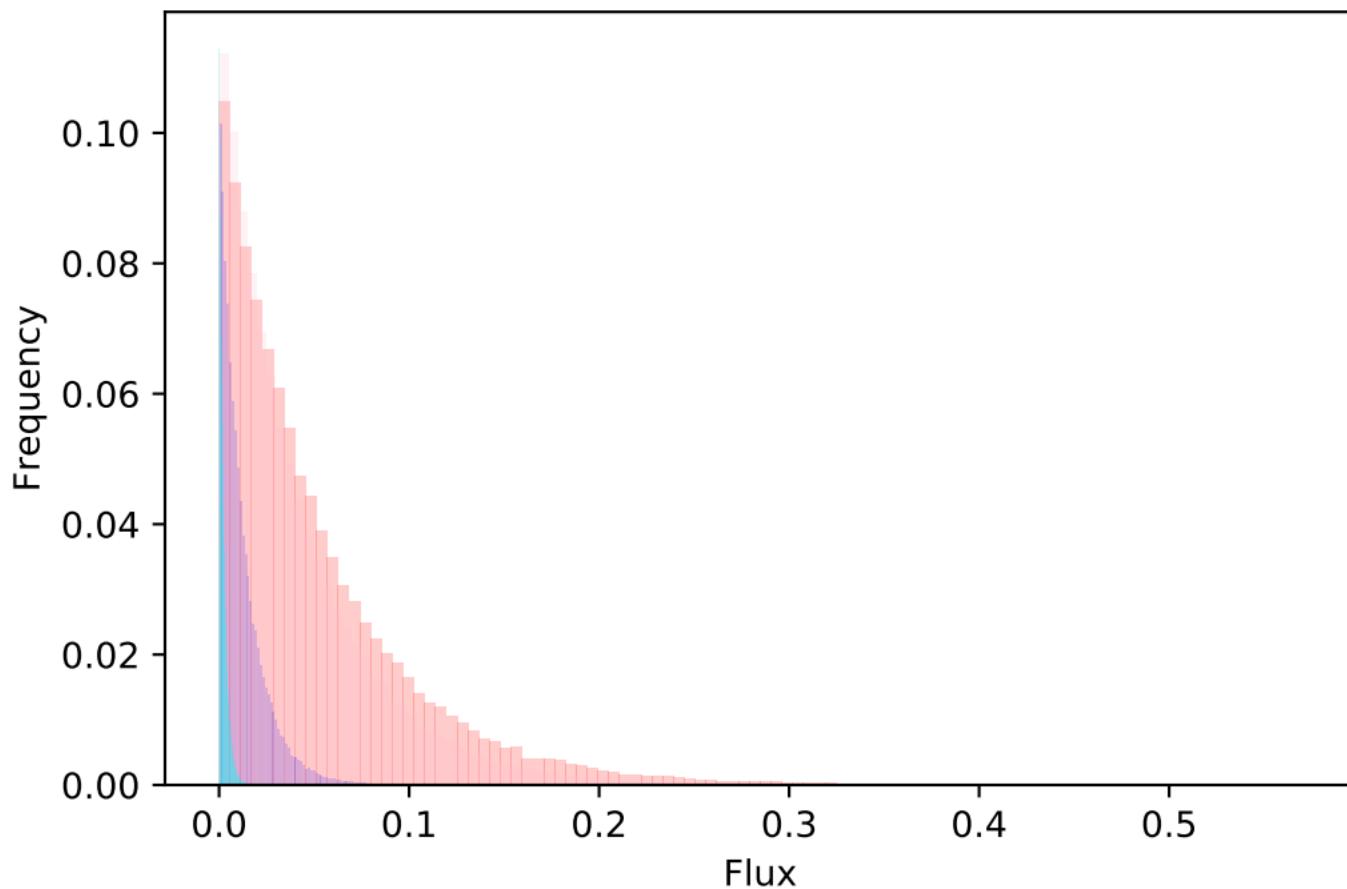
539 : Mas_c -->
['-']

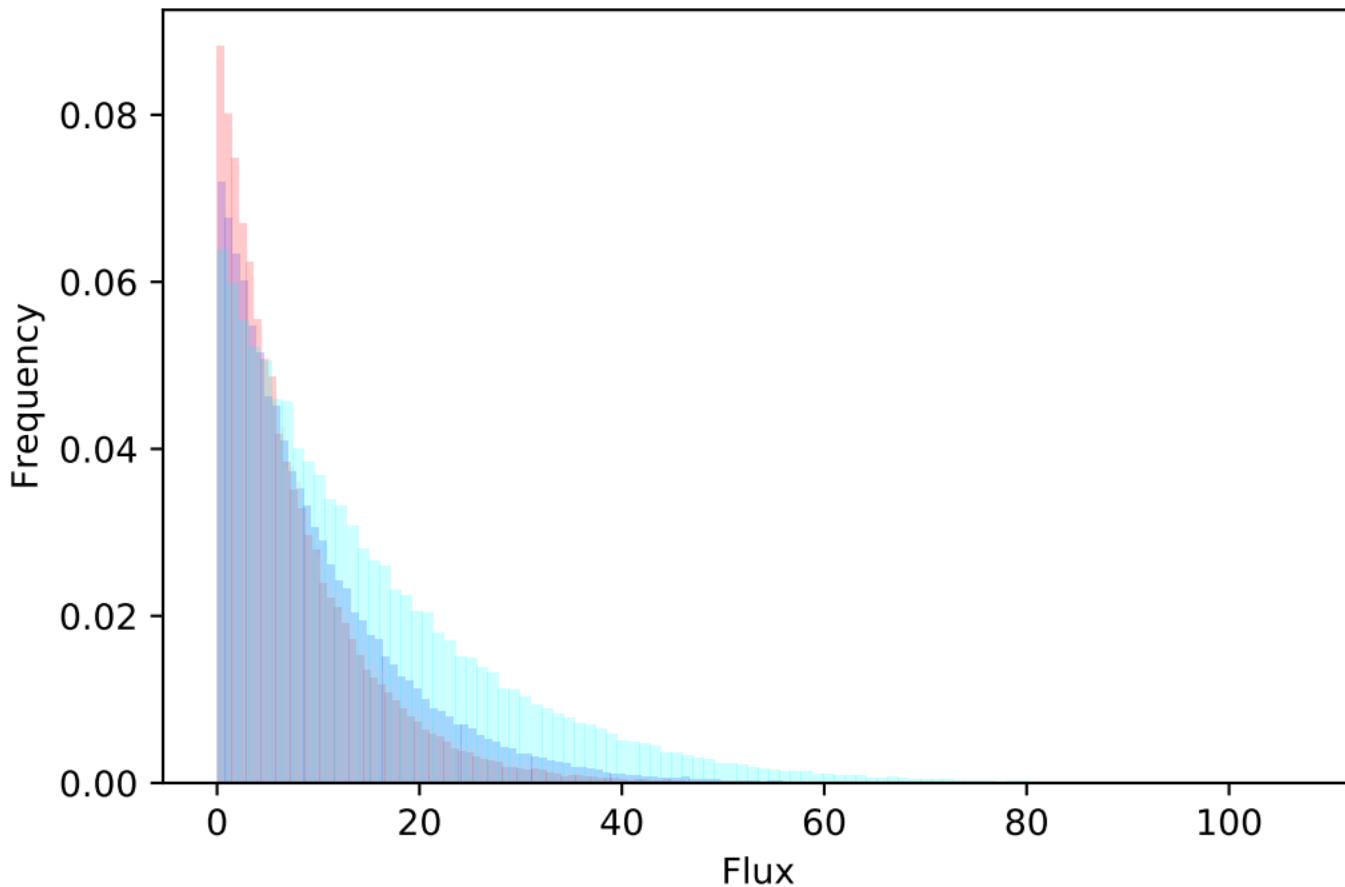
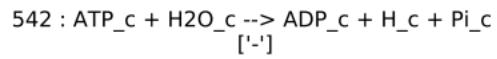


