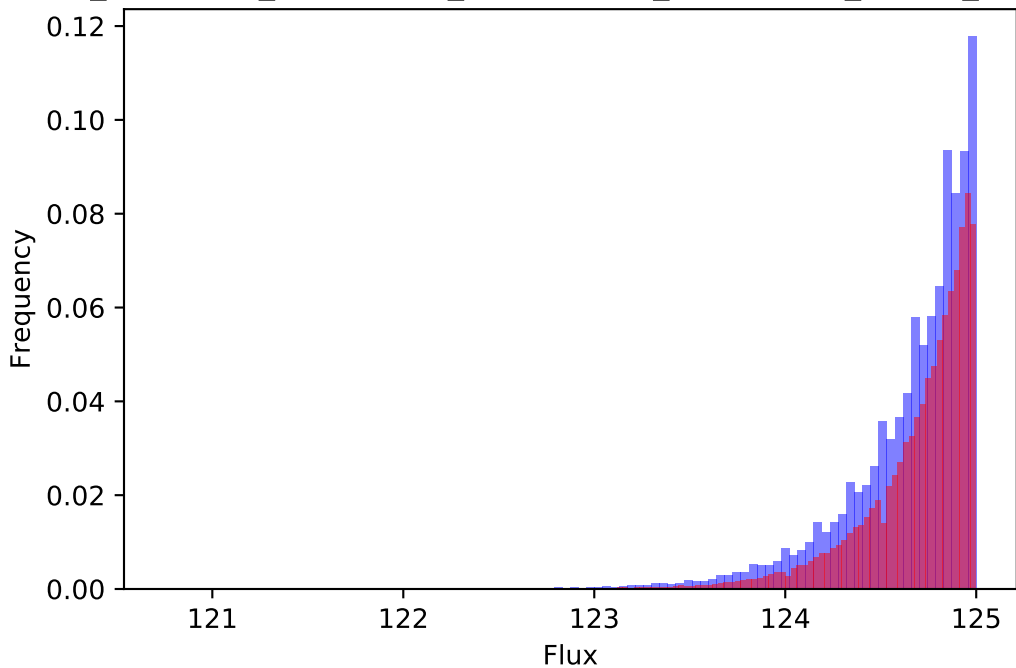
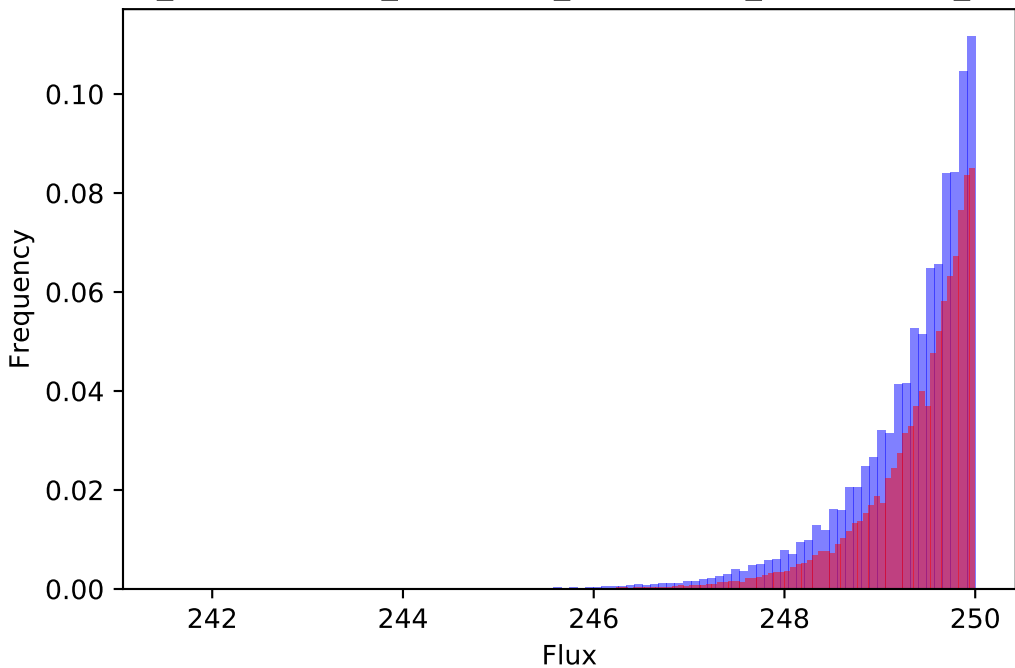


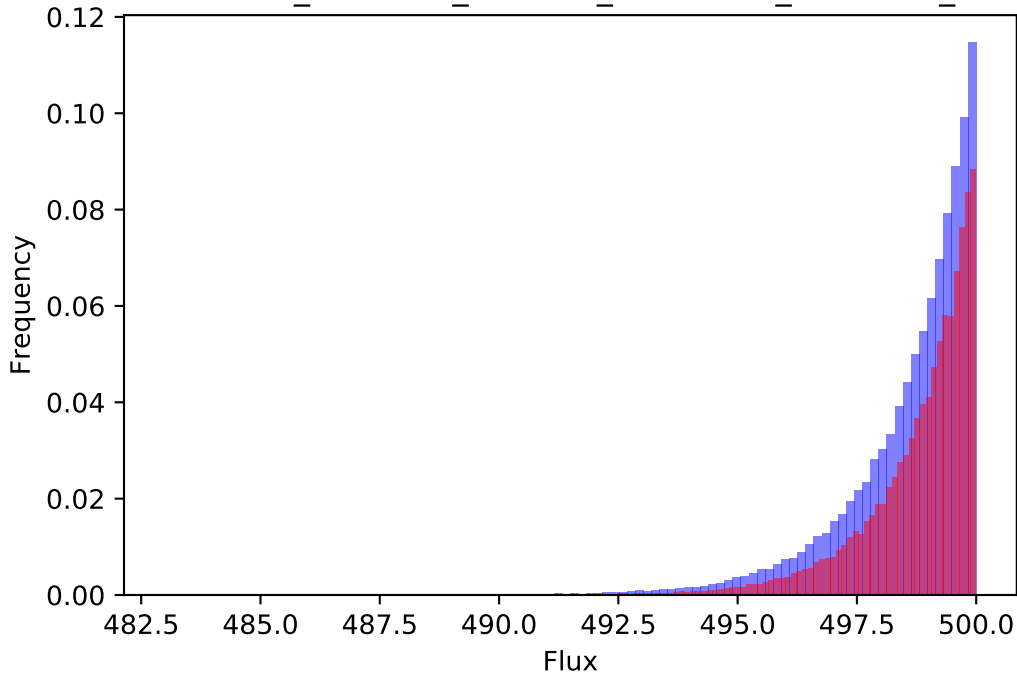
.0 H2O_h + 4.0 H_h + 2.0 PQ_h + 4.0 hnu_h --> 4.0 H_l + O2_h + 2.0 PO_h



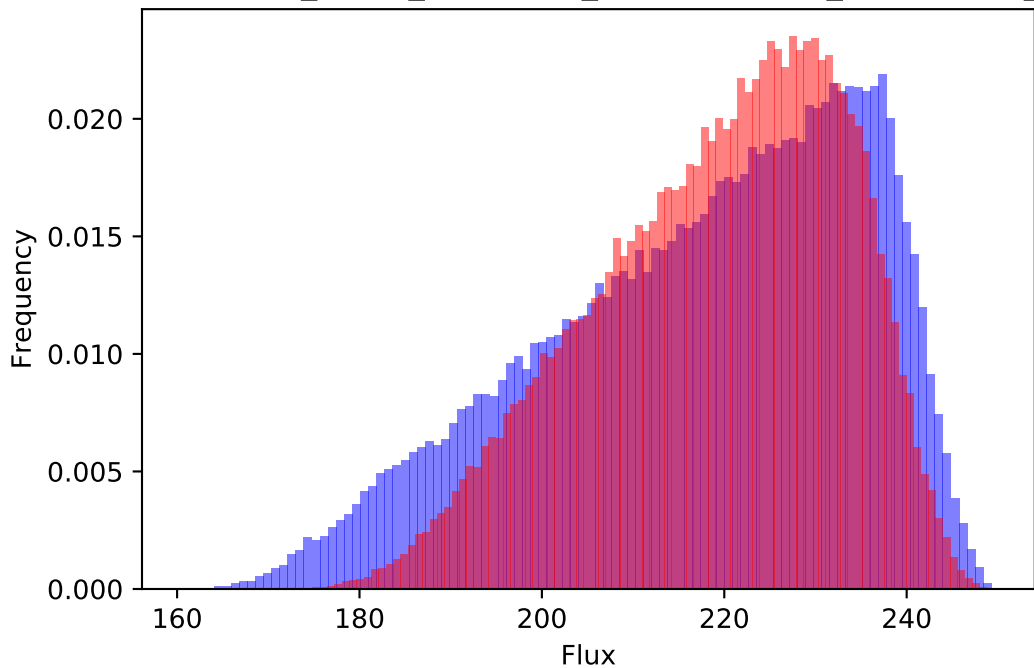
1 : 2.0 H_h + 2.0 PCox_h + PQH2_h --> 4.0 H_l + 2.0 PCrd_h + PQ_h



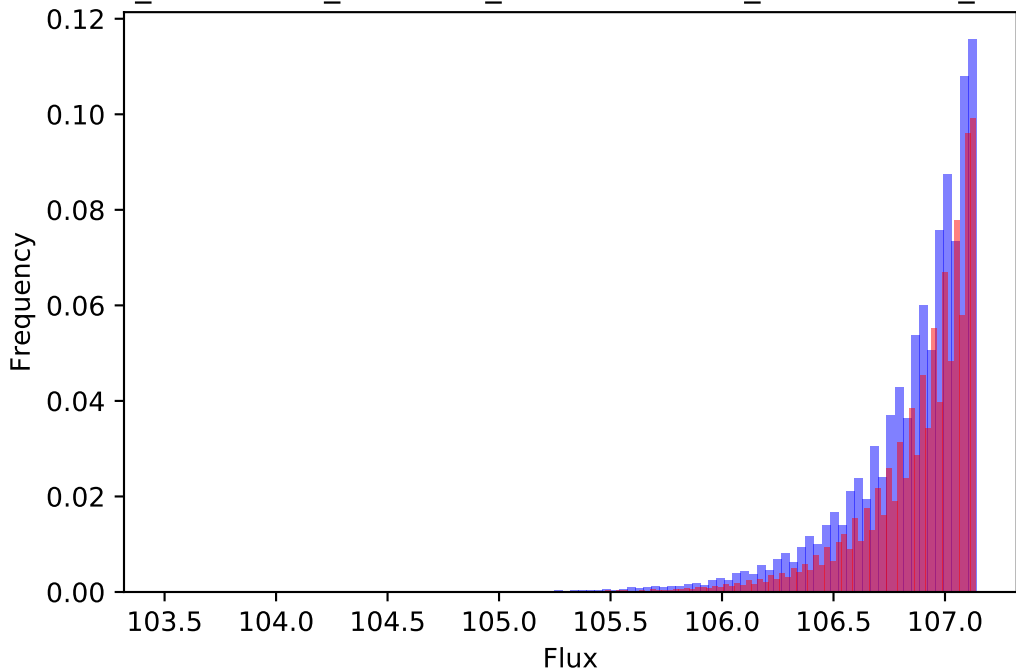
2 : Fdox_h + PCrd_h + hnu_h --> Fdrd_h + PCox_h



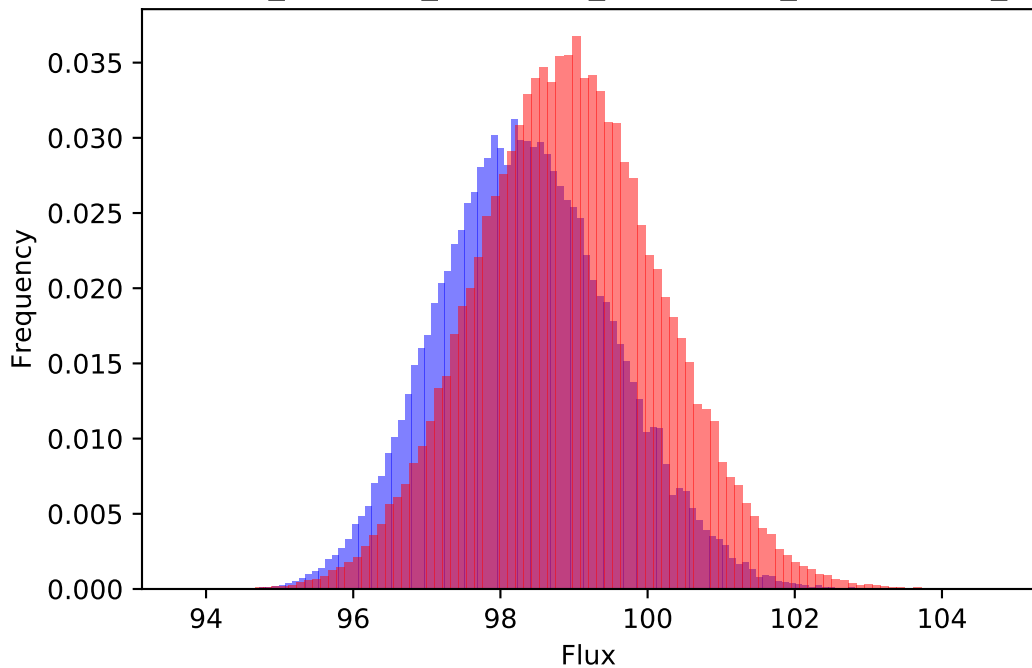
3 : 2.0 Fdrd_h + H_h + NADP_h --> 2.0 Fdox_h + NADPH_h



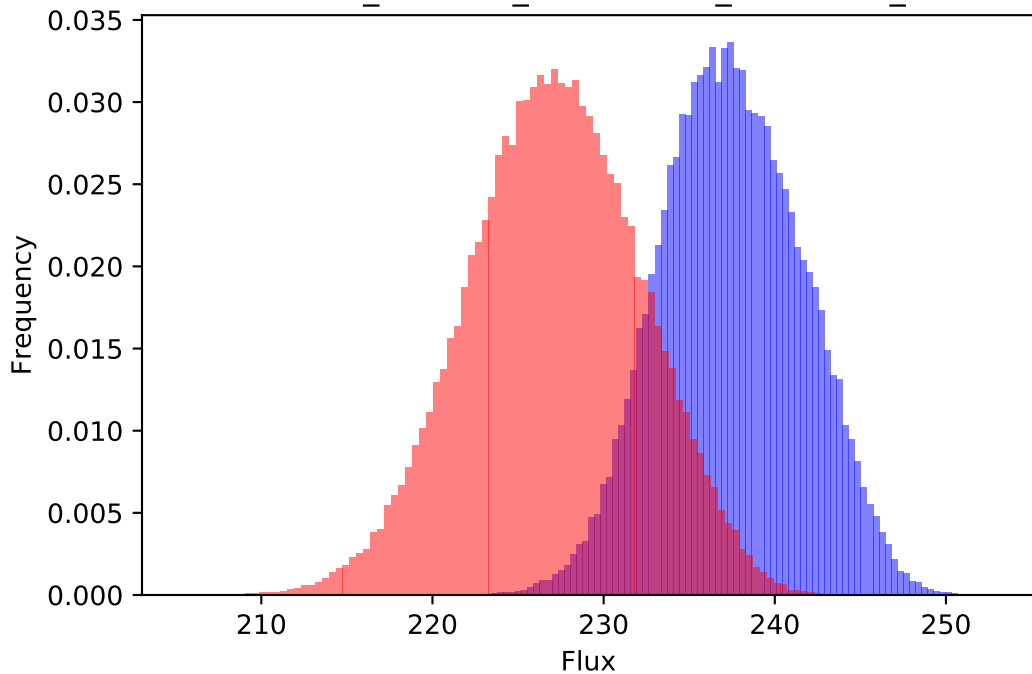
: 3.0 ADP_h + 14.0 H_l + 3.0 Pi_h <=> 3.0 ATP_h + 3.0 H2O_h + 11.0 H



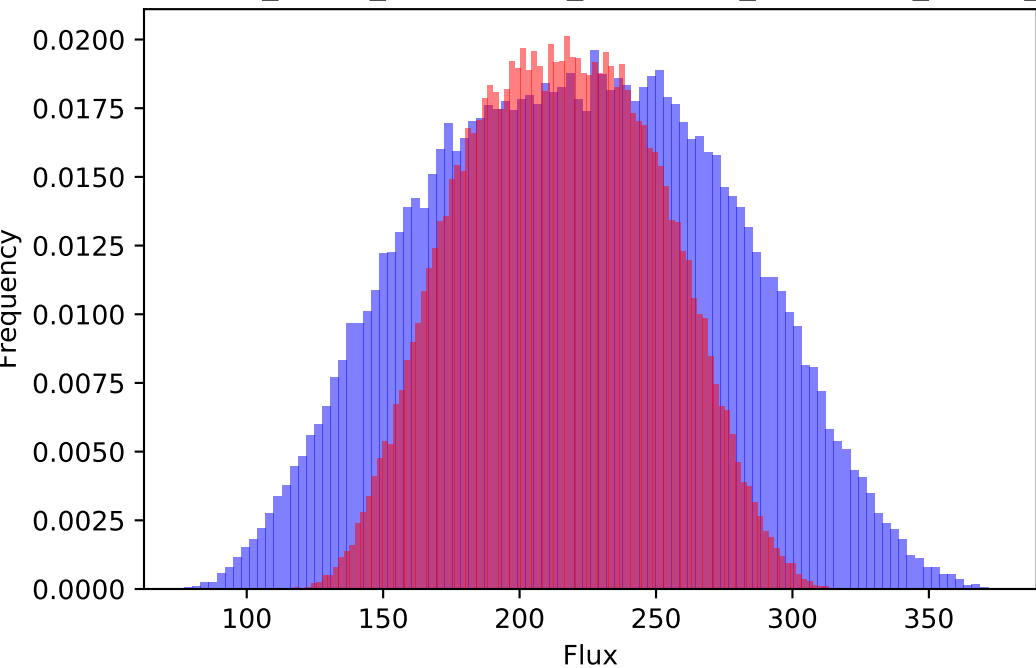
5 : CO2_h + H2O_h + RuBP_h --> 2.0 H_h + 2.0 PGA_h



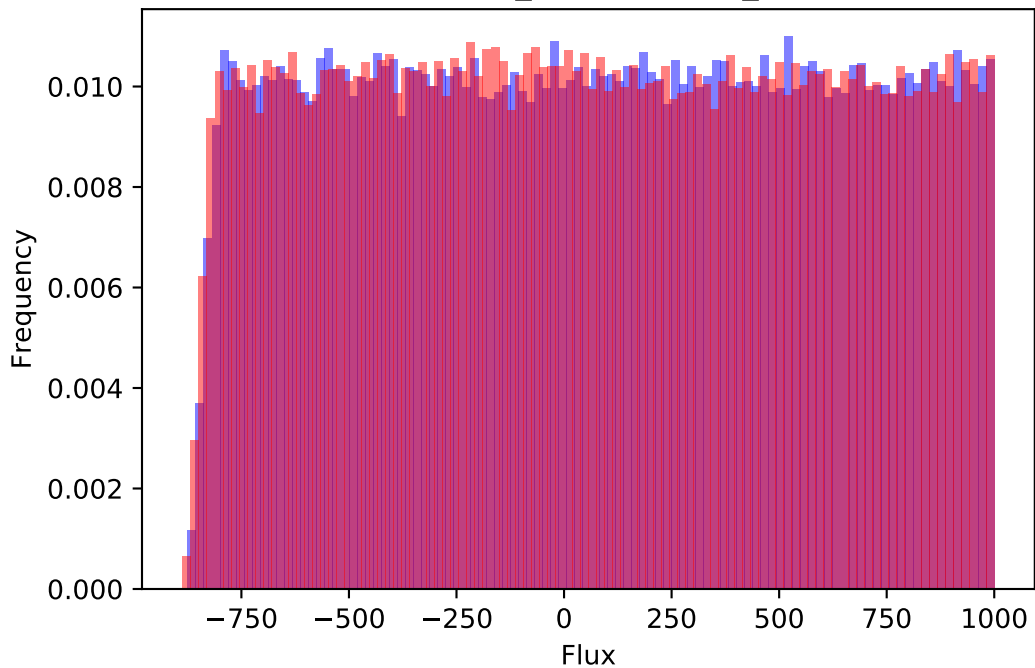
6 : $\text{ATP}_h + \text{PGA}_h \rightleftharpoons \text{ADP}_h + \text{DPGA}_h$



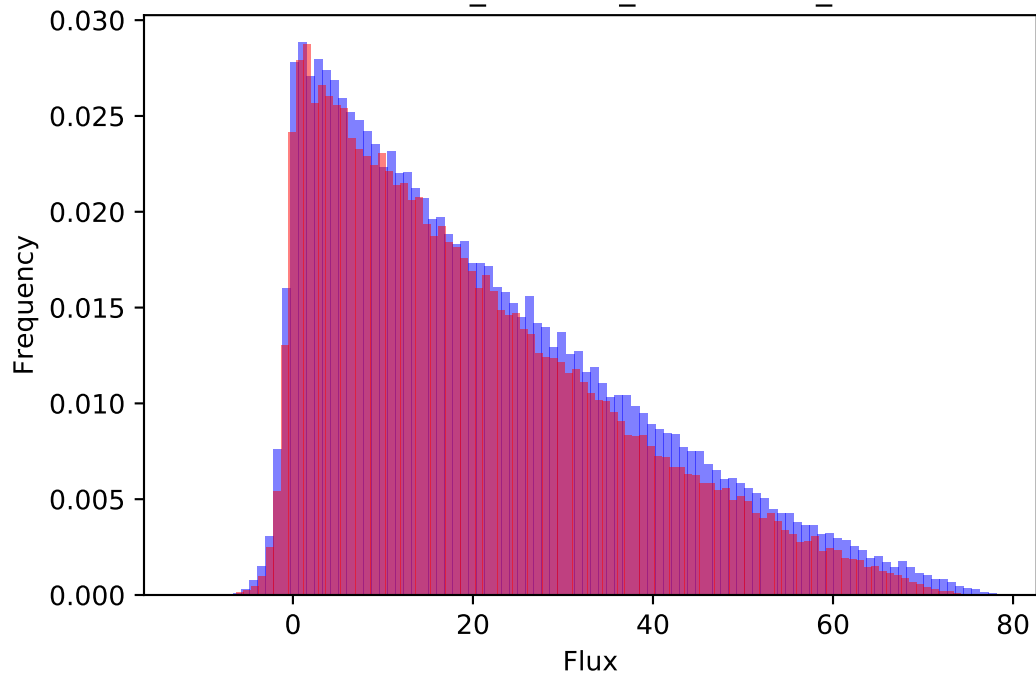
7 : DPGA_h + H_h + NADPH_h --> GAP_h + NADP_h + Pi_h