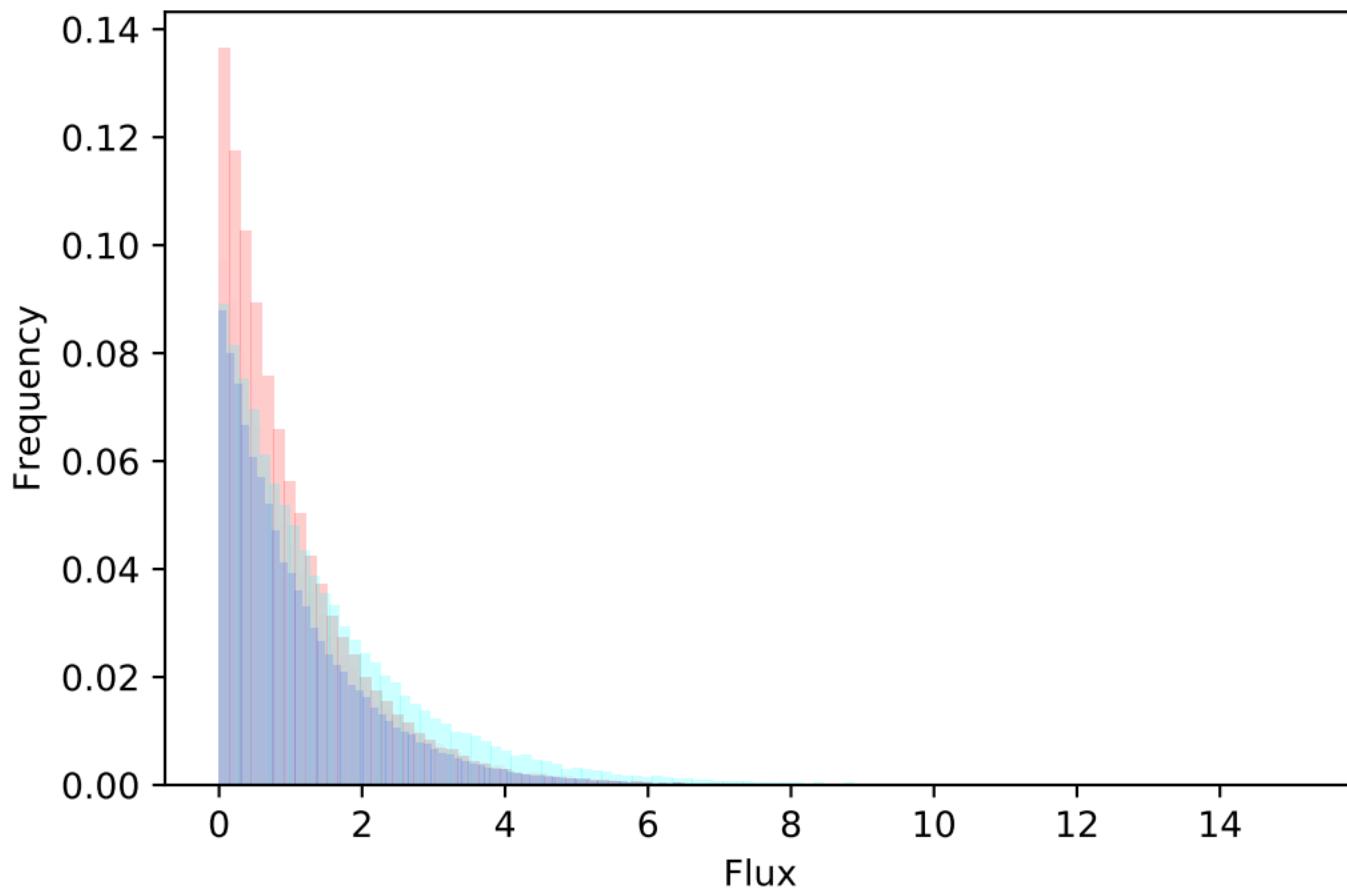
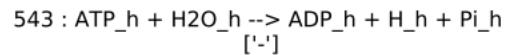
540 : M_DASH_ACP_h --> ACP_h + H_h
[!-]

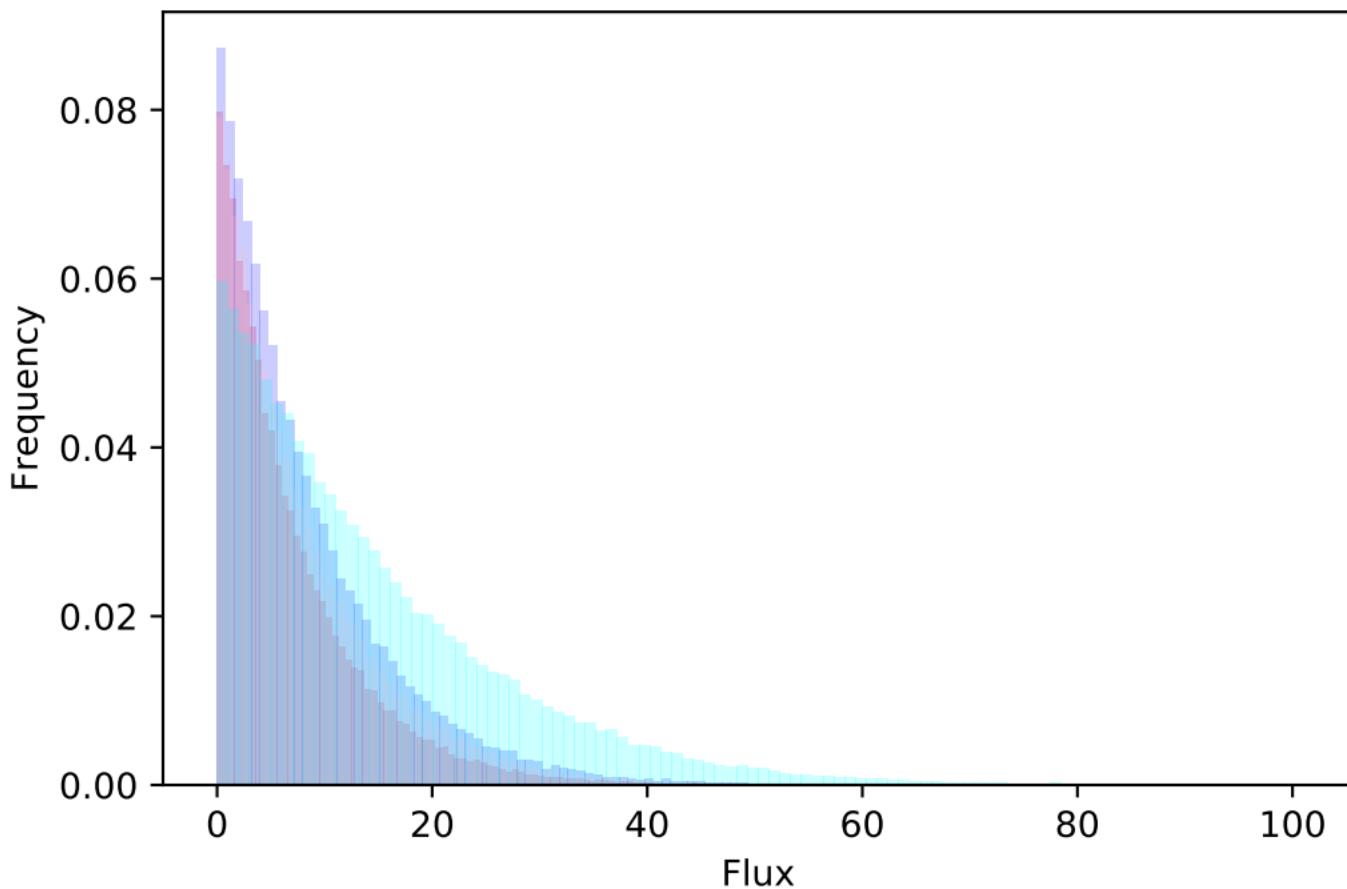