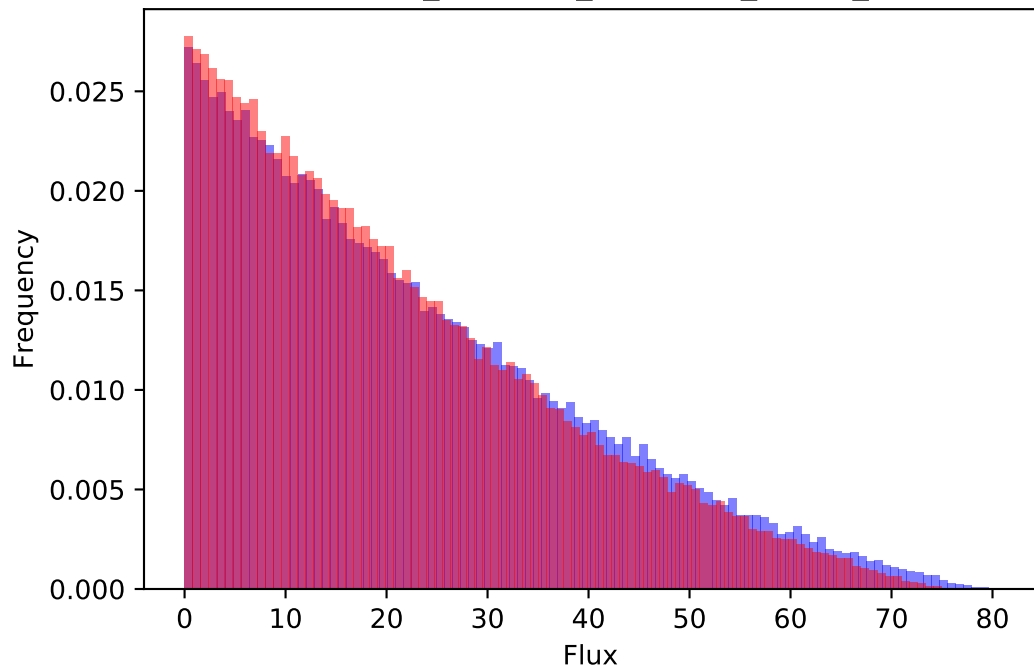
8 : GAP_h \Leftrightarrow DHAP_h



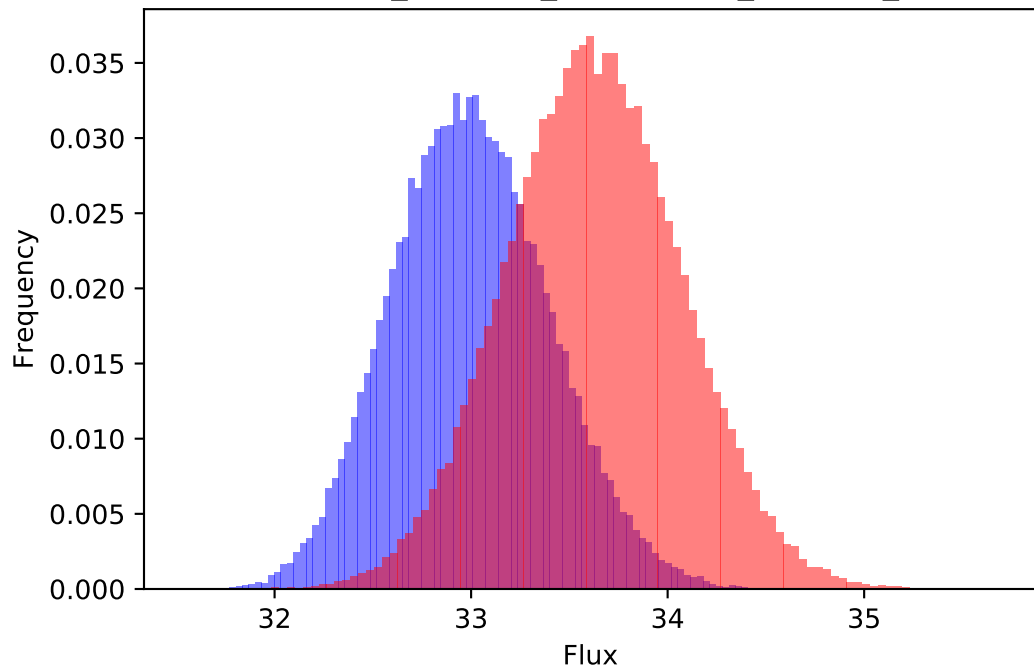
9 : DHAP_h + GAP_h \rightleftharpoons FBP_h



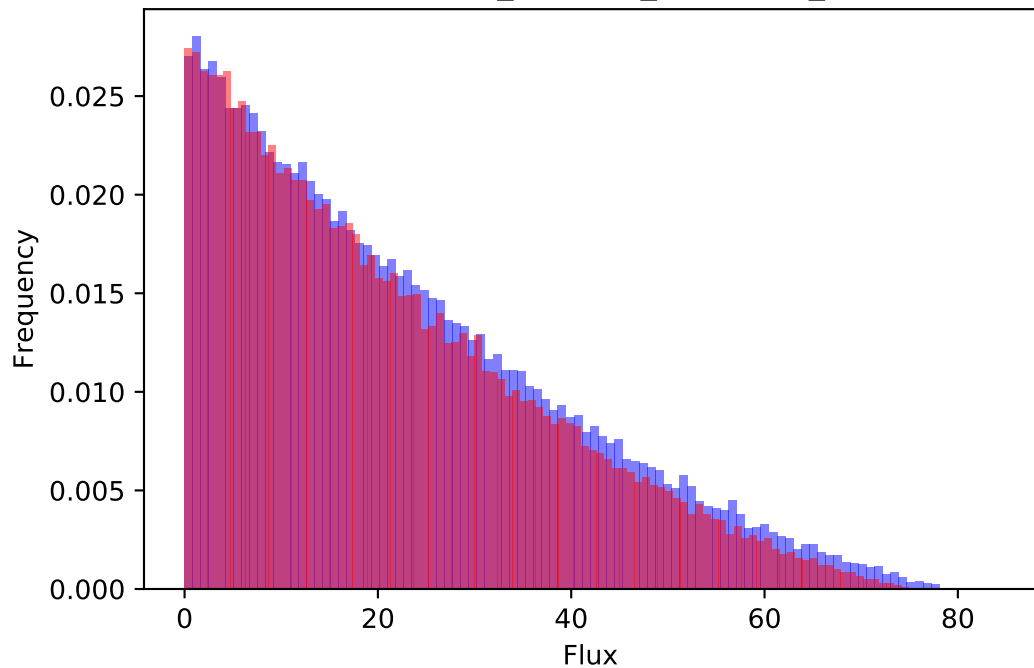
10 : FBP_h + H2O_h --> F6P_h + Pi_h



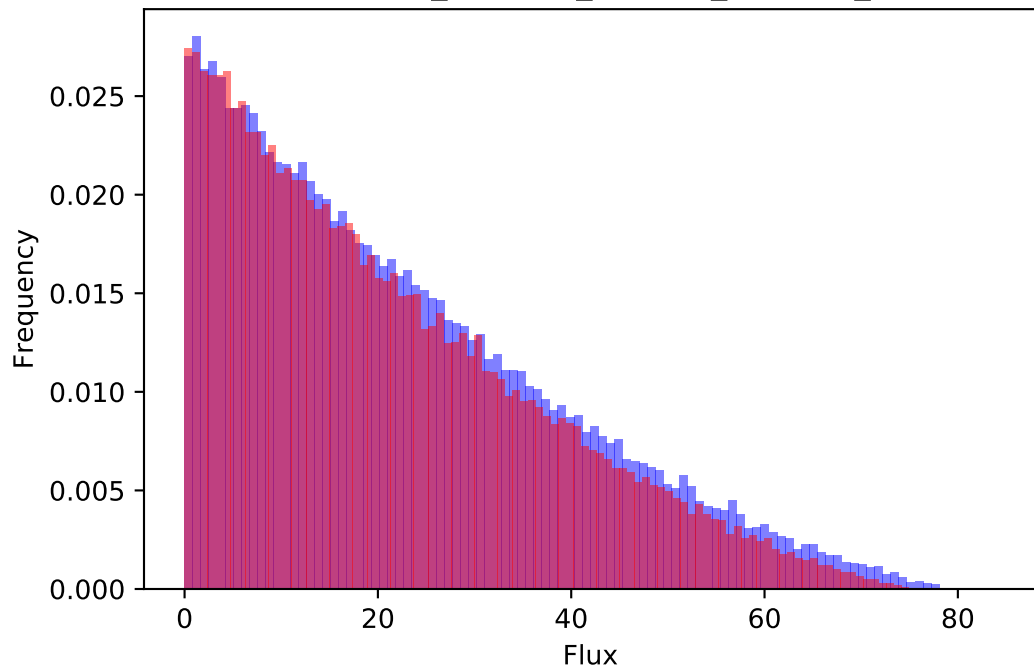
11 : F6P_h + GAP_h \rightleftharpoons E4P_h + X5P_h



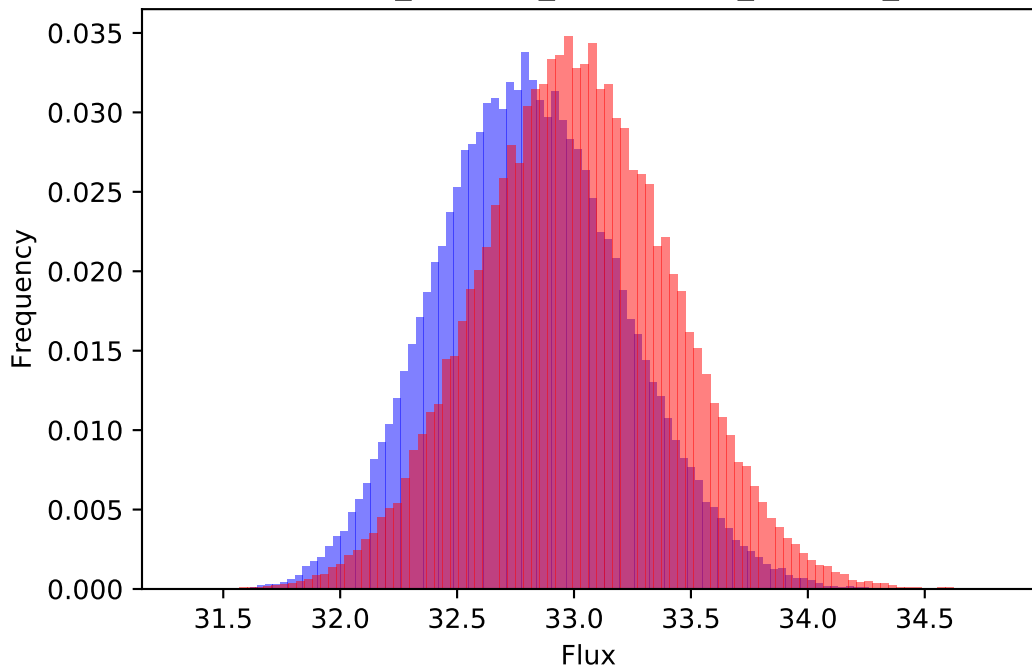
12 : DHAP_h + E4P_h --> SBP_h



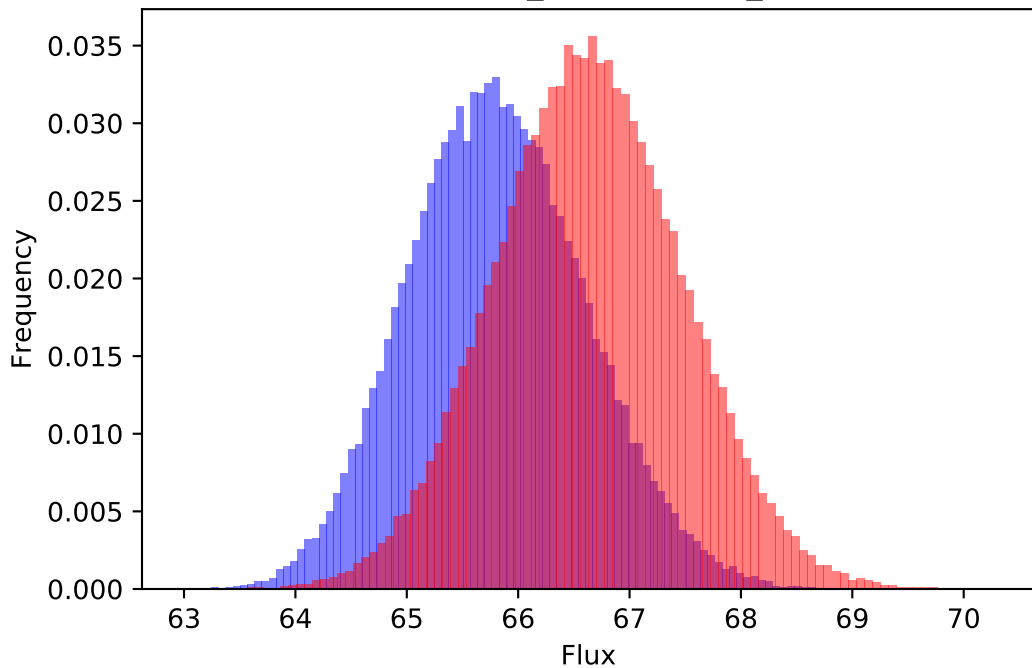
13 : H2O_h + SBP_h --> Pi_h + S7P_h



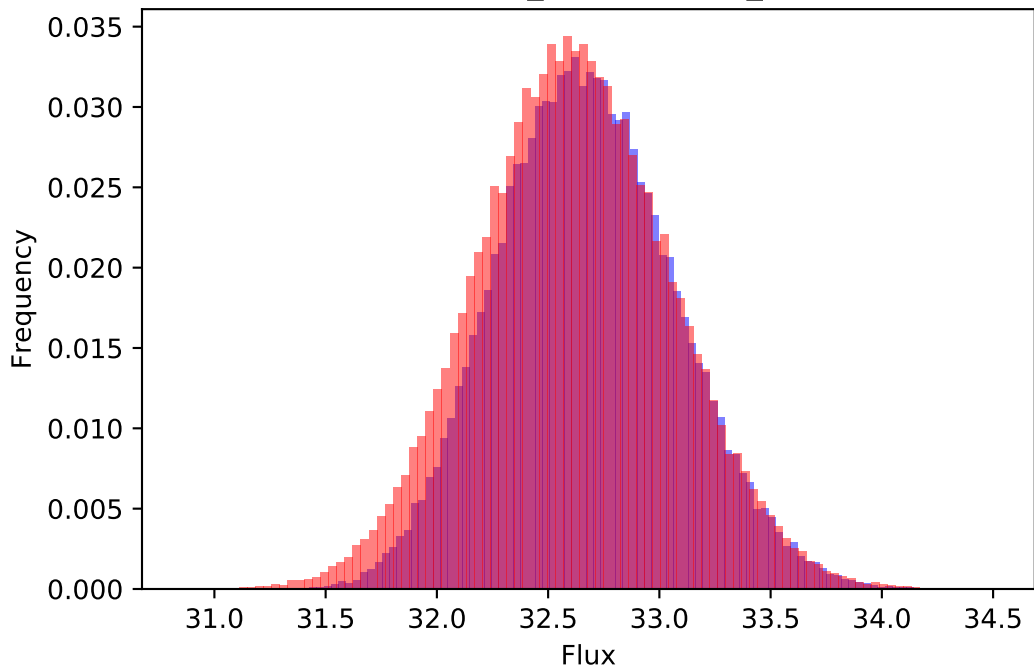
14 : GAP_h + S7P_h <=> R5P_h + X5P_h



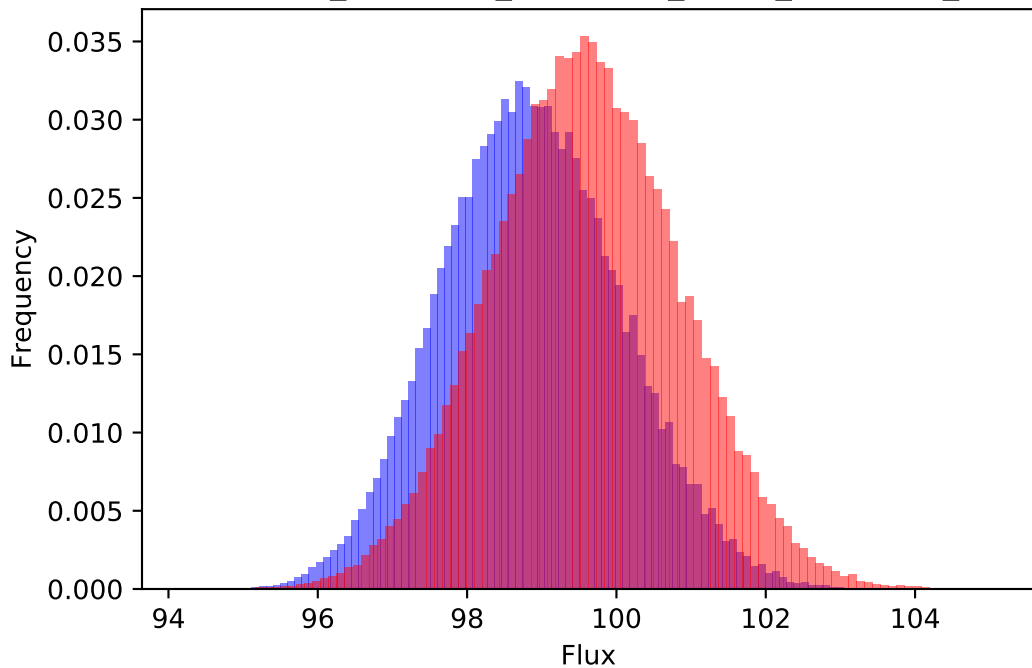
15 : X5P_h \rightleftharpoons Ru5P_h



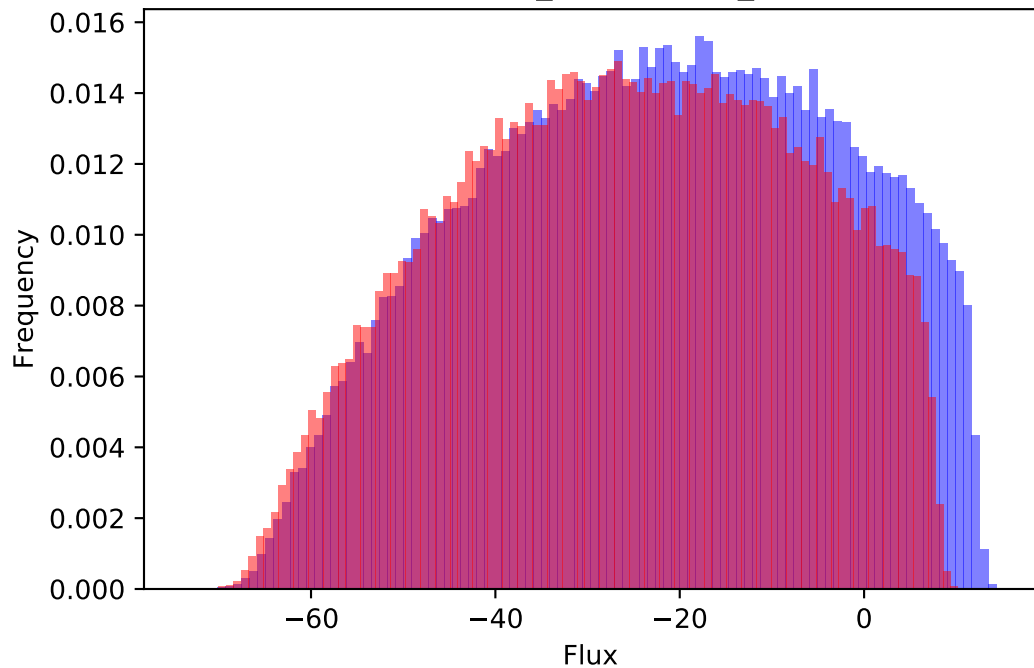
16 : R5P_h <=> Ru5P_h



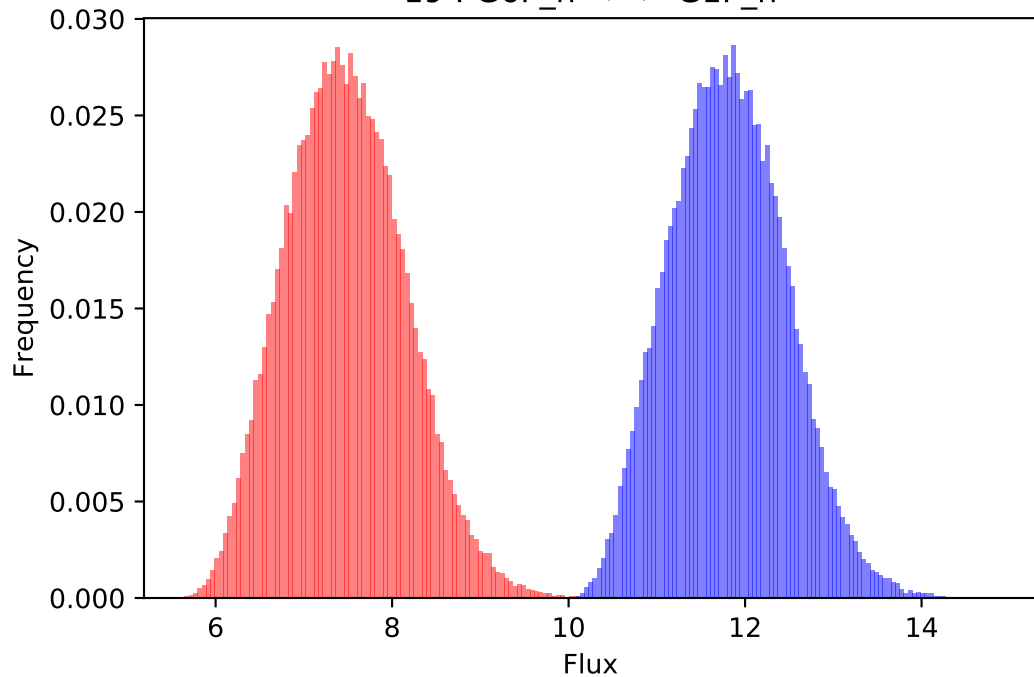
17 : ATP_h + Ru5P_h --> ADP_h + H_h + RuBP_h



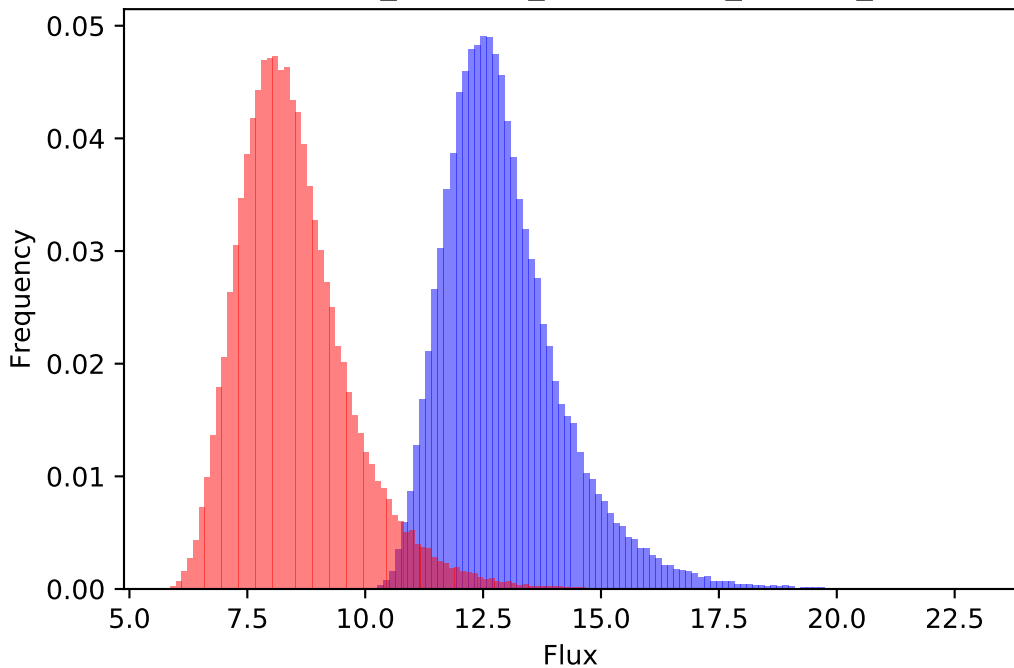
18 : F6P_h \rightleftharpoons G6P_h



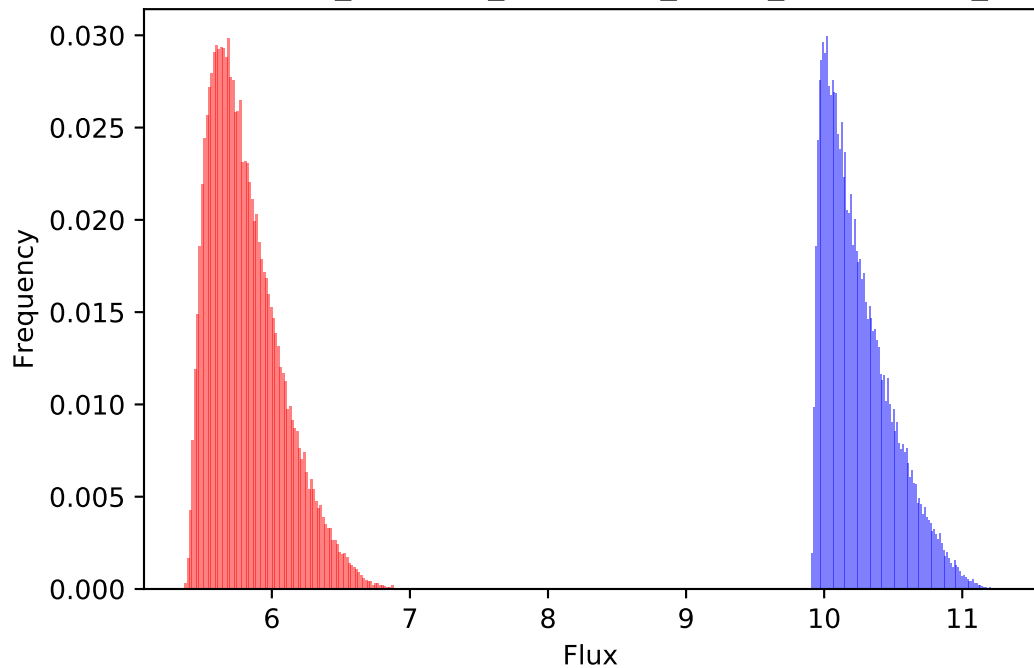
19 : G6P_h \rightleftharpoons G1P_h



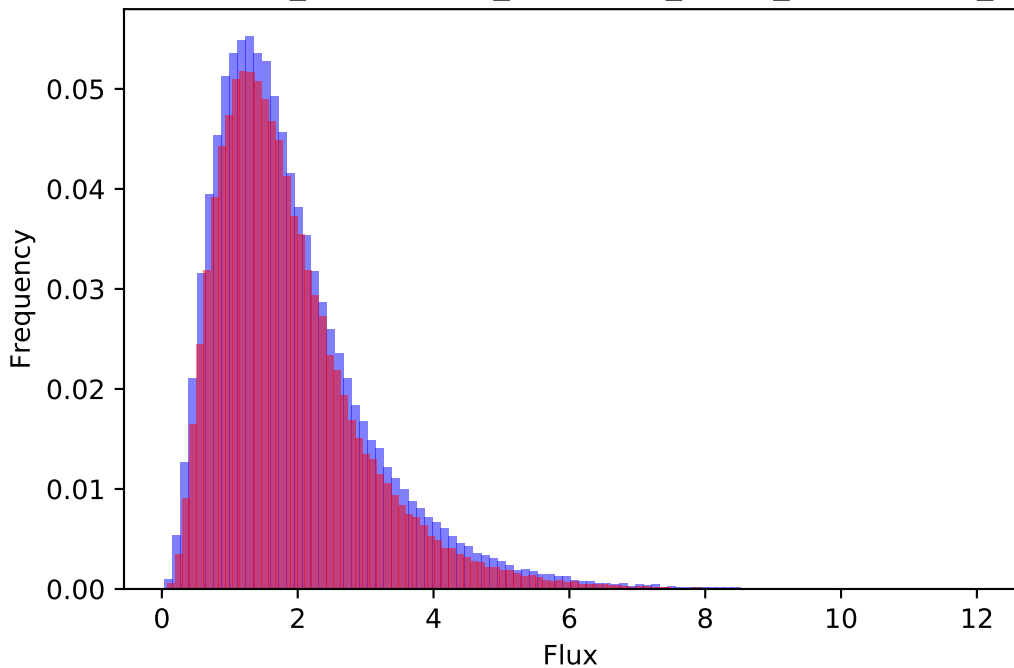
20 : ATP_h + G1P_h --> ADPG_h + PPI_h



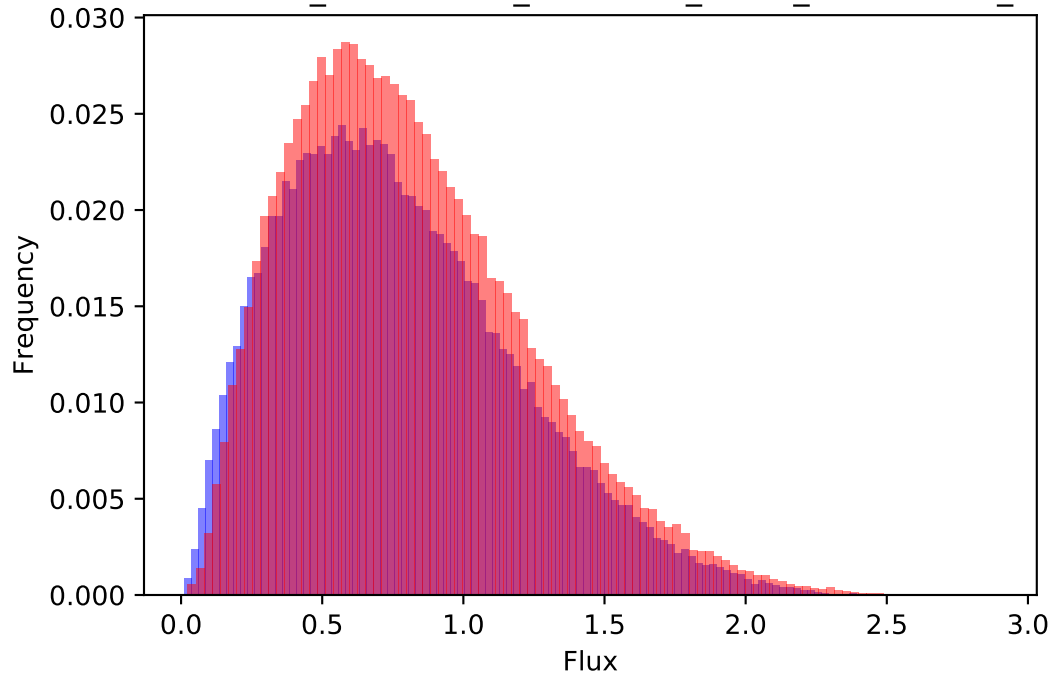
21 : ADPG_h + H2O_h --> ADP_h + H_h + starch1_h



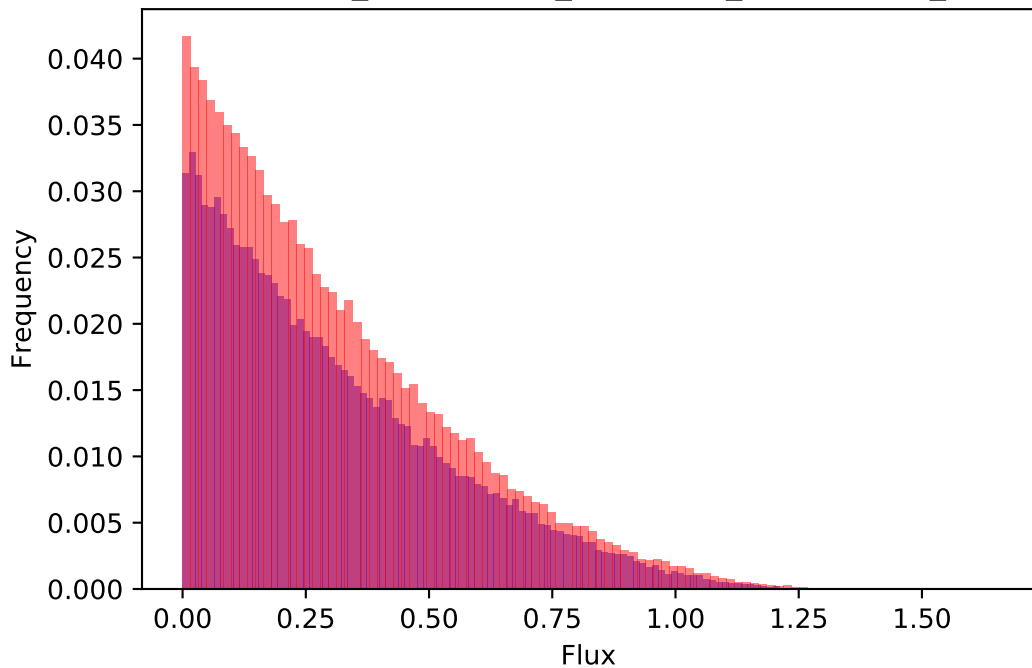
22 : ADPG_h + starch1_h --> ADP_h + H_h + starch2_h



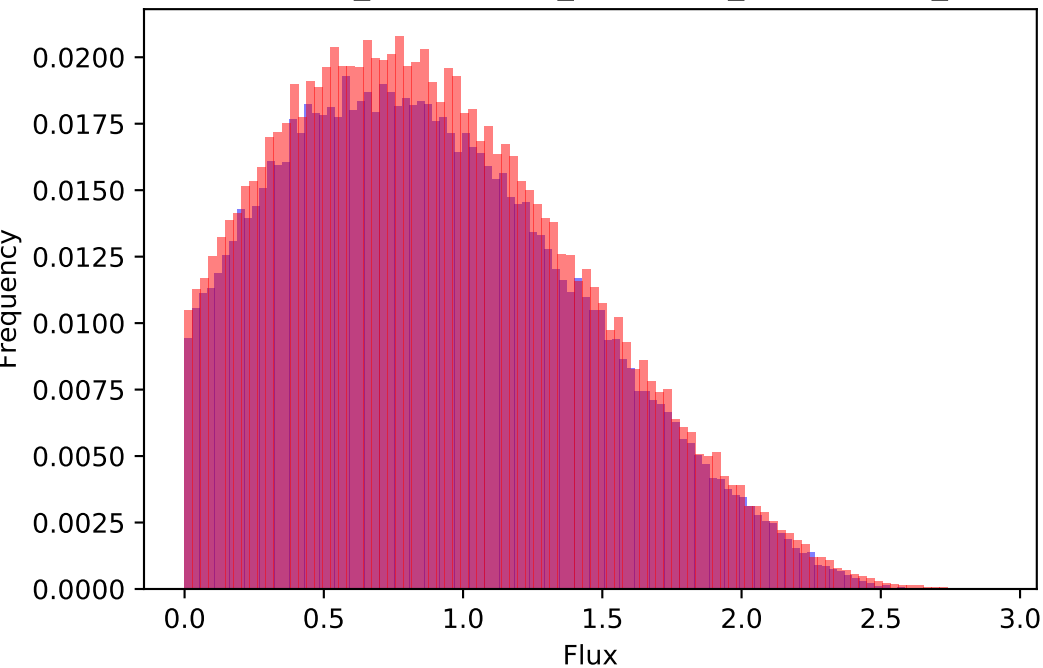
23 : ADPG_h + starch2_h --> ADP_h + H_h + starch3_h



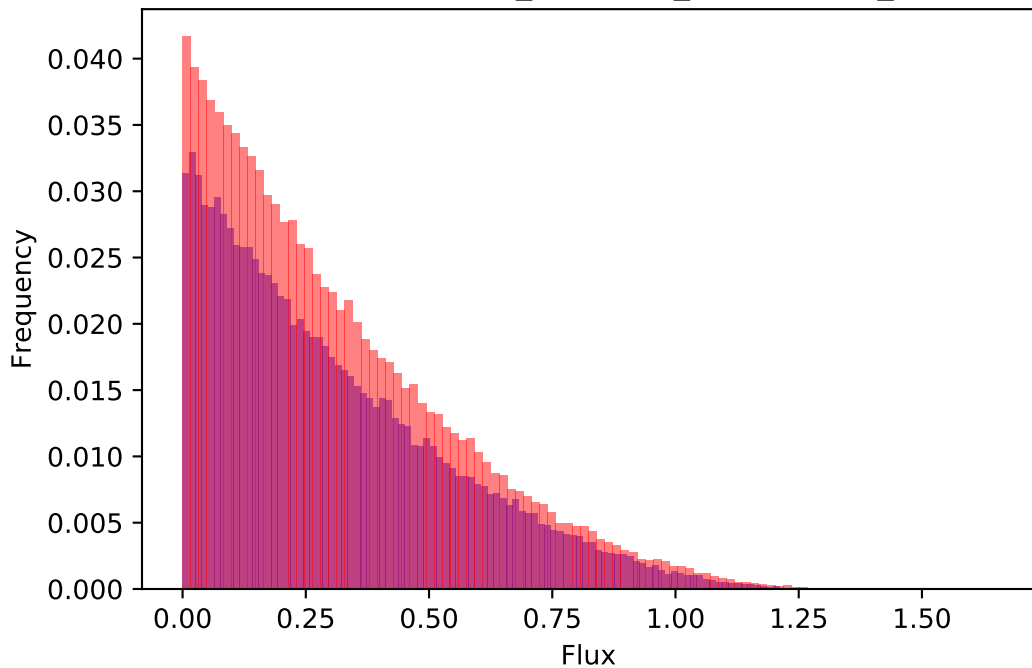
24 : H2O_h + starch5_h --> Mas_h + starch3_h



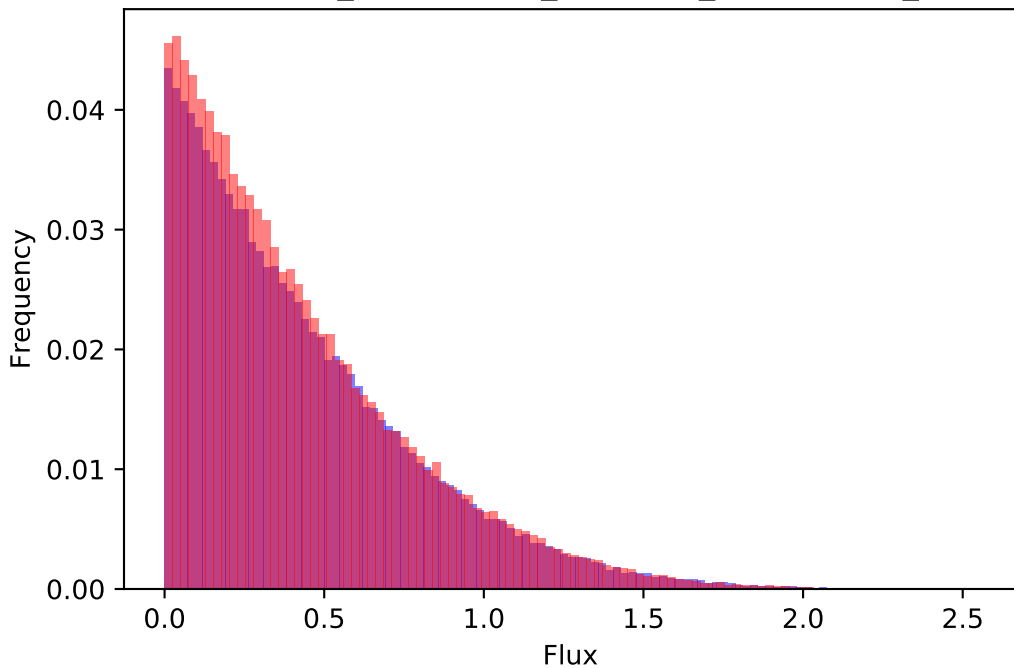
25 : H2O_h + starch3_h --> Mas_h + starch1_h



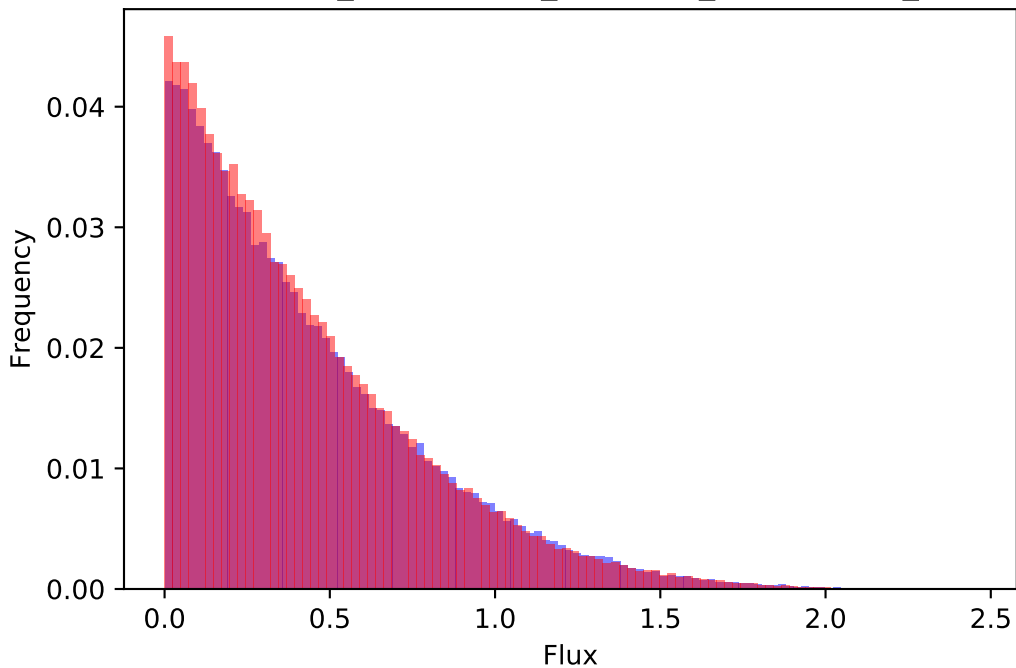
26 : 2.0 starch3_h --> Glc_h + starch5_h



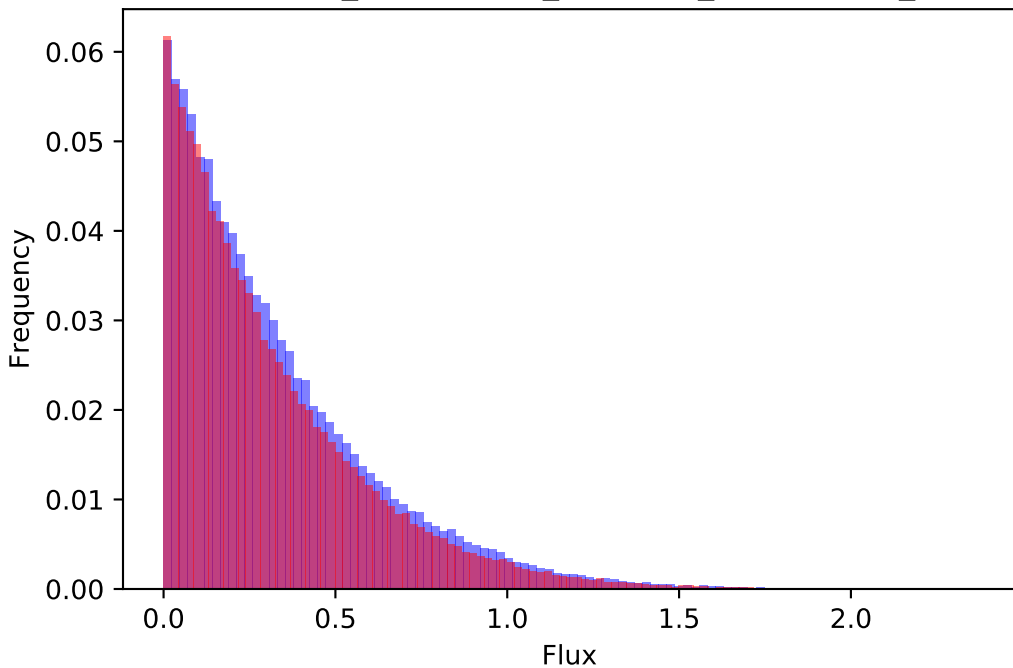
27 : Mas_h + starch1_h --> Glc_h + starch2_h