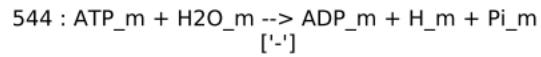


541 : Tre_c -->
['-']



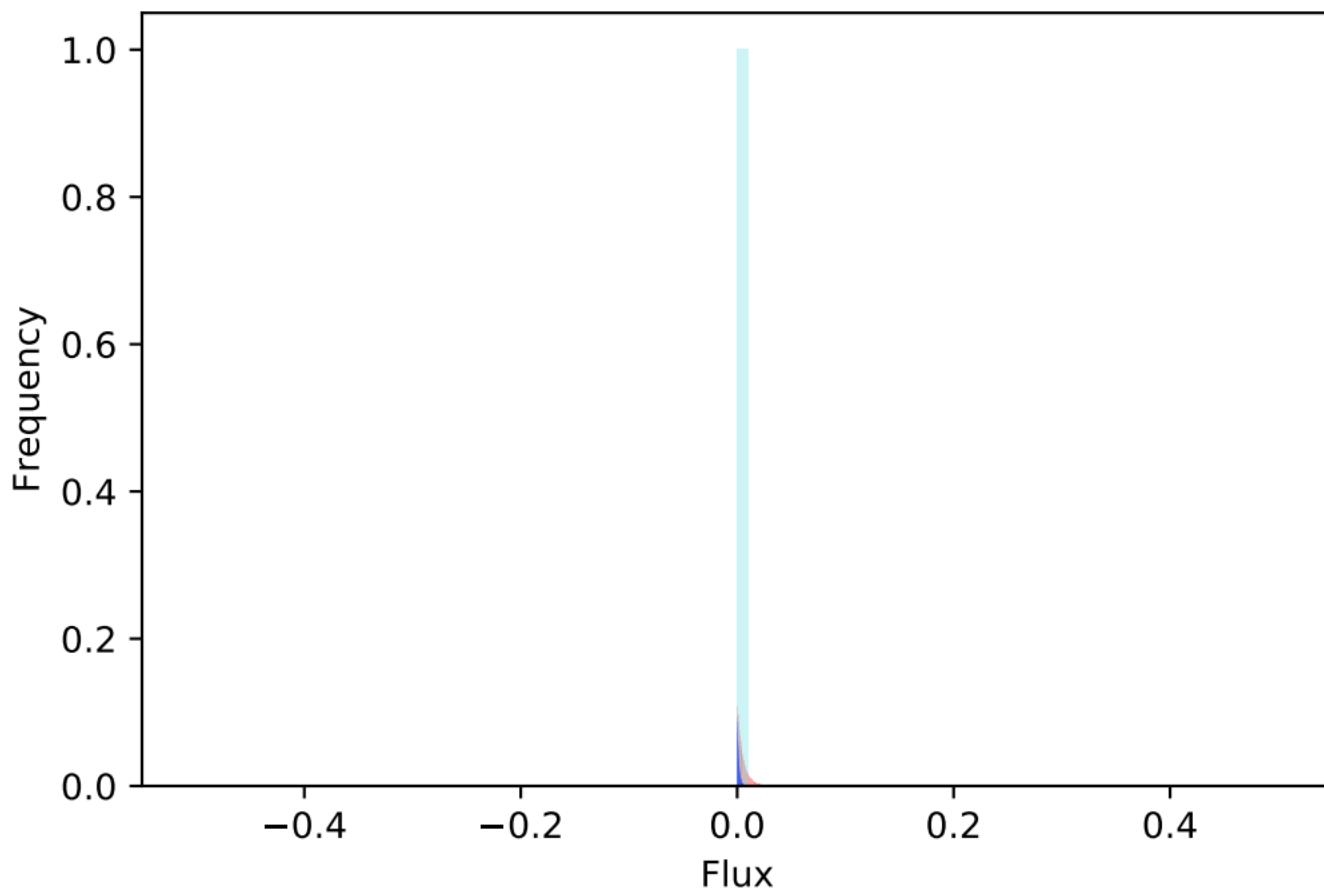




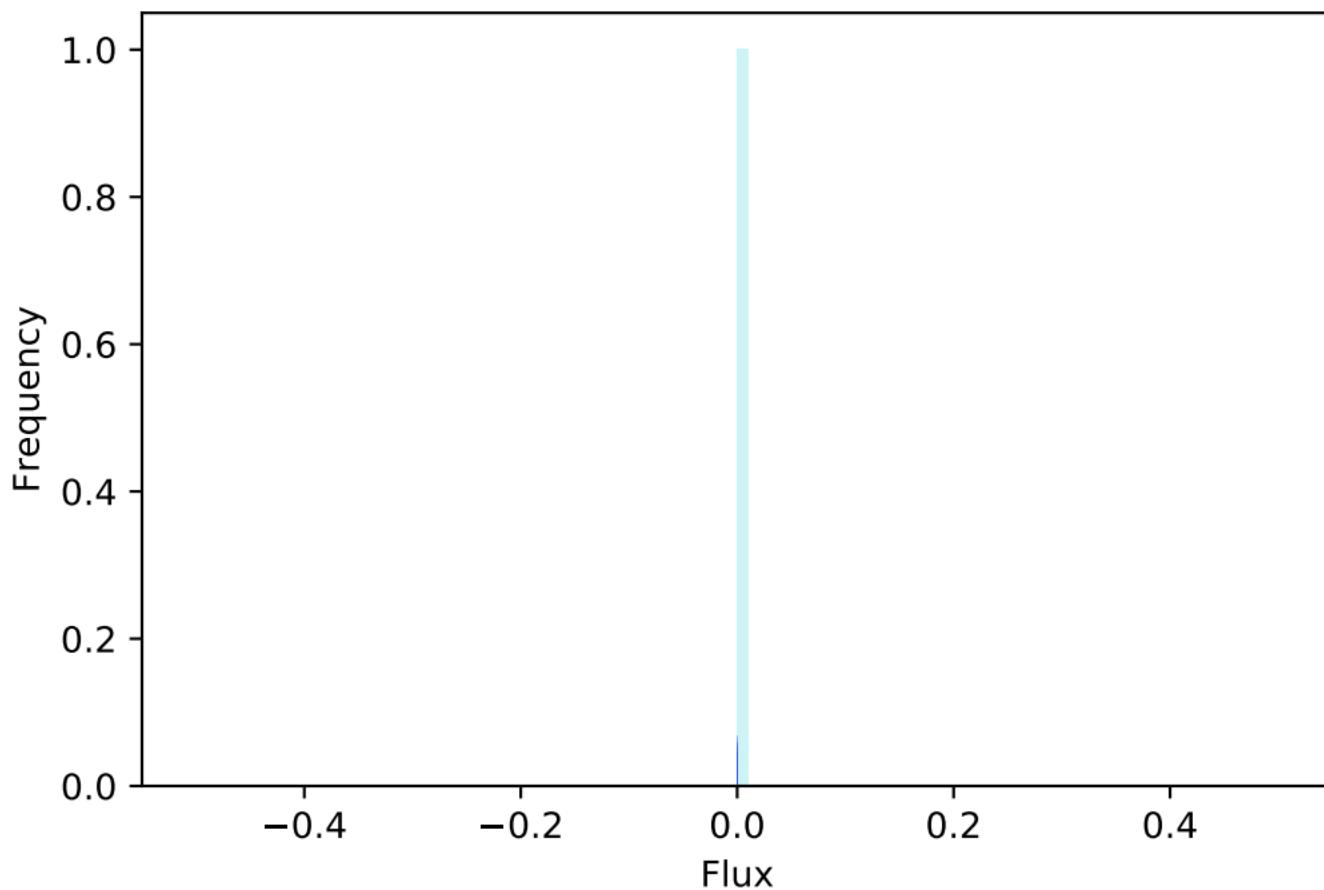


Arg_c + Asn_c + Asp_c + Cys_c + Gln_c + Glu_c + Gly_c + His_c + Ile_c + Leu_c + Lys_c + Met_c + Phe_c + Pro_c + Ser_c + Thr_c + Trp_c + T

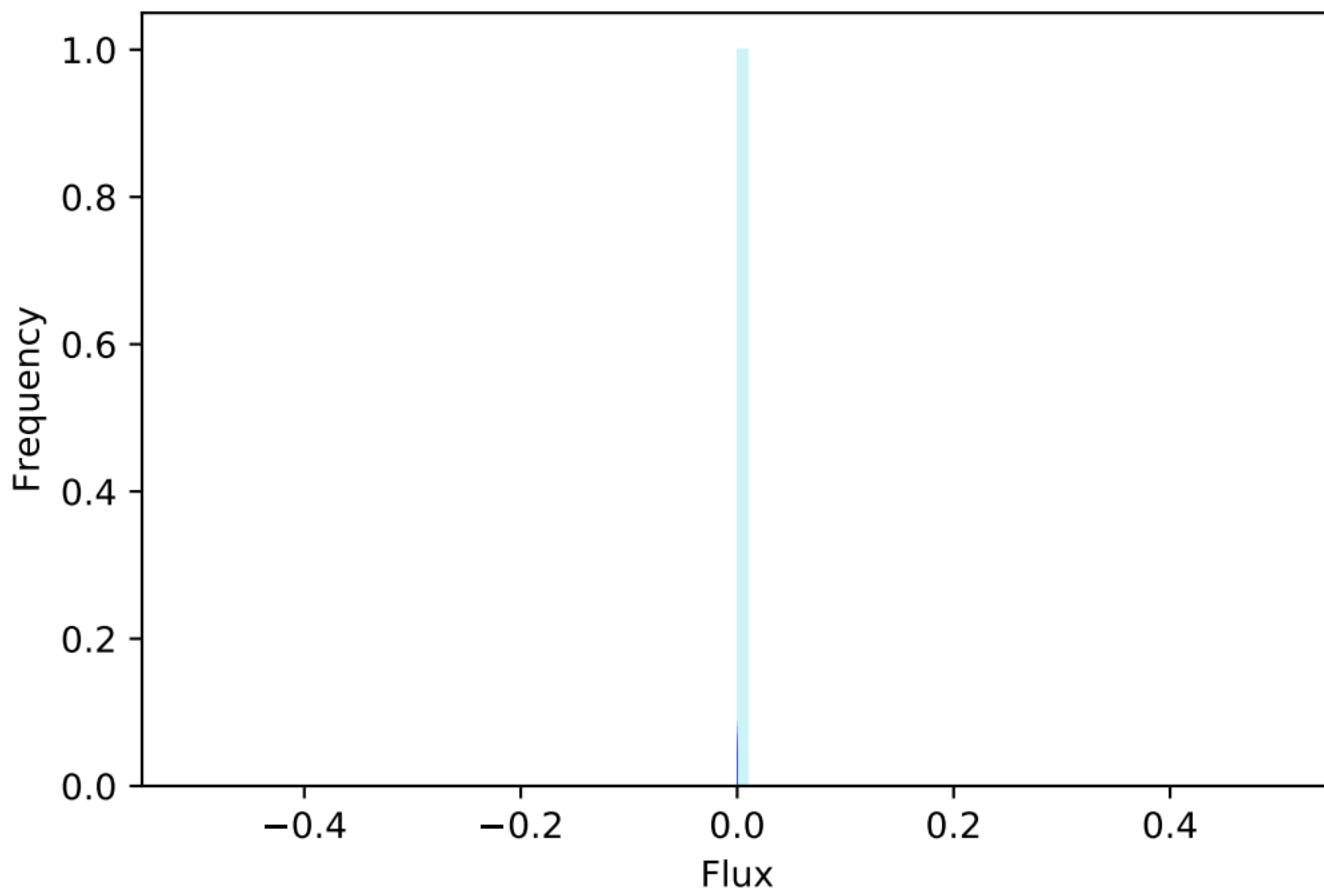
['-']