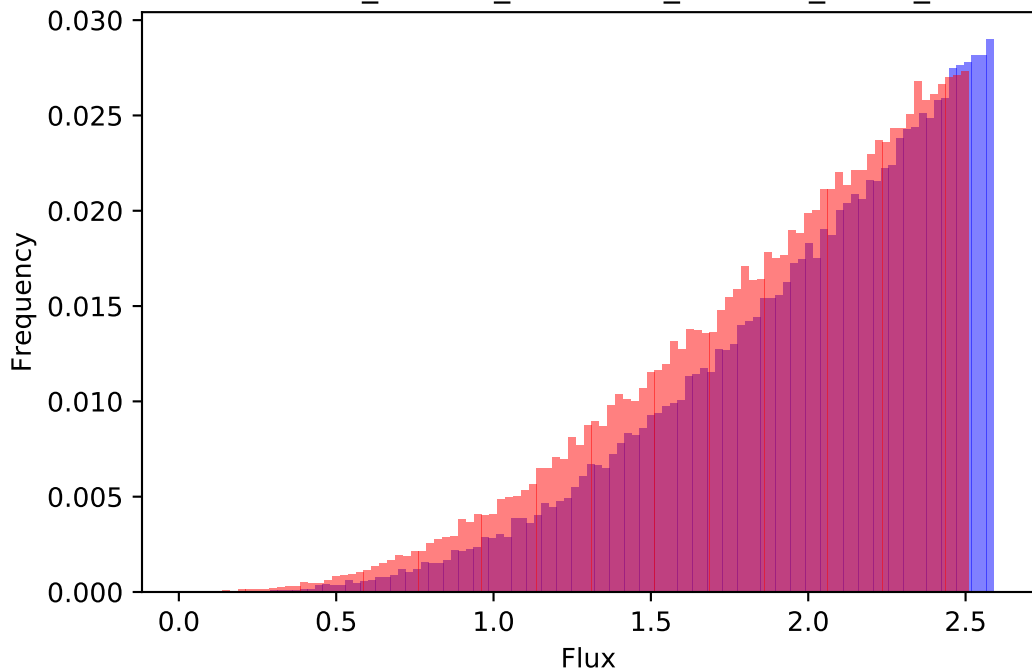
28 : Mas_h + starch2_h --> Glc_h + starch3_h



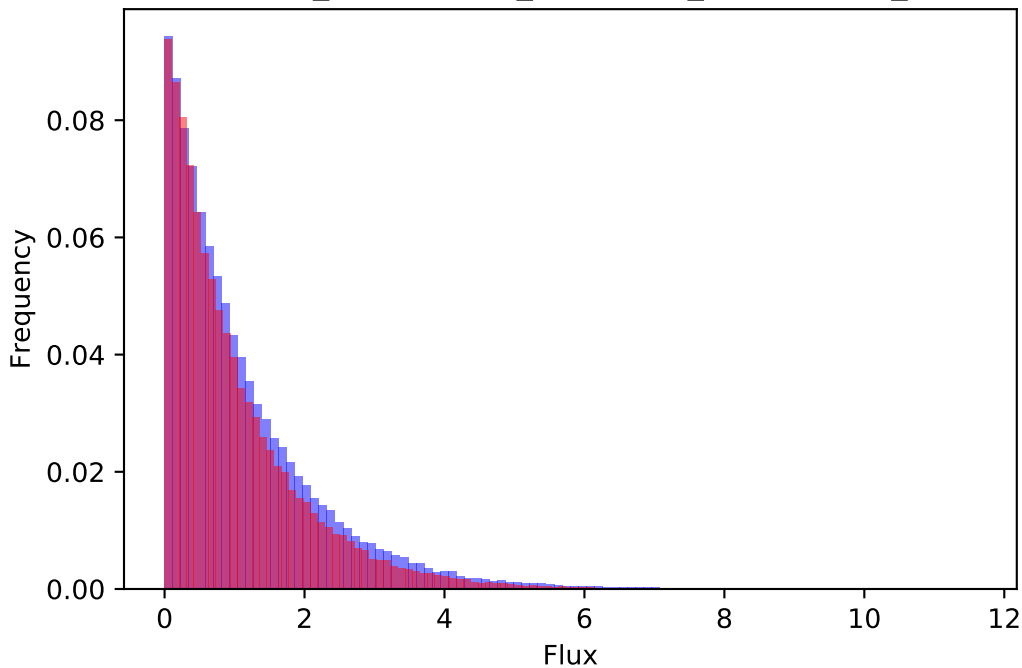
29 : Mas_c + starch1_c --> Glc_c + starch2_c



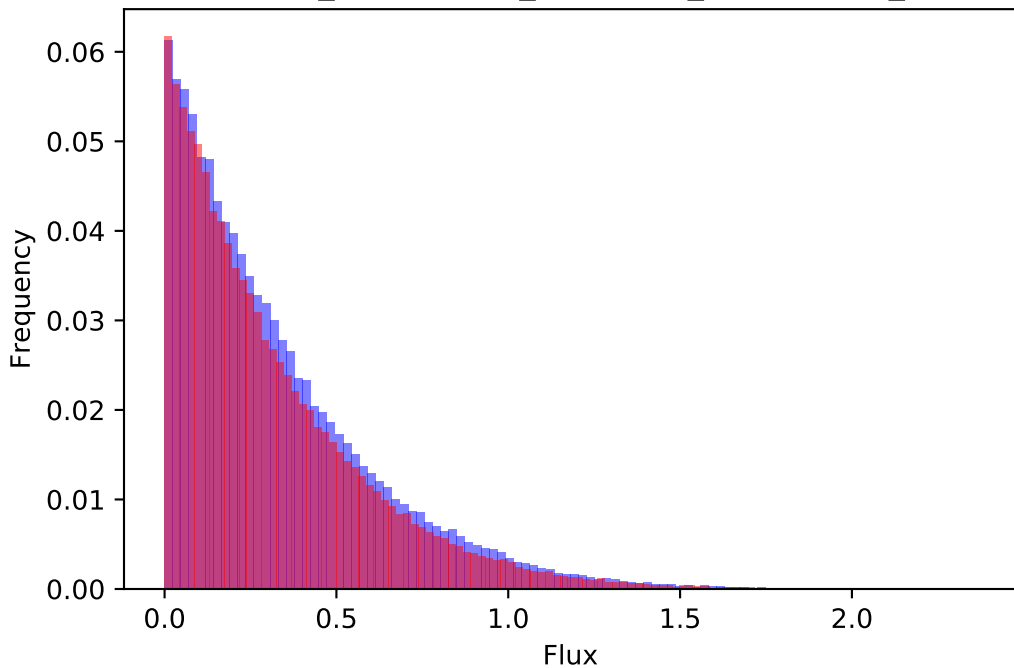
30 : ATP_c + Glc_c --> ADP_c + G6P_c + H_c



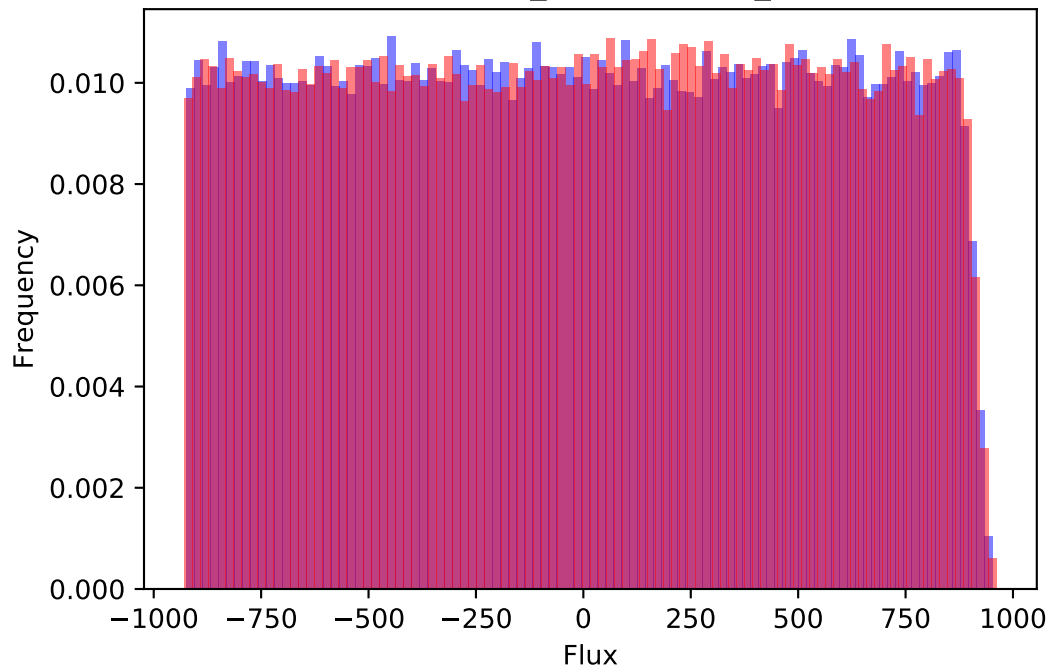
31 : Pi_h + starch2_h --> G1P_h + starch1_h



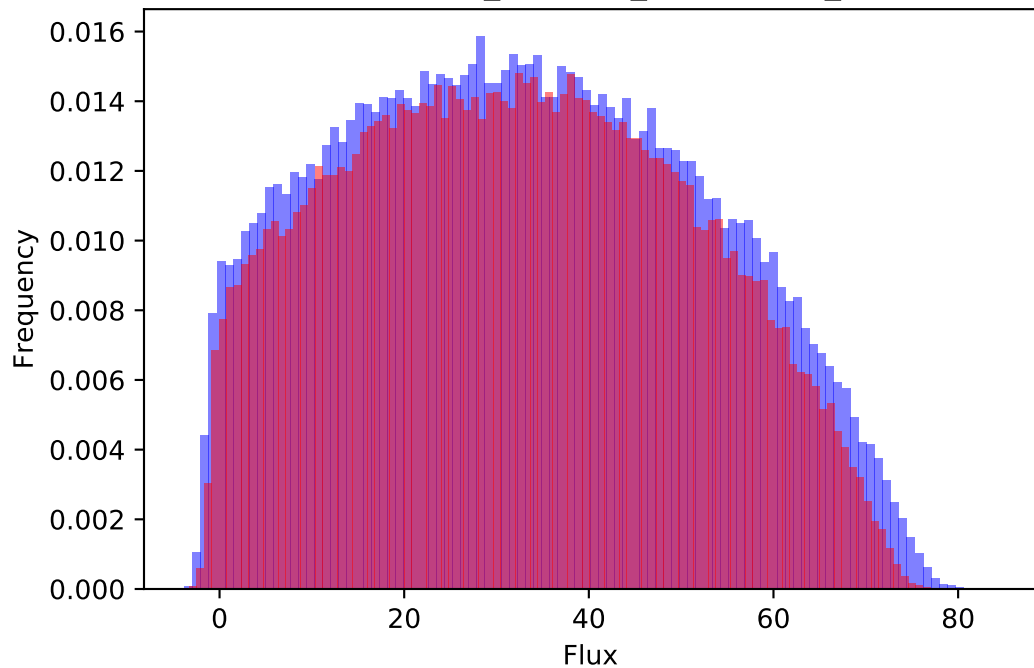
32 : Pi_c + starch2_c --> G1P_c + starch1_c



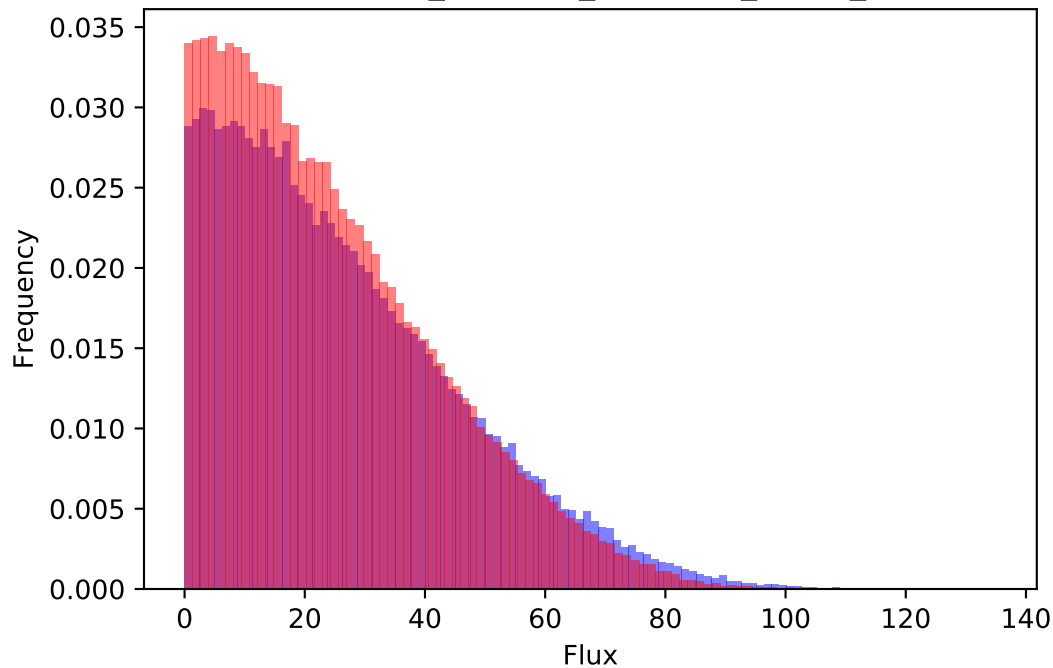
33 : GAP_c <=> DHAP_c



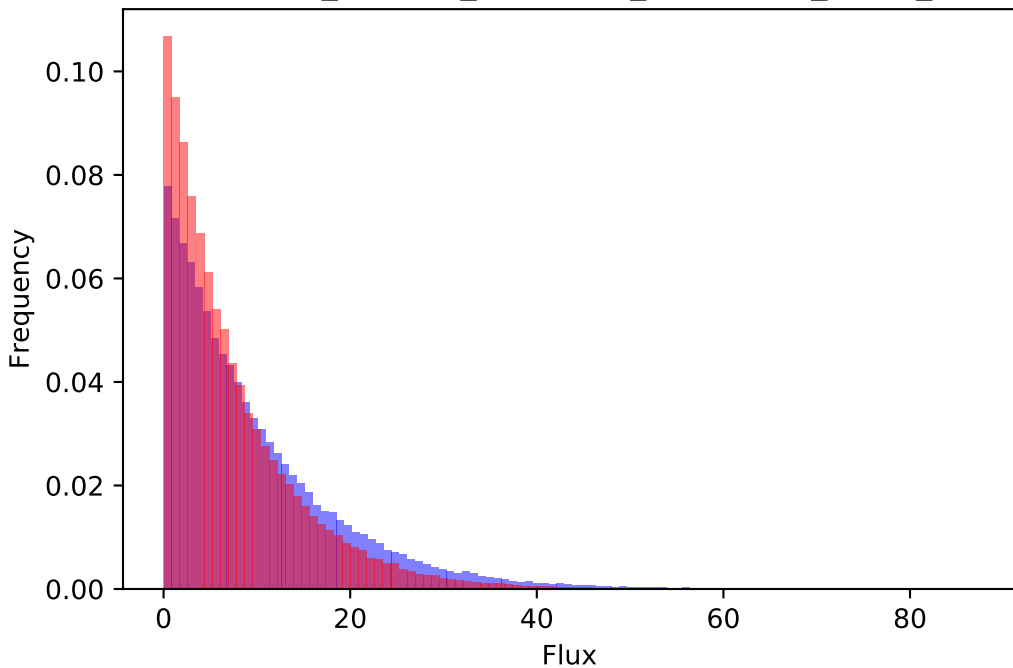
34 : DHAP_c + GAP_c \rightleftharpoons FBP_c



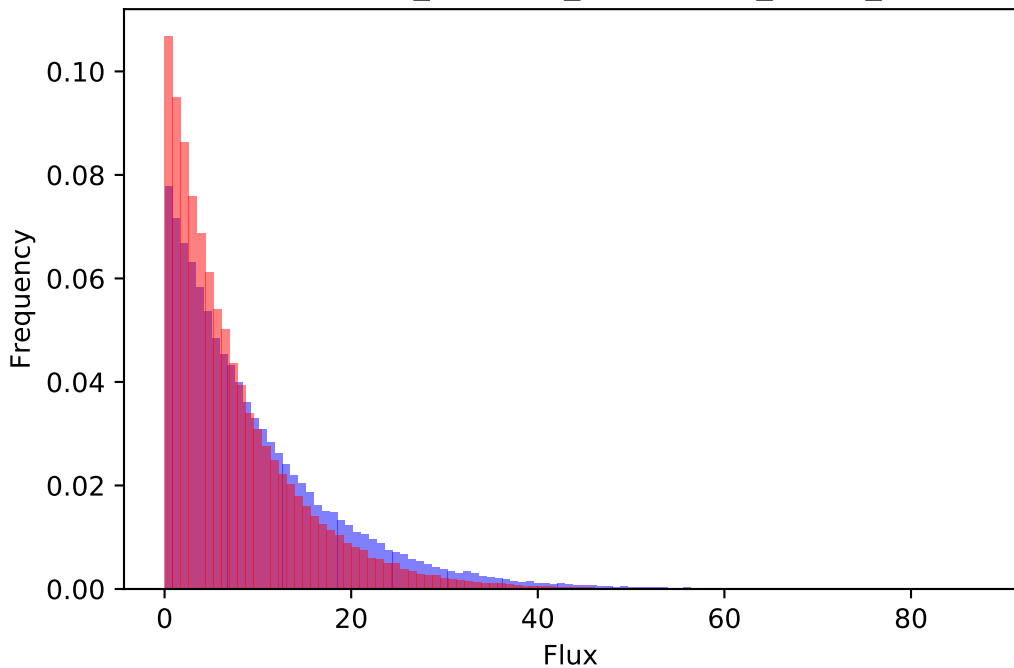
35 : FBP_c + H2O_c --> F6P_c + Pi_c



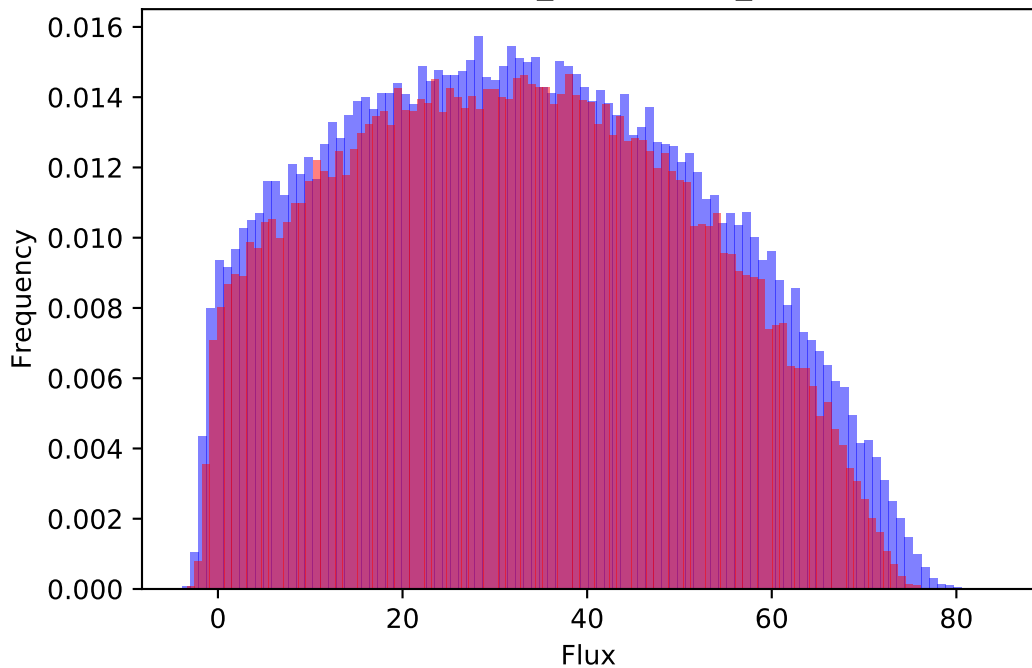
36 : ATP_c + F6P_c --> ADP_c + F26BP_c + H_c



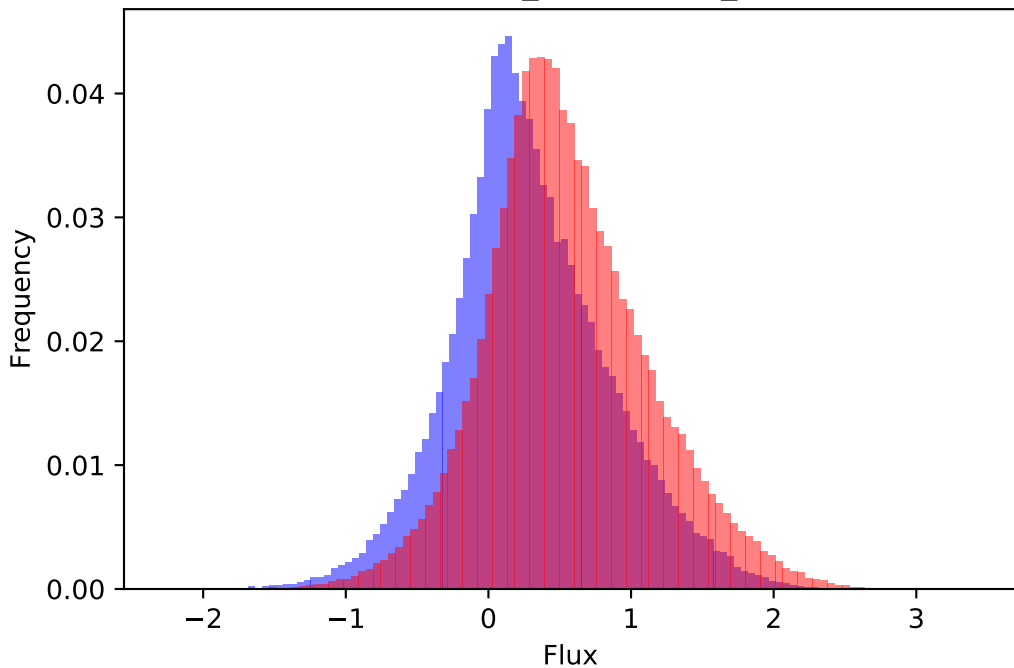
37 : F26BP_c + H2O_c <=> F6P_c + Pi_c



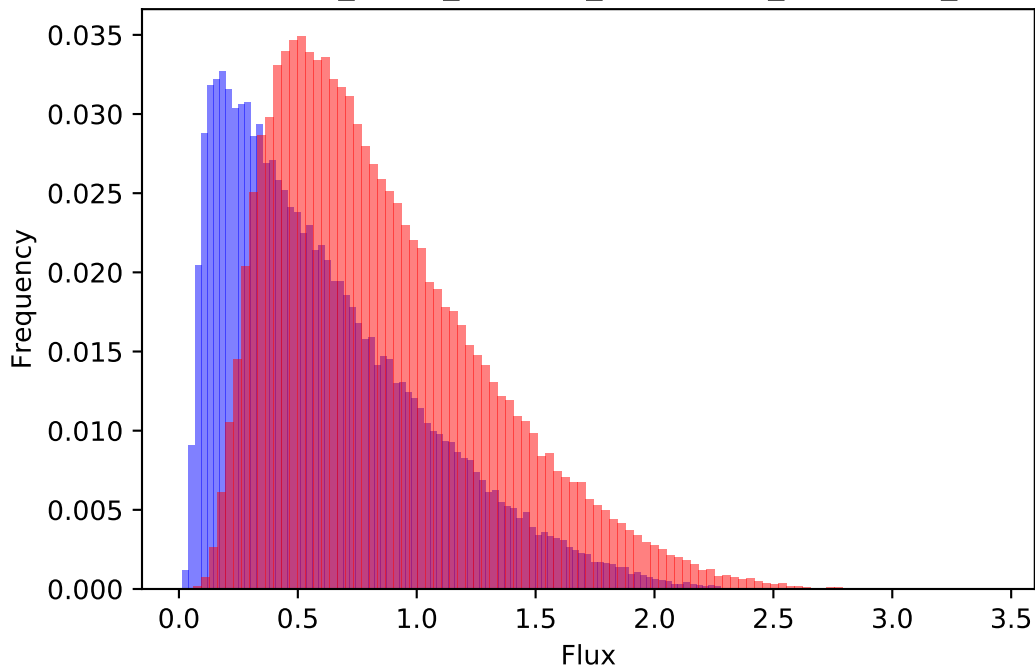
38 : F6P_c <=> G6P_c



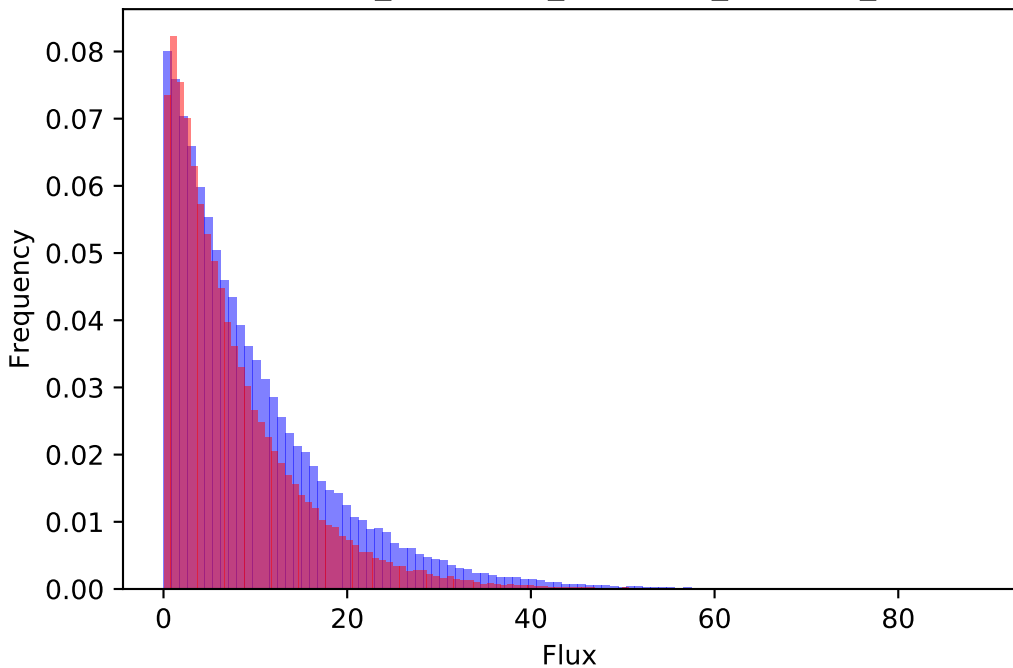
39 : G6P_c \rightleftharpoons G1P_c



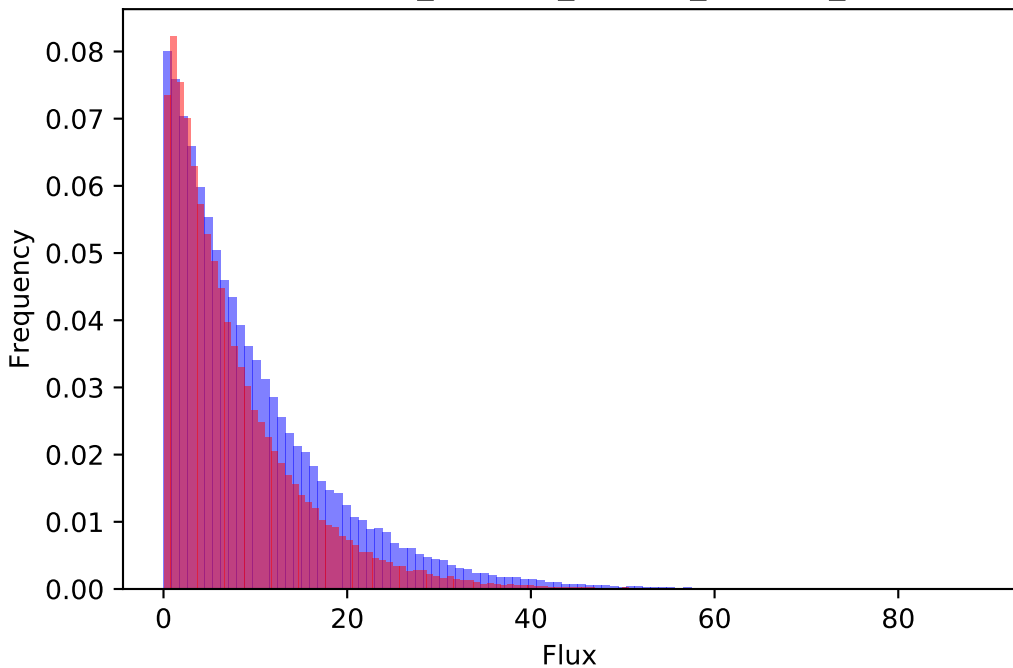
40 : G1P_c + H_c + UTP_c <=> PPi_c + UDPG_c



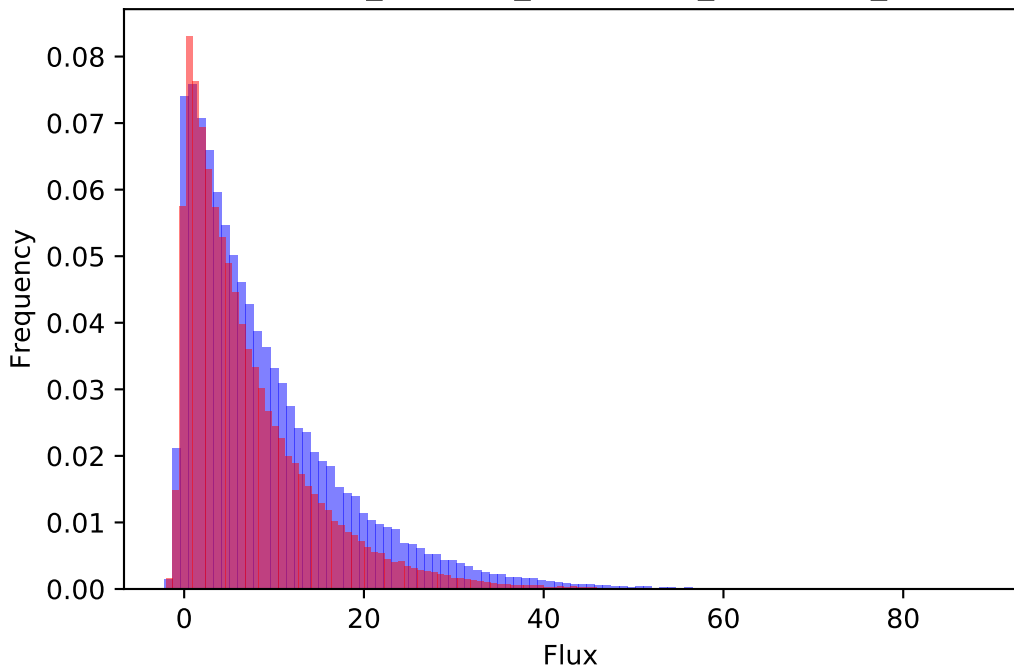
41 : F6P_c + UDPG_c --> S6P_c + UDP_c



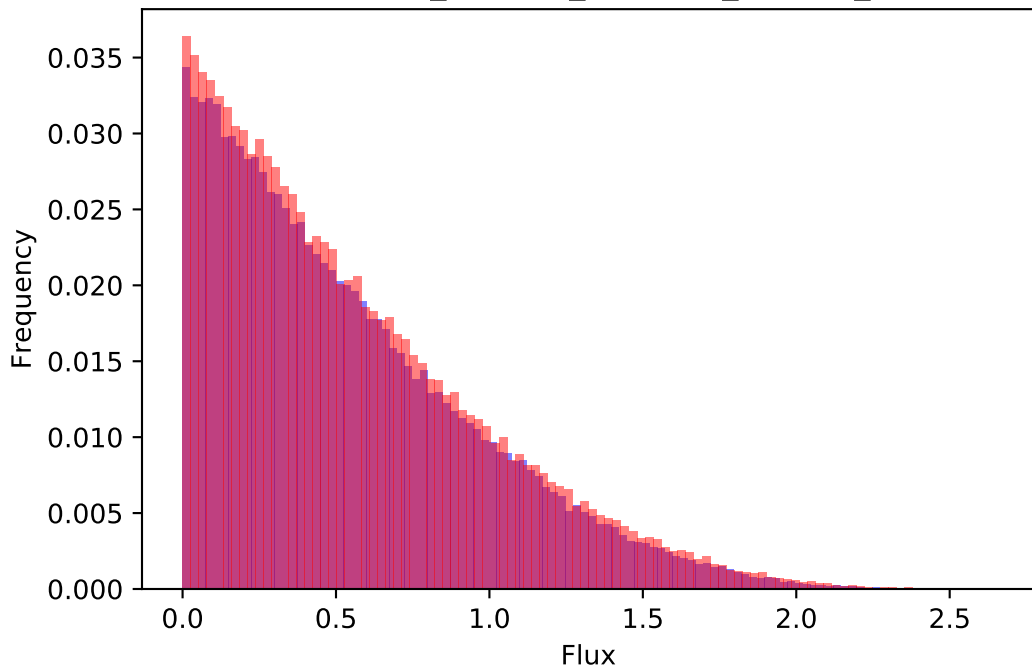
42 : H2O_c + S6P_c --> Pi_c + Suc_c

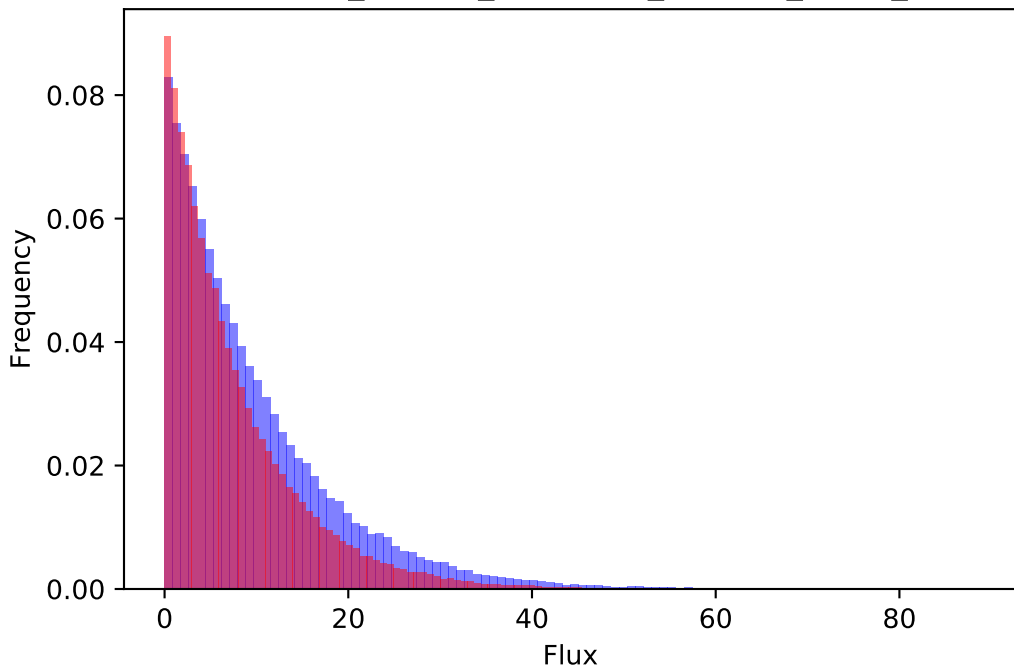
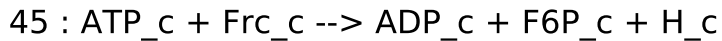


43 : Suc_c + UDP_c <=> Frc_c + UDPG_c

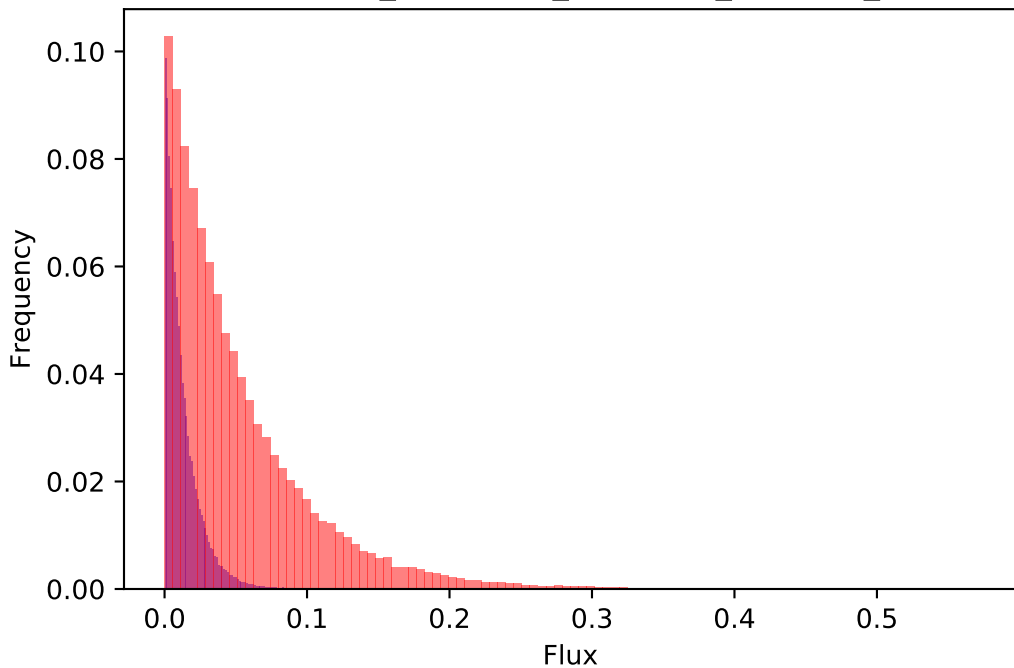


44 : H2O_c + Suc_c --> Frc_c + Glc_c

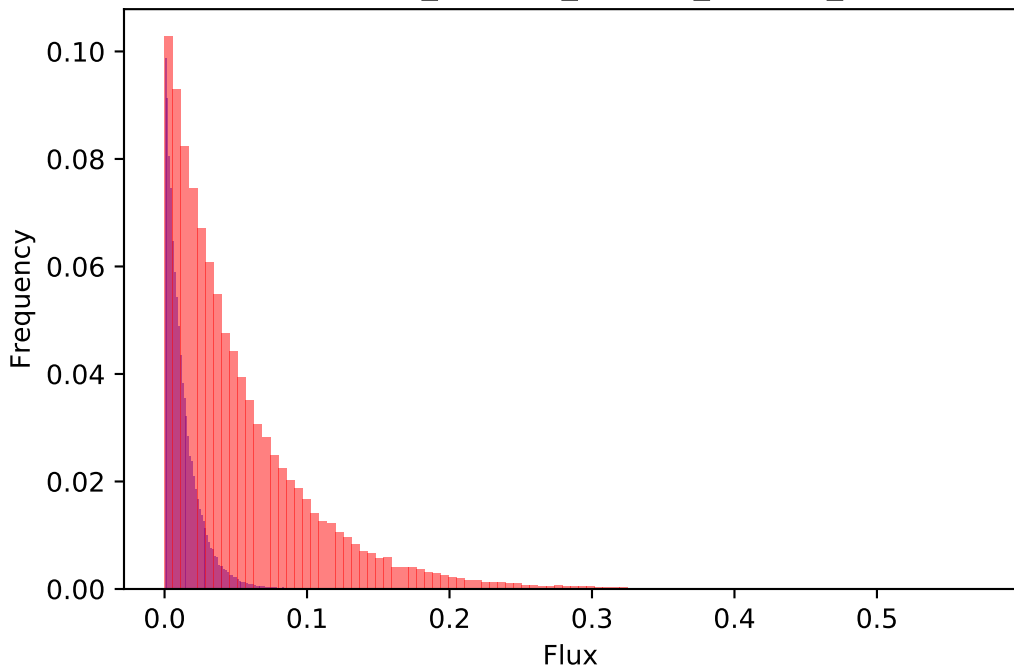




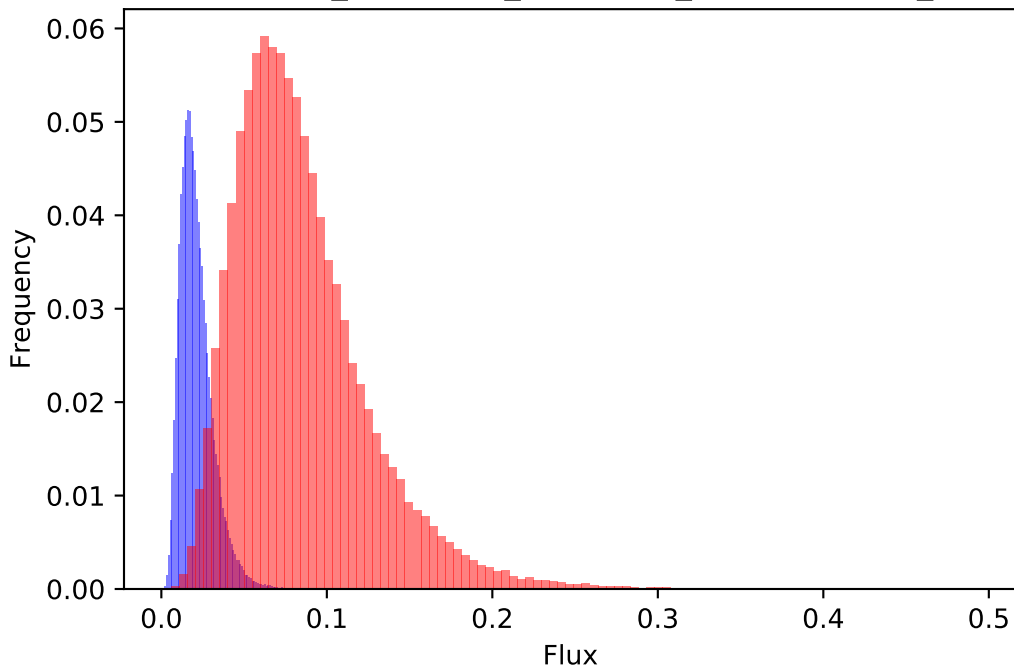
46 : G6P_c + UDPG_c --> T6P_c + UDP_c



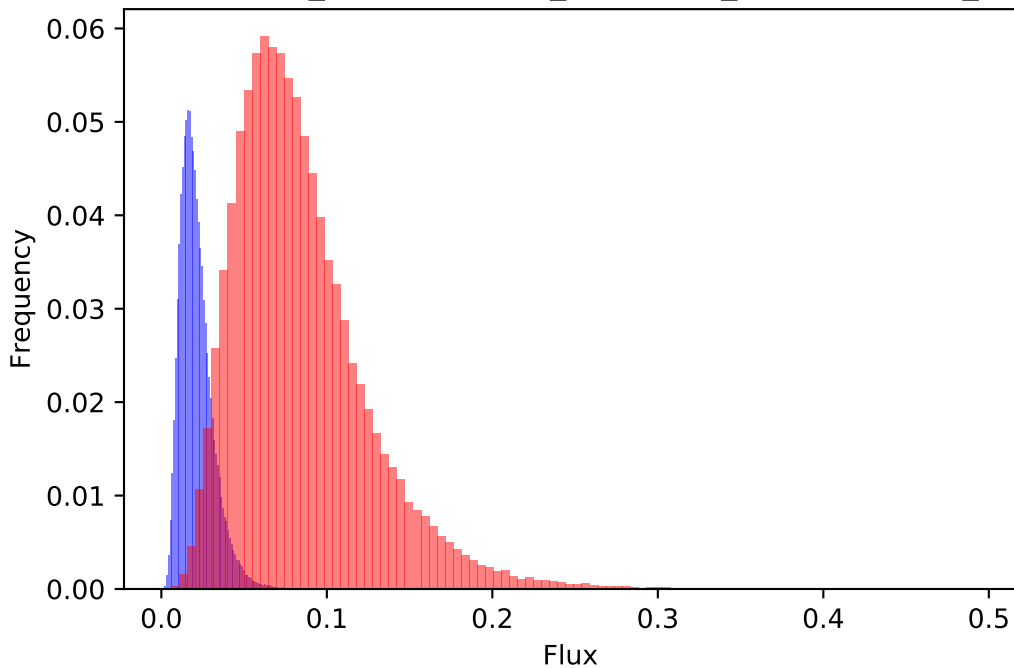
47 : H2O_c + T6P_c --> Pi_c + Tre_c



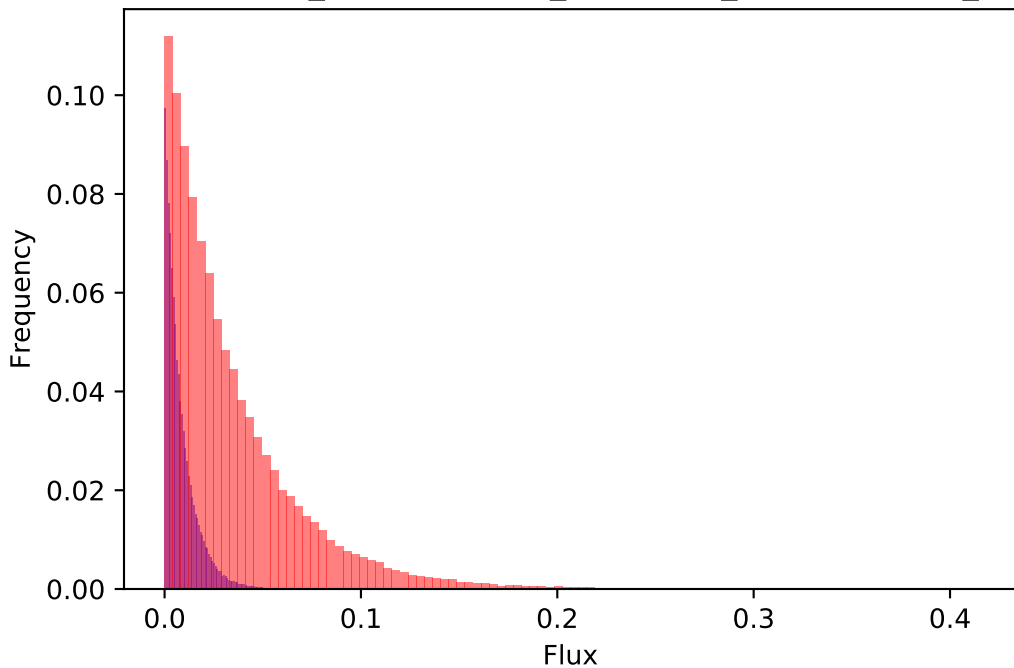
48 : H2O_c + UDPG_c --> UDP_c + cellulose1_c