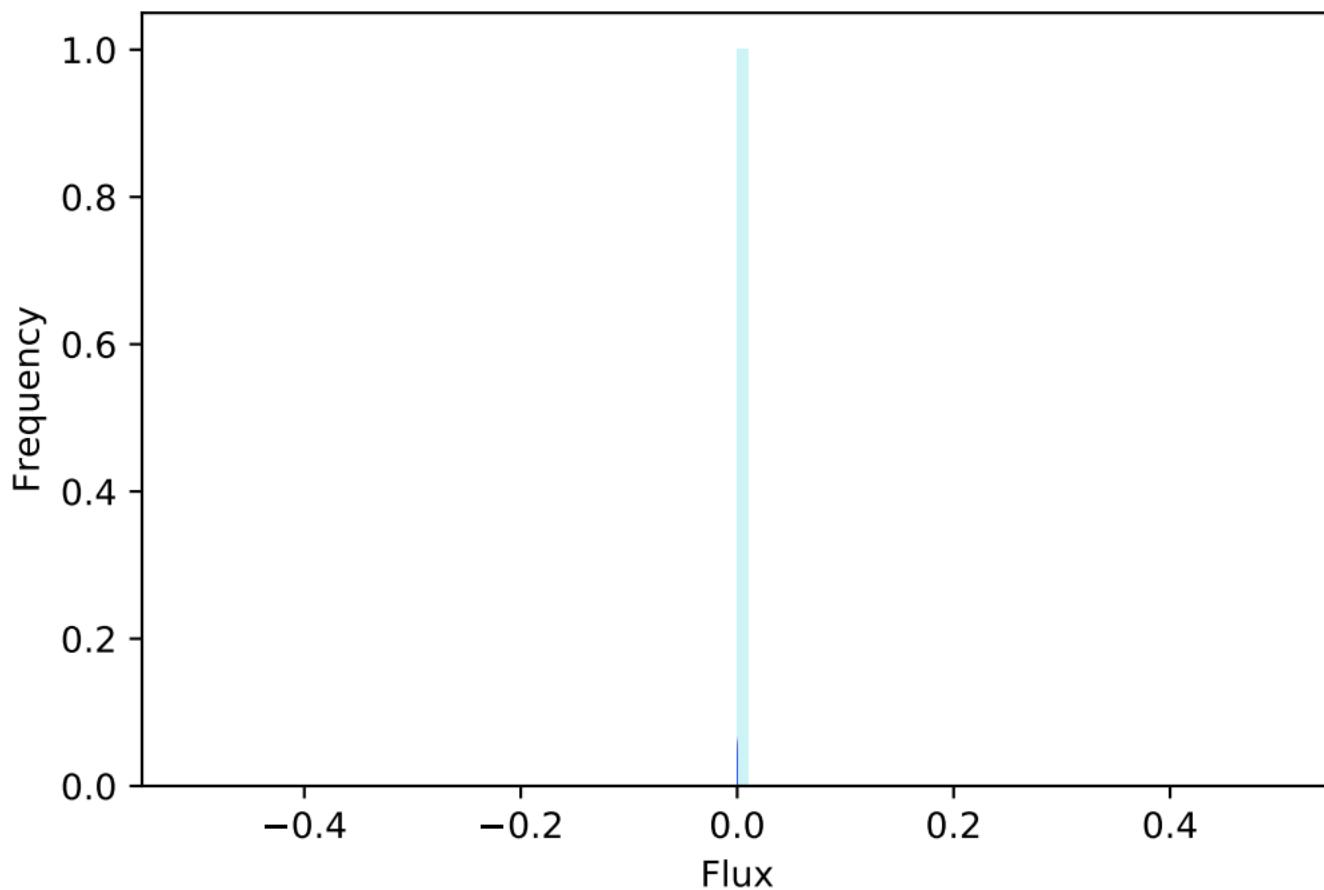
779.97036 M_DASH_ACP_h + 38.11199 Mal_m + 2.27742 Mas_c + 30.37981 Met_c + 14.60727 Orn_h + 59.65081 Phe_c + 96.88322 Pro_c + 0