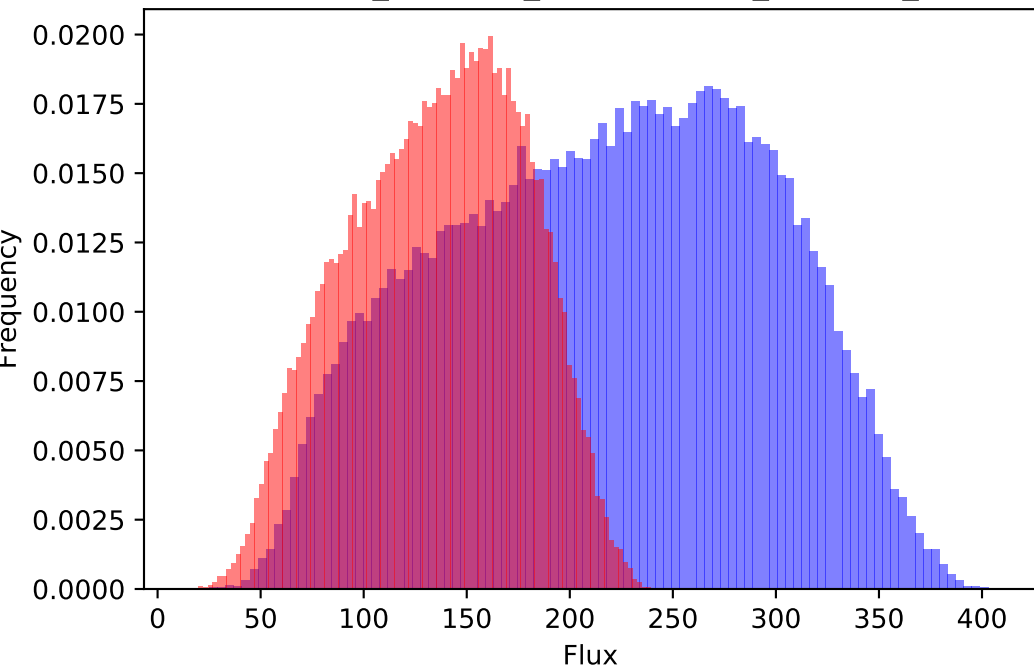
49 : UDPG_c + cellulose1_c --> UDP_c + cellulose2_c



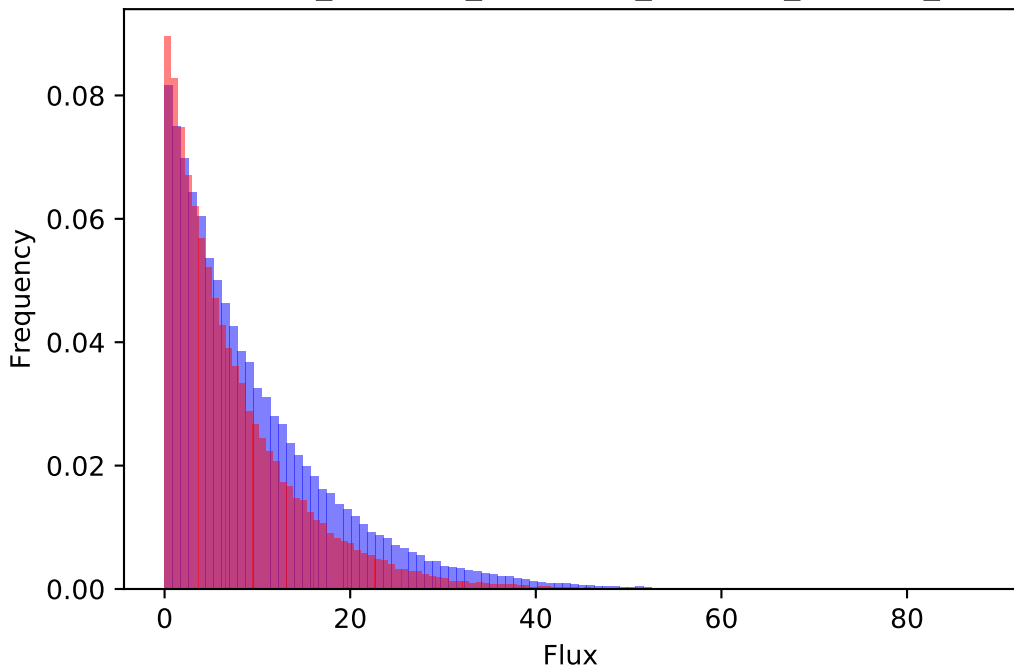
50 : UDPG_c + cellulose2_c --> UDP_c + cellulose3_c



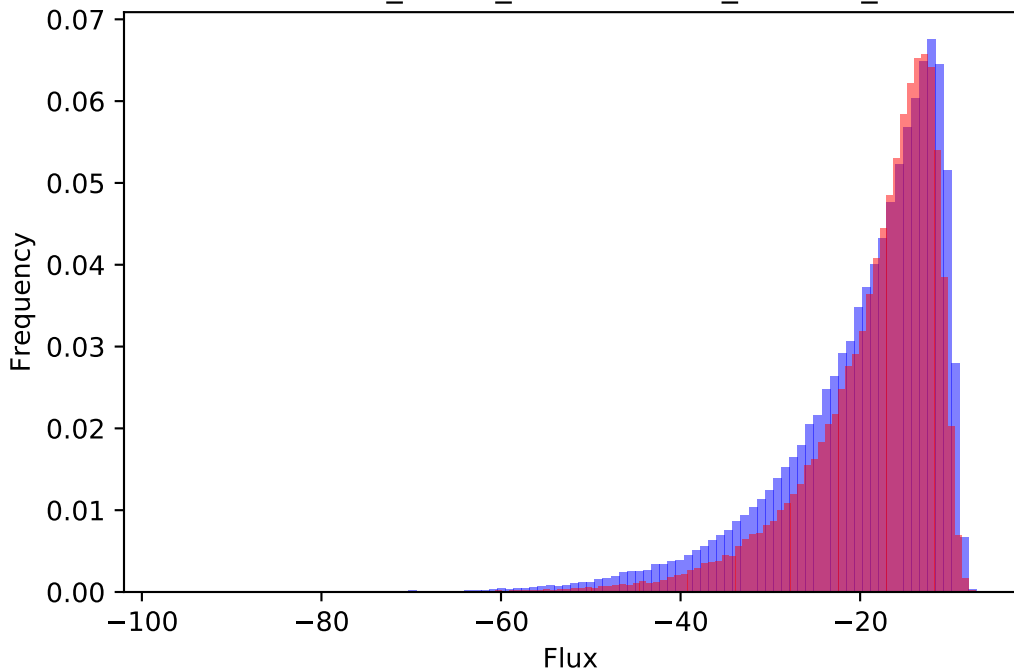
51 : Mal_c + NAD_c <=> NADH_c + OAA_c



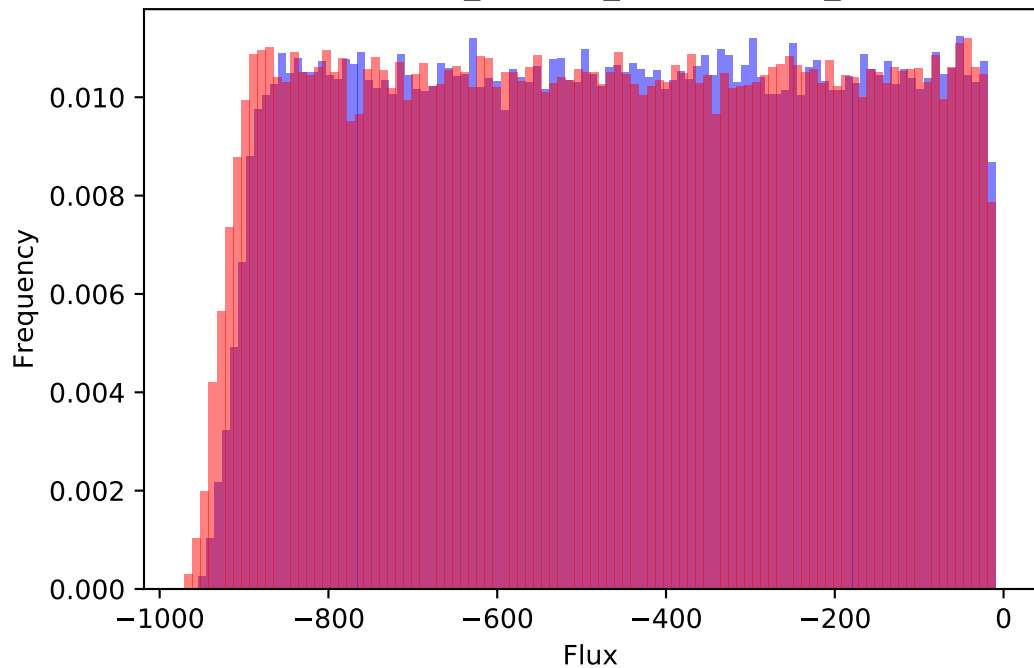
52 : ATP_c + OAA_c --> ADP_c + CO2_c + PEP_c



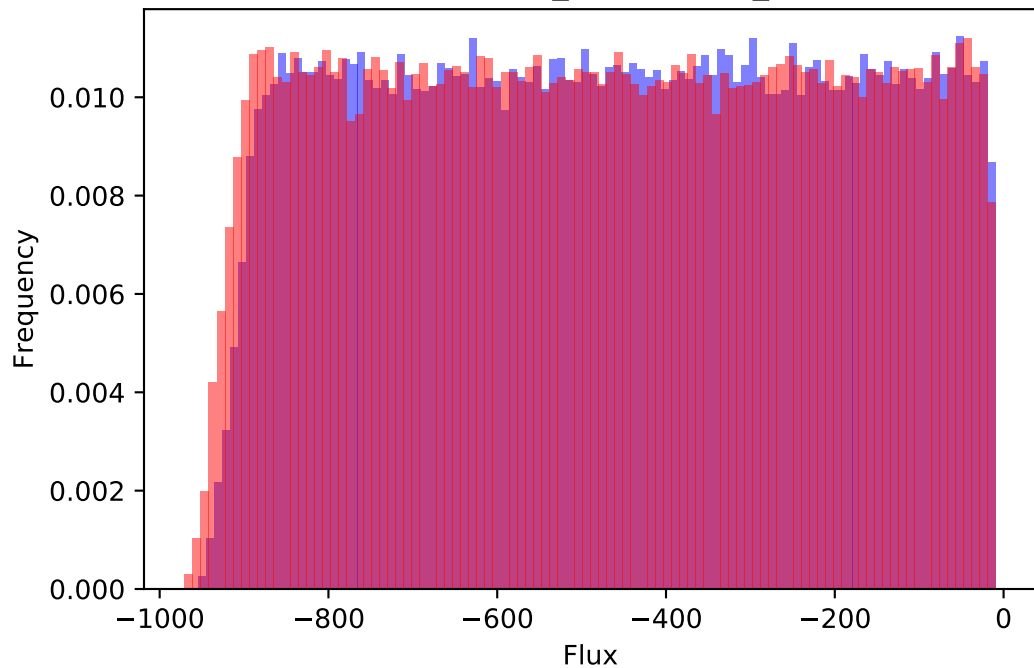
53 : OAA_c + Pi_c \rightleftharpoons HCO3_c + PEP_c



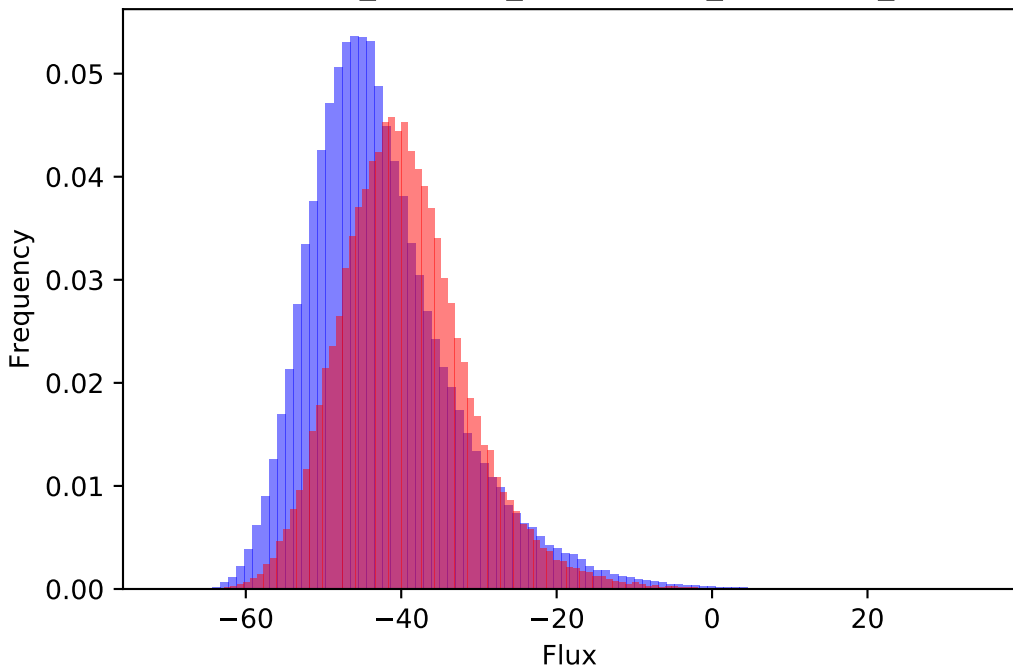
54 : H2O_c + PEP_c <=> 2PGA_c



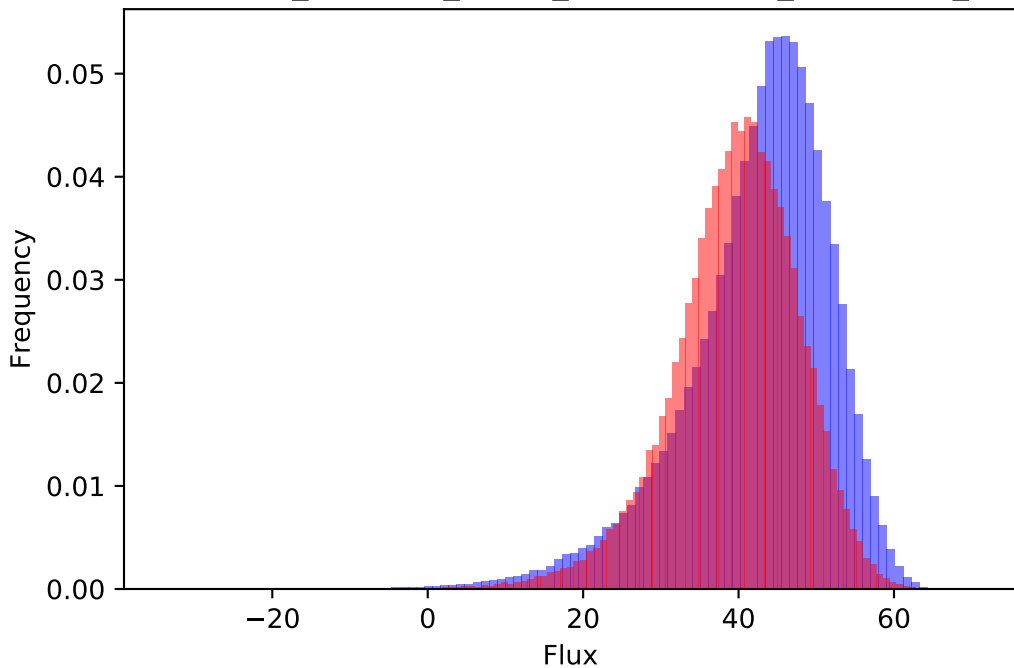
55 : 2PGA_c <=> PGA_c



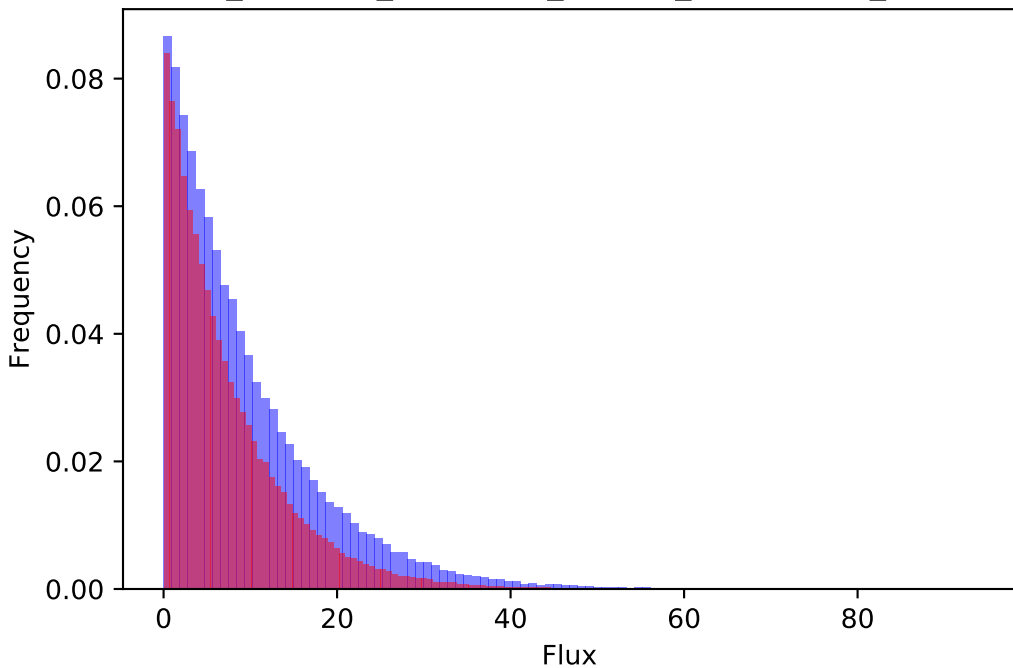
56 : $\text{ATP}_c + \text{PGA}_c \rightleftharpoons \text{ADP}_c + \text{DPGA}_c$

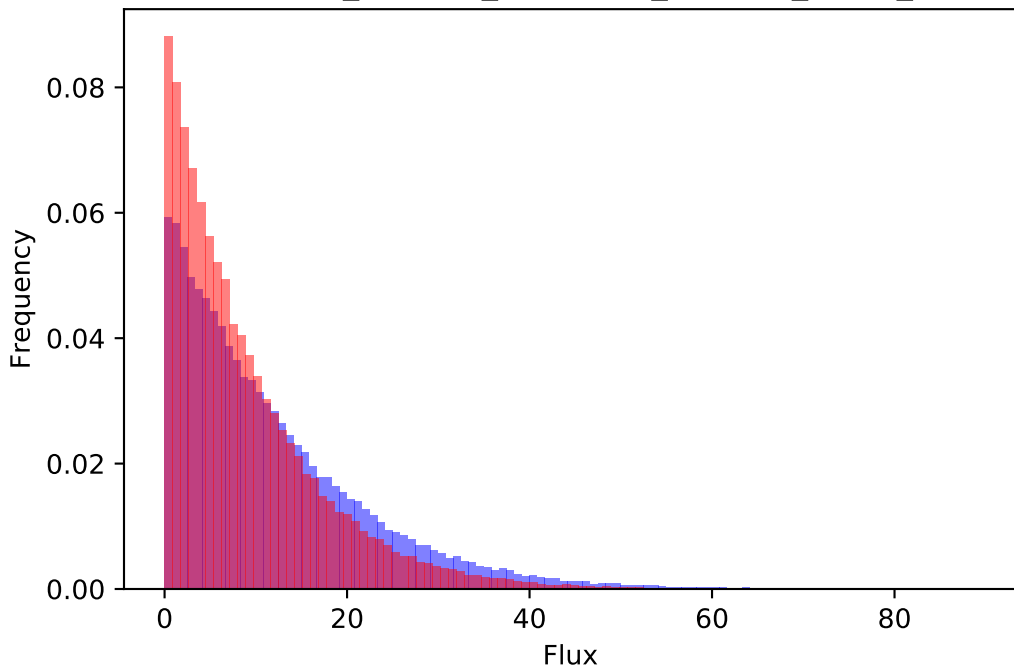
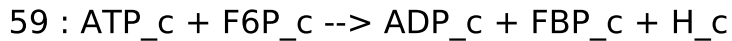


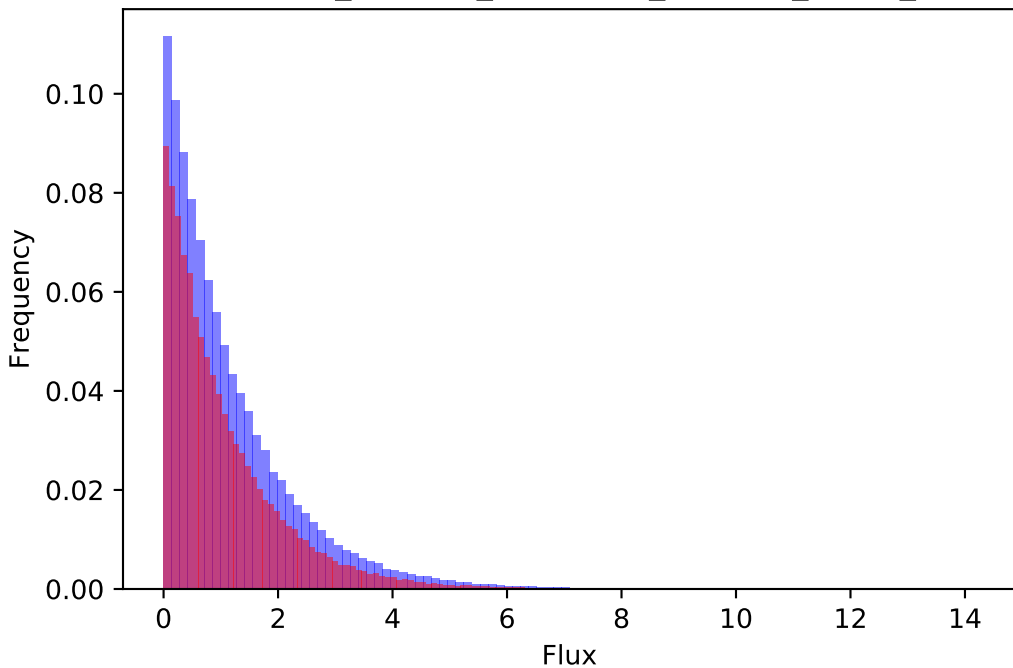
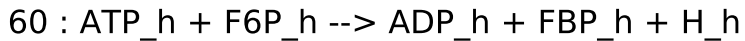
57 : $\text{GAP}_c + \text{NAD}_c + \text{Pi}_c \rightleftharpoons \text{DPGA}_c + \text{NADH}_c$



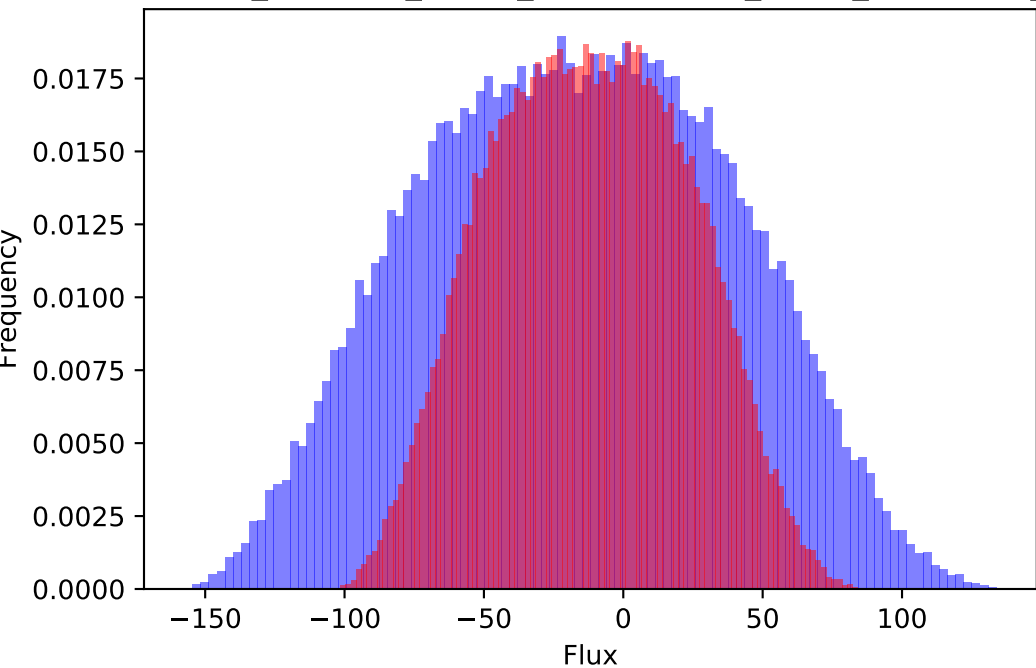
58 : GAP_c + H2O_c + NADP_c --> H_c + NADPH_c + PGA_c



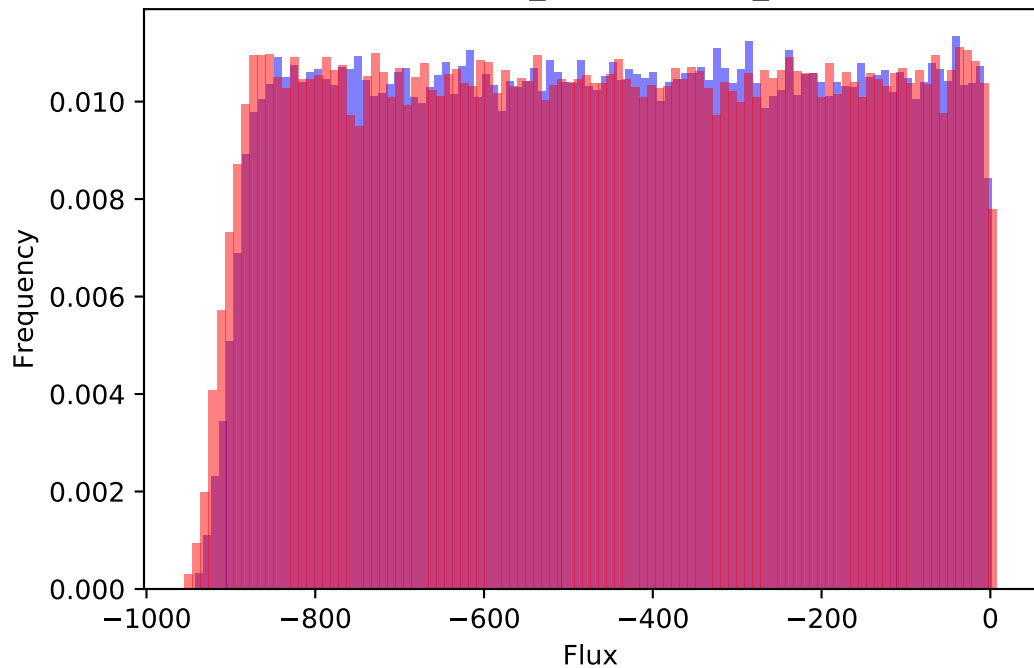




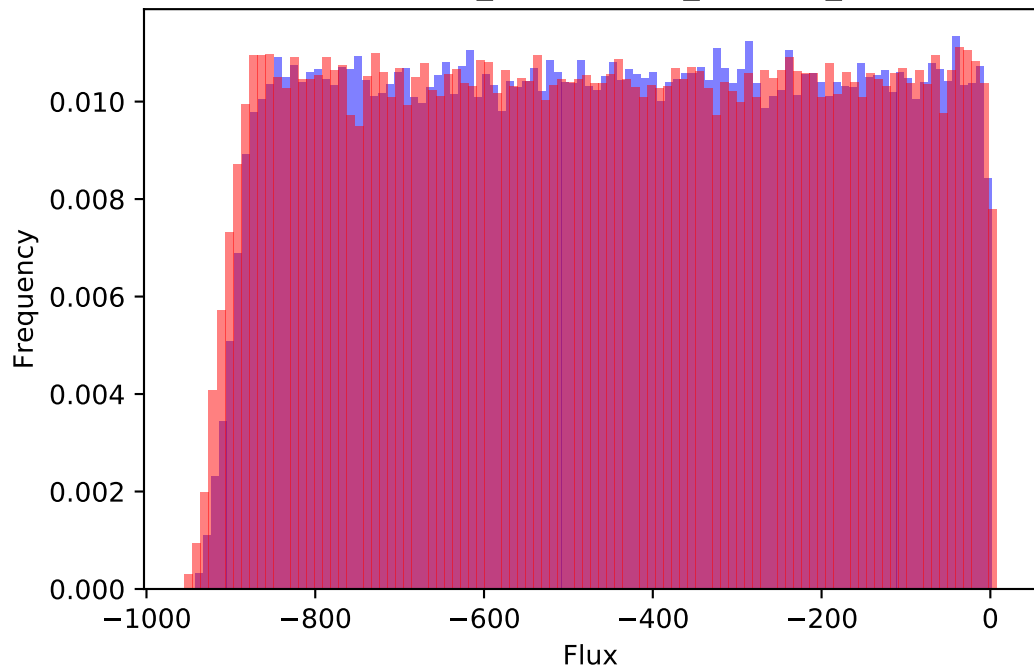
61 : GAP_h + NAD_h + Pi_h \rightleftharpoons DPGA_h + H_h + NADH_h



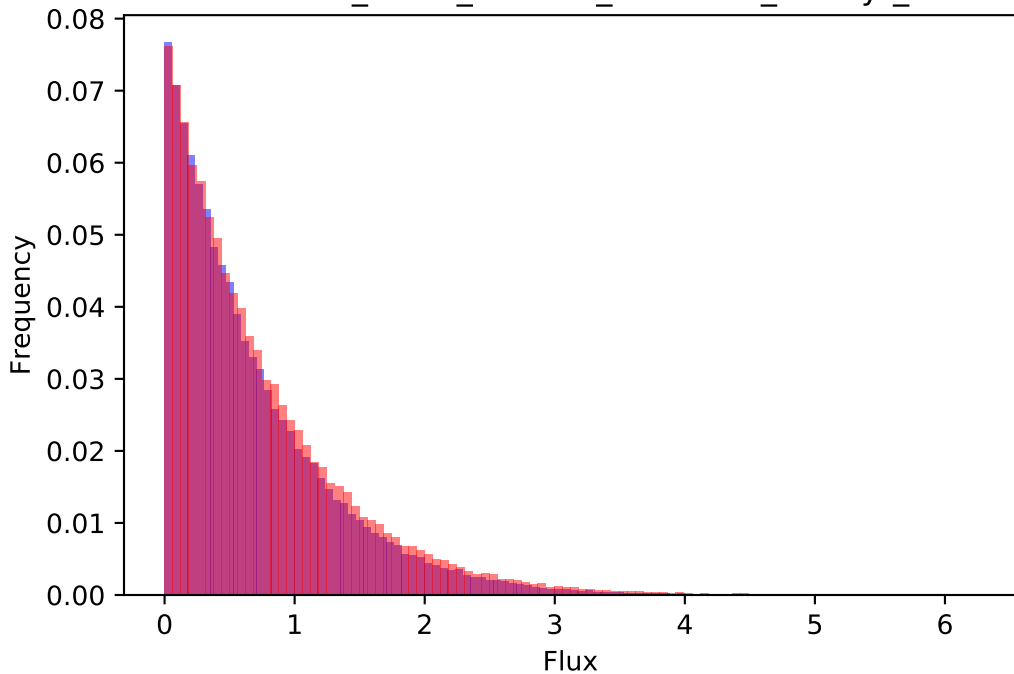
62 : PGA_h \leq 2PGA_h



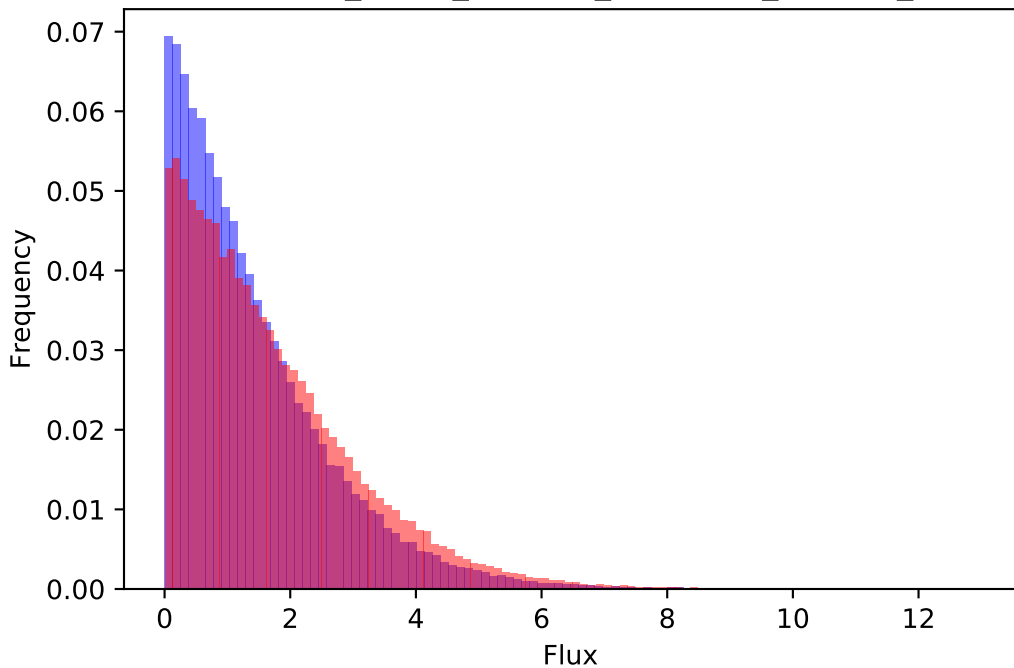
63 : 2PGA_h <=> H2O_h + PEP_h



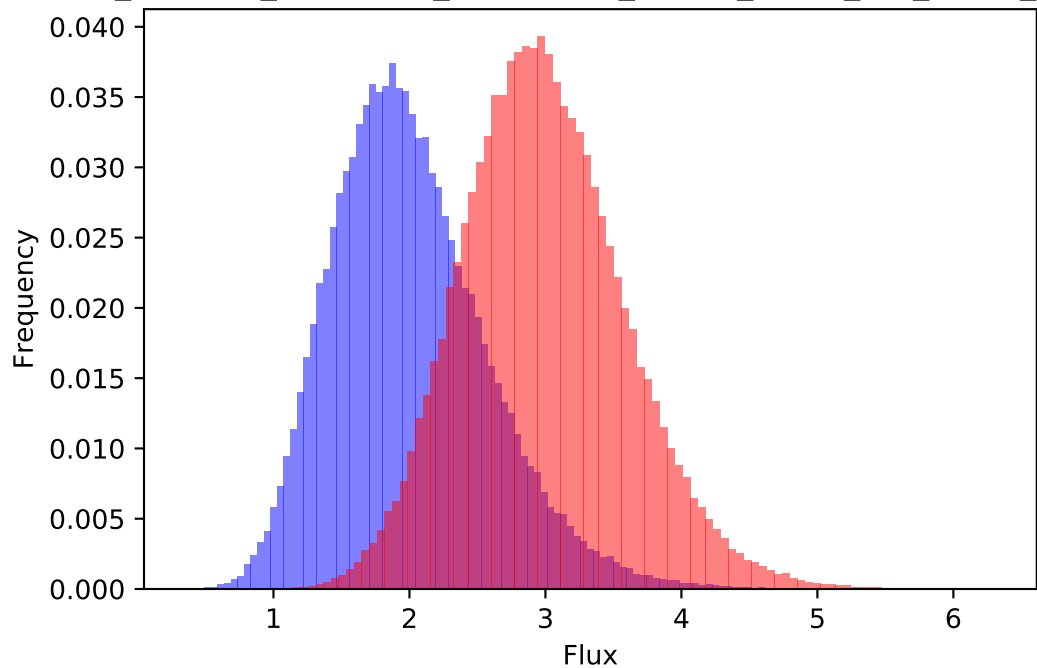
64 : ADP_c + H_c + PEP_c --> ATP_c + Pyr_c



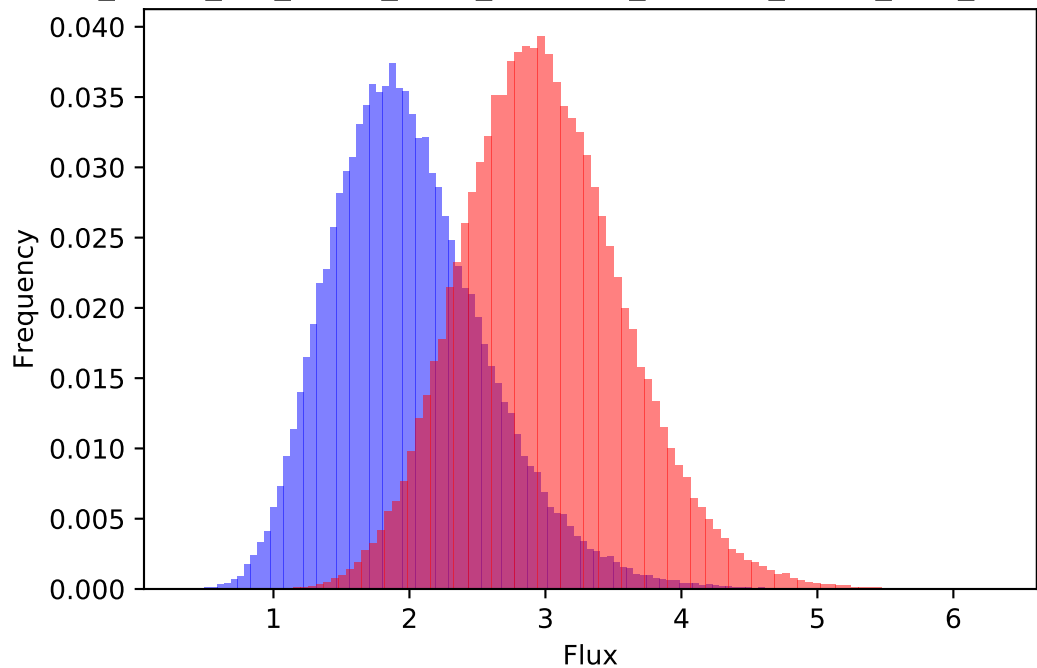
65 : ADP_h + H_h + PEP_h --> ATP_h + Pyr_h



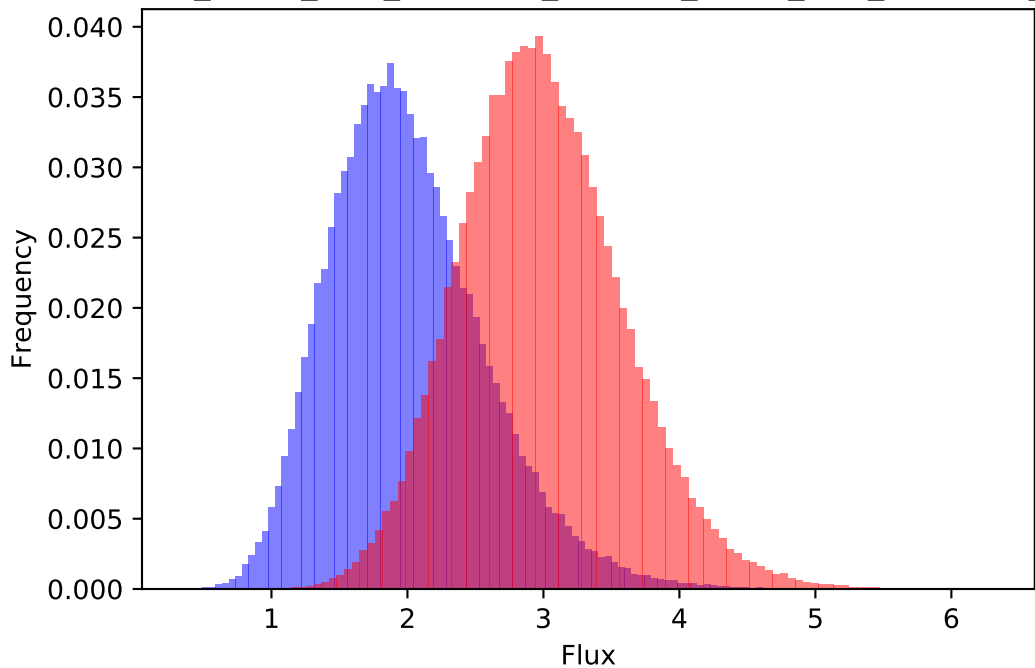
66 : H_m + Pyr_m + ThPP_m --> CO2_m + H_DASH_Eth_DASH_ThPP_m



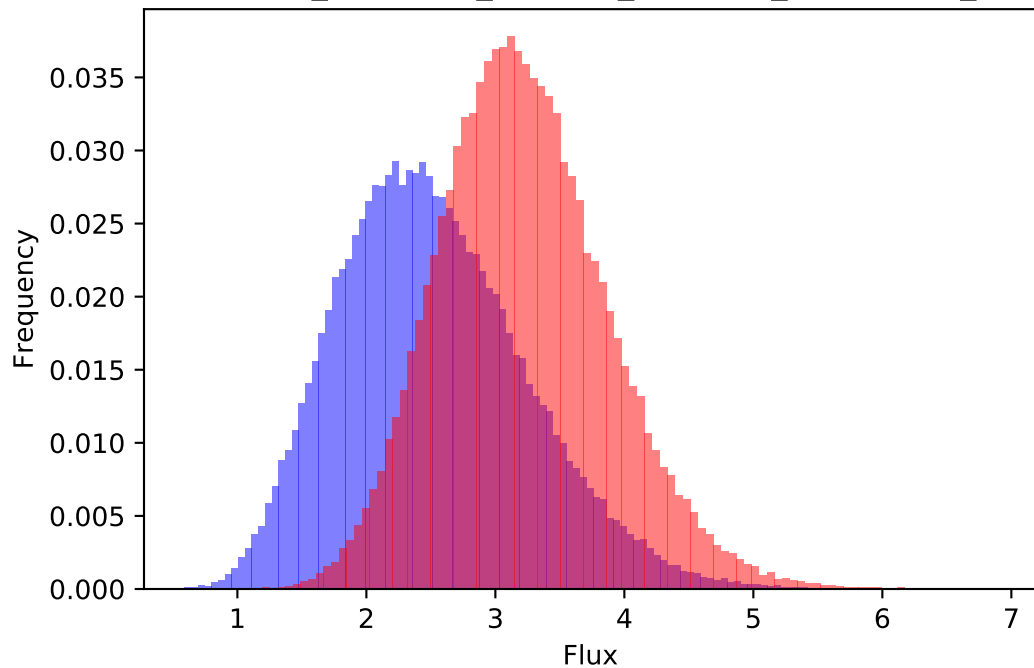
67 : H_DASH_Eth_DASH_ThPP_m + LPA_m --> A_DASH_DHL_m + ThPP_m