['-']



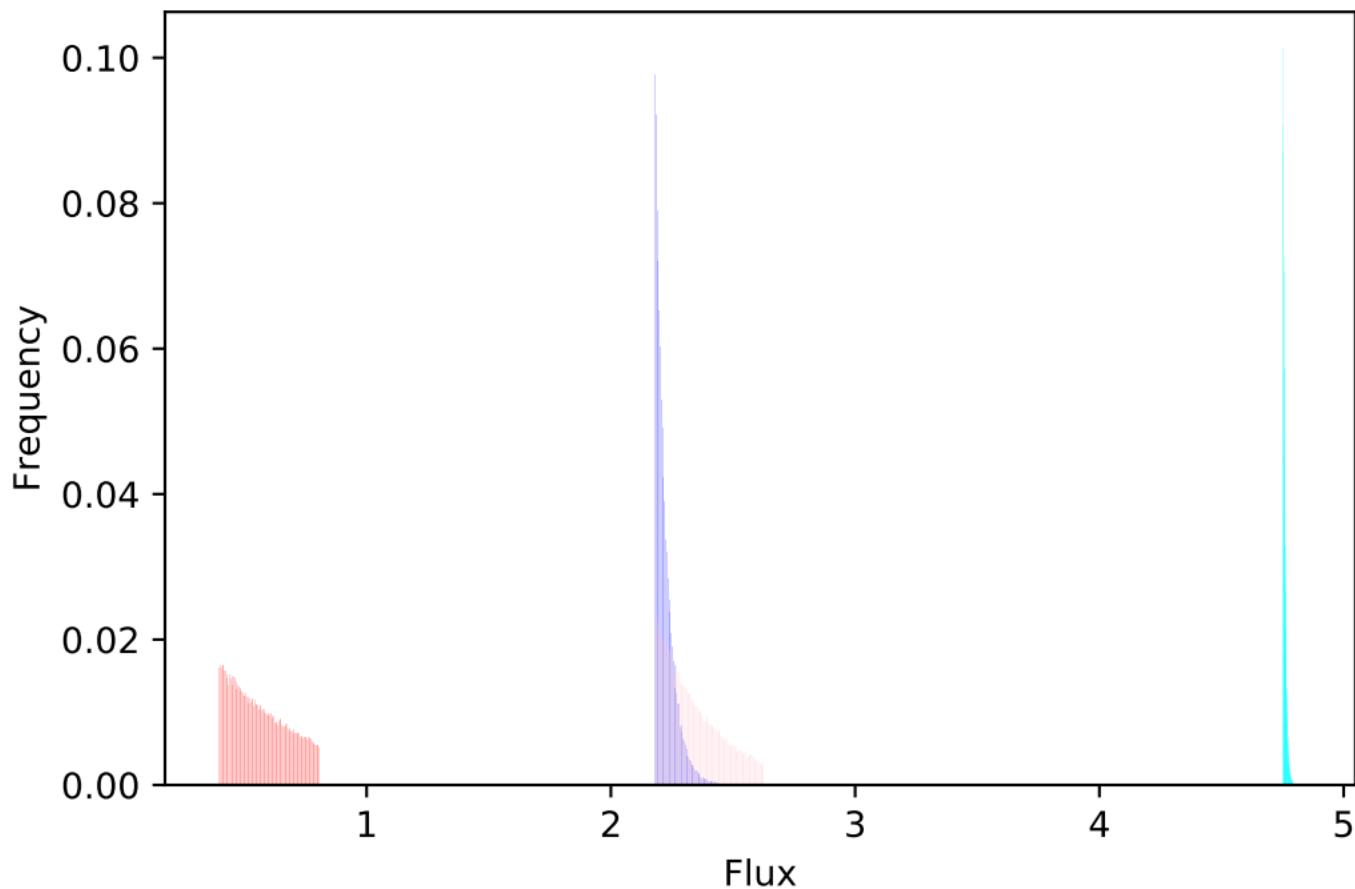
$_c + 826.95653 \text{ M_DASH_ACP_h} + 10.89856 \text{ Mal_m} + 5.37965 \text{ Mas_c} + 51.81818 \text{ Met_c} + 9.64682 \text{ Orn_h} + 101.65645 \text{ Phe_c} + 164.00331 \text{ Pro}$
['-']



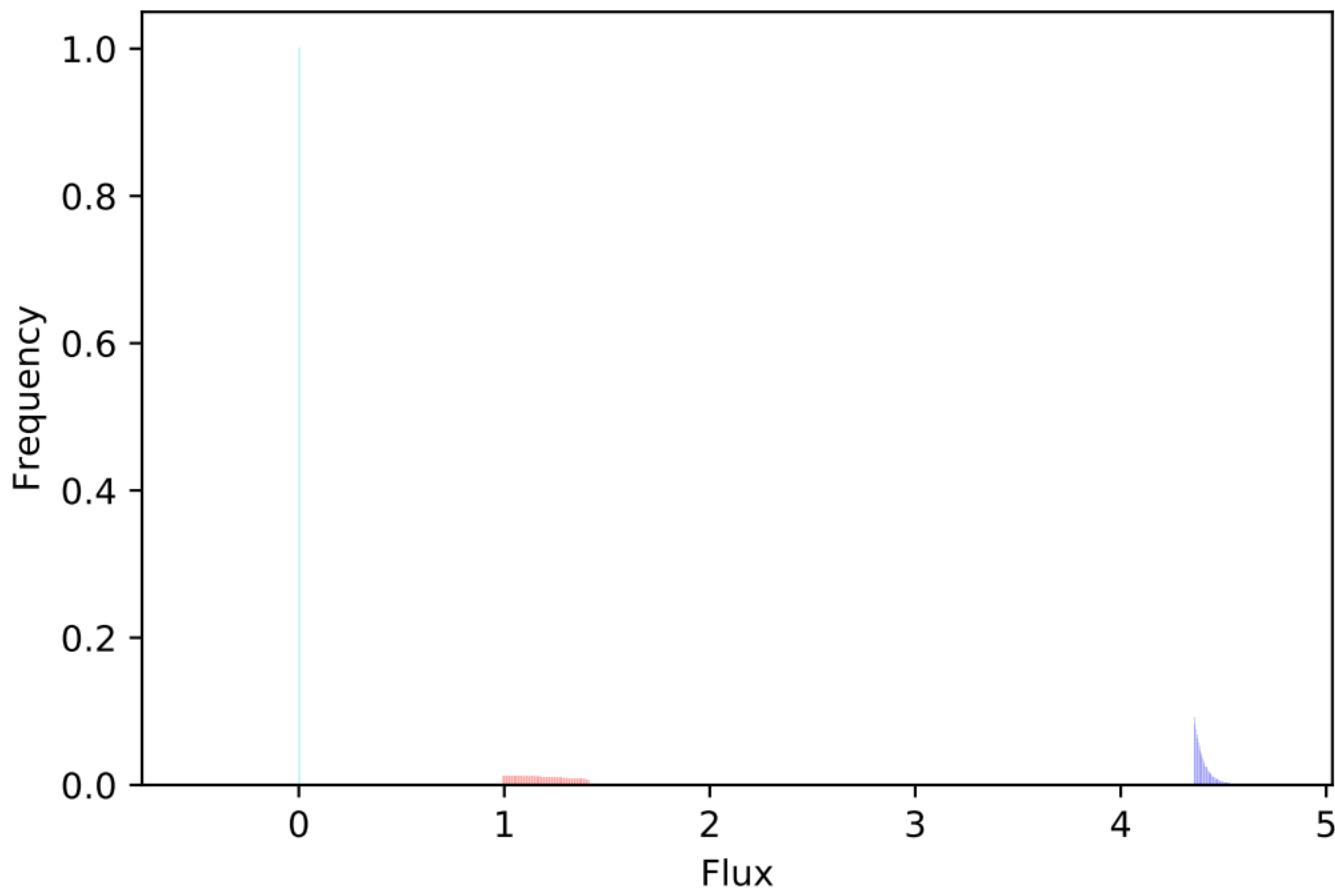
779.97036 M_DASH_ACP_h + 50.99641 Mal_m + 2.60958 Mas_c + 33.61497 Met_c + 1.58654 Orn_h + 66.66173 Phe_c + 108.03688 Pro_c + 0
['-']



549 : Mal_c -->
[]



550 : Fum_c -->
[]



551 : starch1_h -->
[]