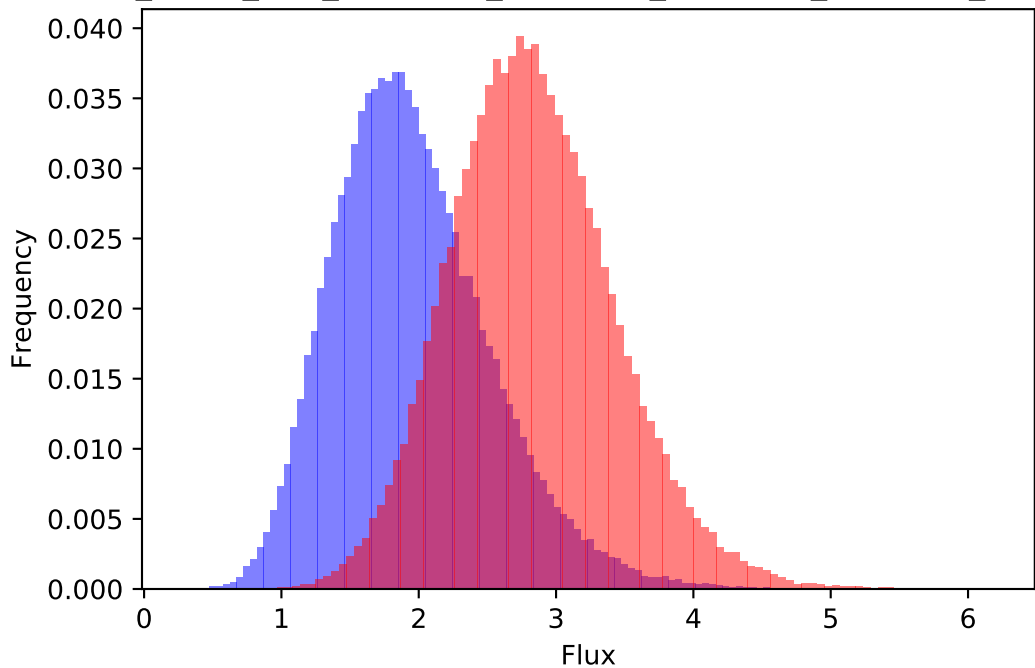
68 : A_DASH_DHL_m + CoA_m --> A_DASH_CoA_m + DHL_m



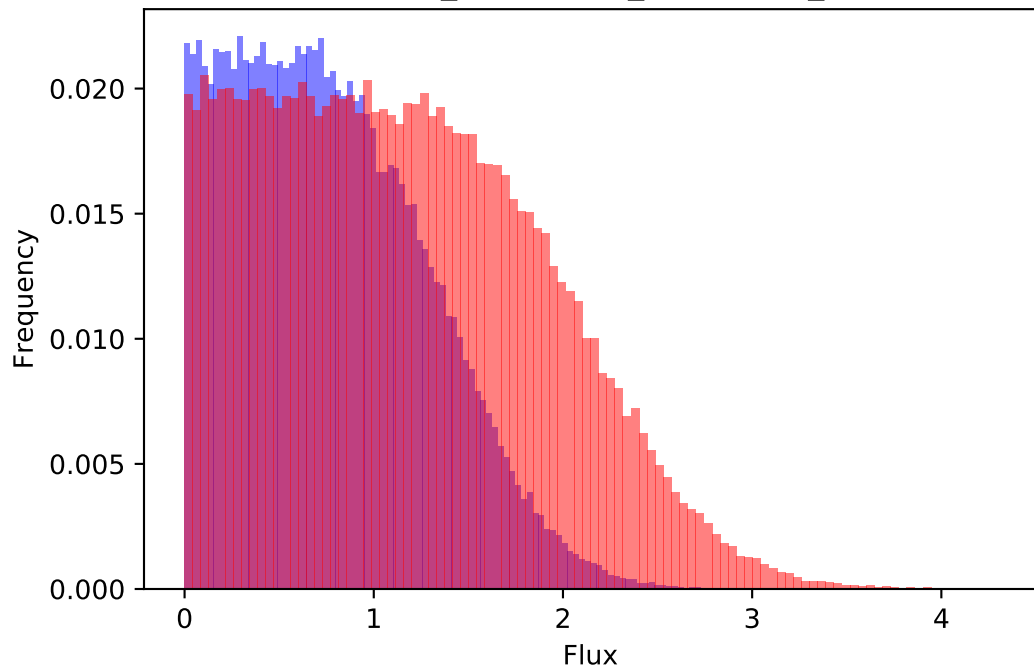
69 : DHL_m + NAD_m --> H_m + LPA_m + NADH_m



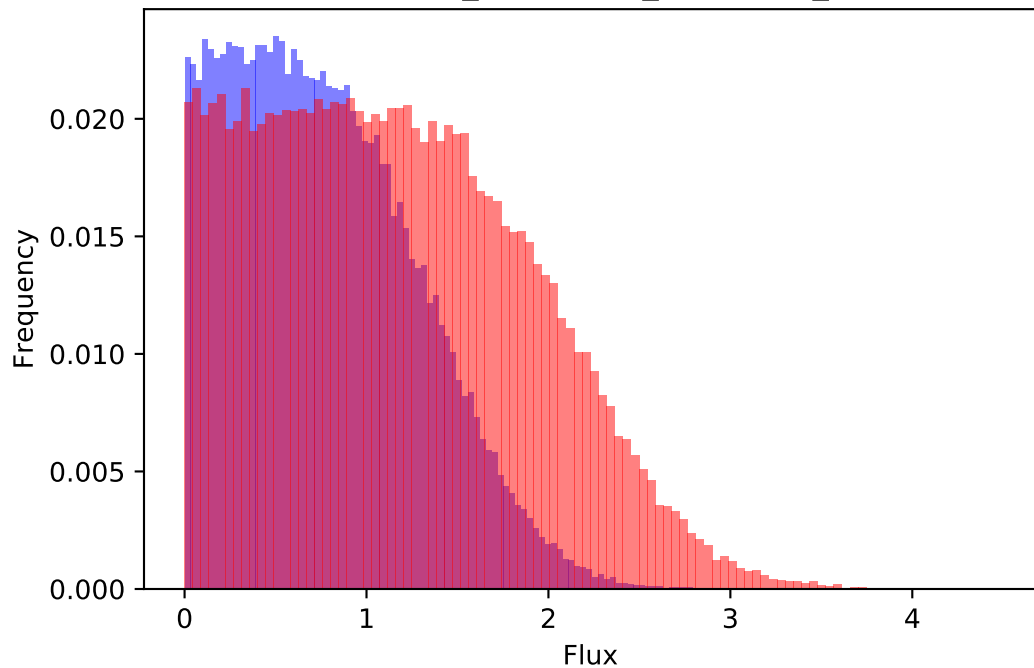
70 : A_DASH_CoA_m + H2O_m + OAA_m --> Cit_m + CoA_m + H_m



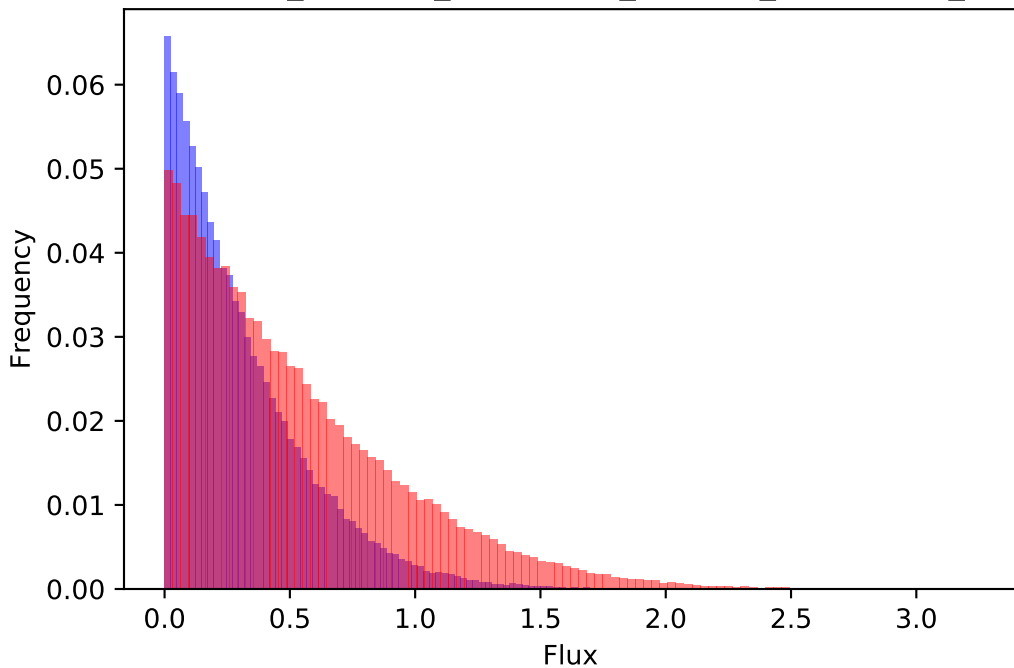
71 : Cit_m --> H₂O_m + cACN_m



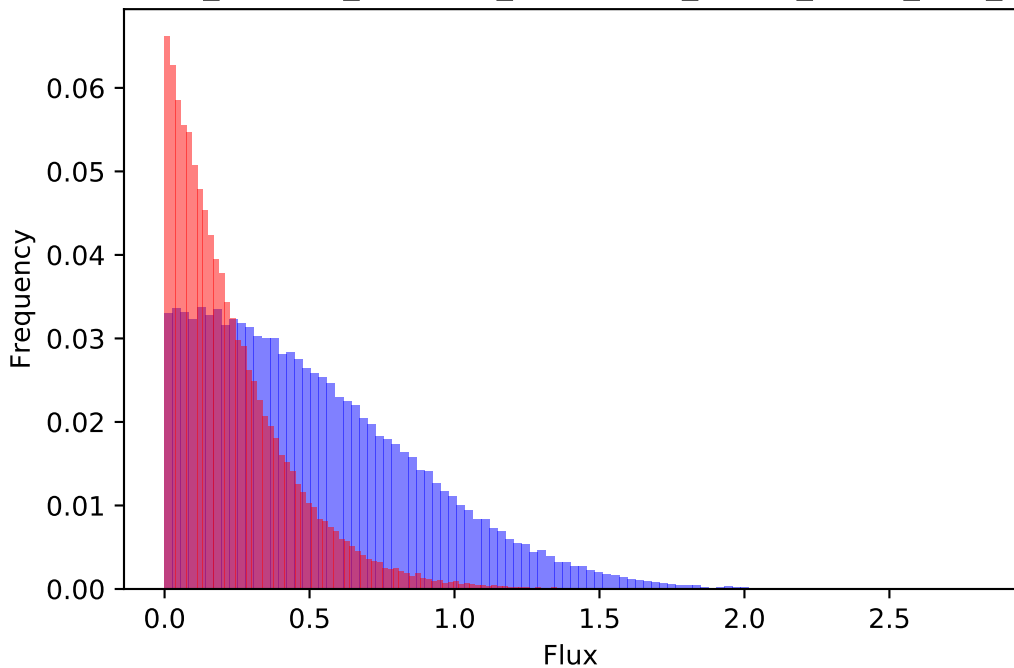
72 : H2O_m + cACN_m --> iCit_m



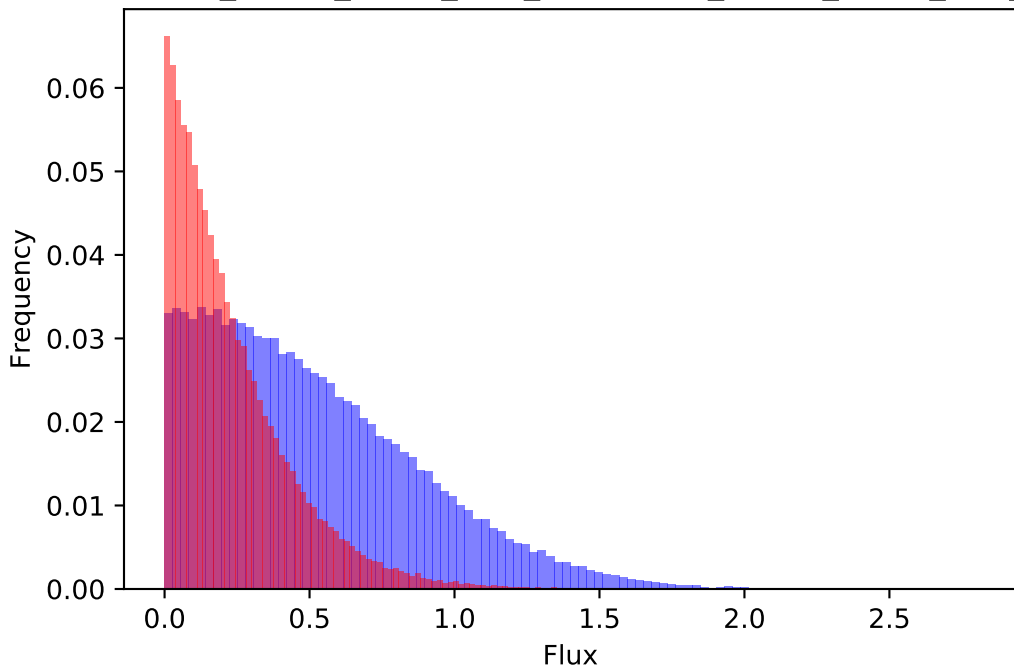
73 : $\text{NAD}_m + \text{iCit}_m \rightarrow \text{CO2}_m + \text{KG}_m + \text{NADH}_m$



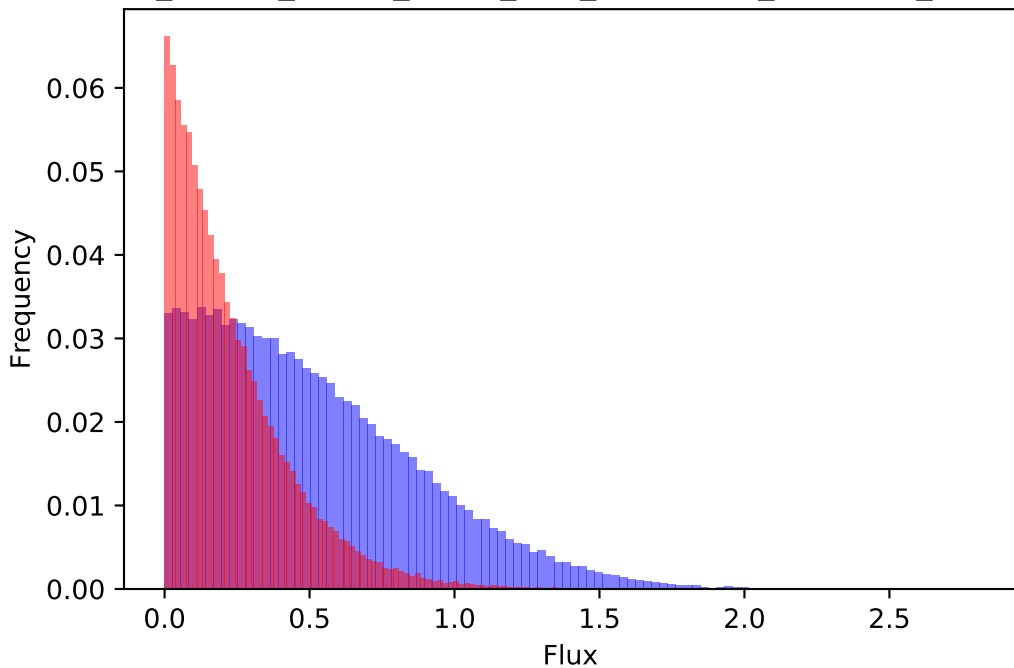
74 : H_m + KG_m + LPA_m --> CO2_m + S_DASH_DHL_m



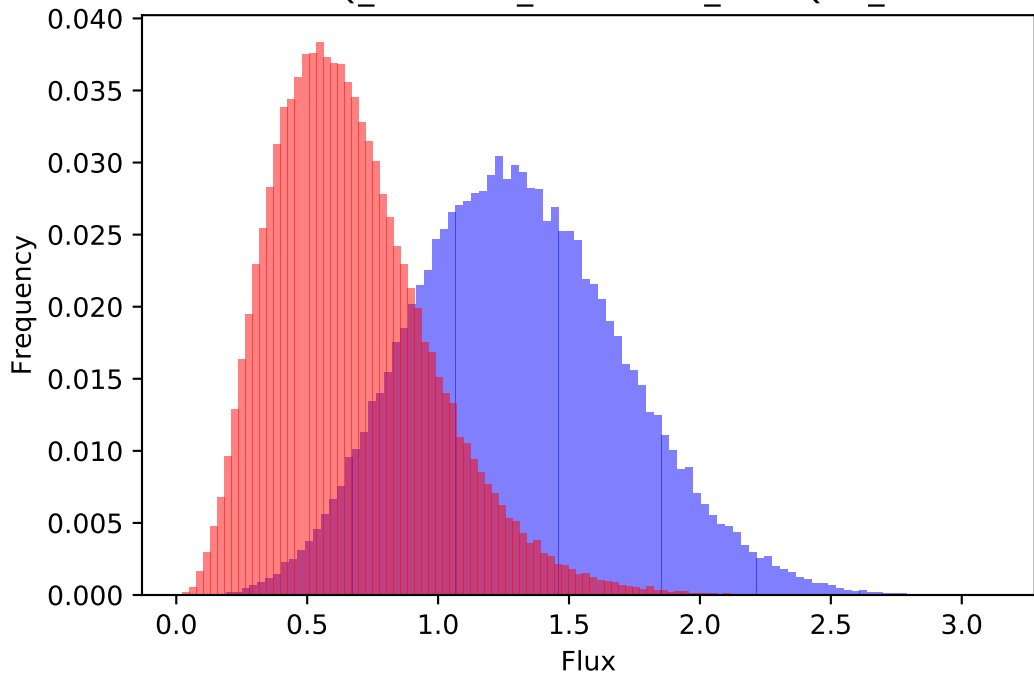
75 : CoA_m + S_DASH_DHL_m --> DHL_m + S_DASH_CoA_m



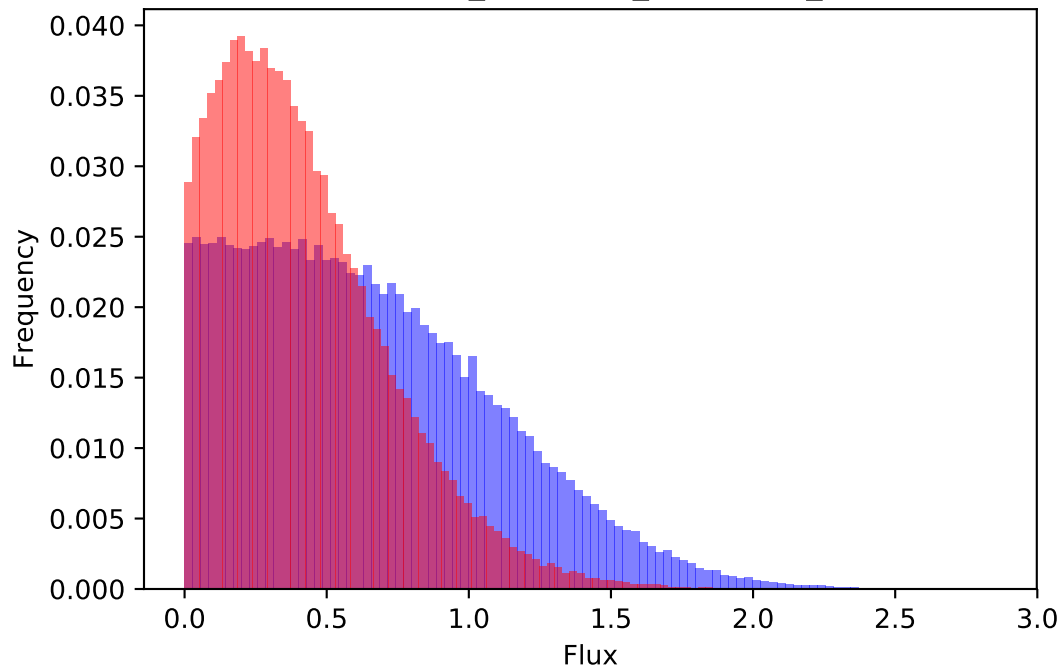
76 : ADP_m + Pi_m + S_DASH_CoA_m --> ATP_m + CoA_m + SCA_m



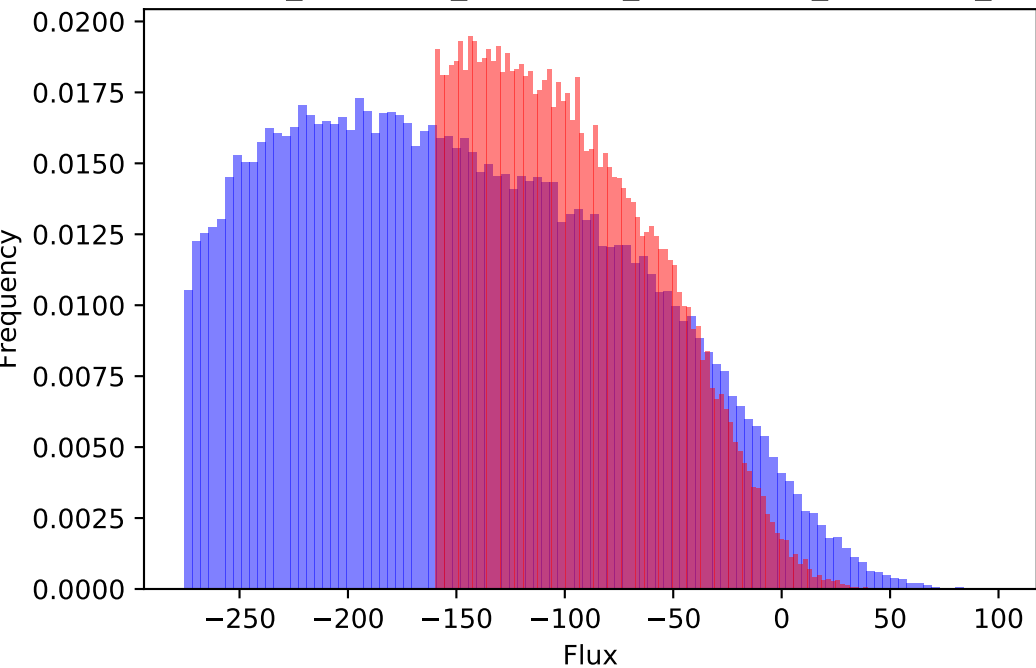
77 : Q_m + SCA_m --> Fum_m + QH2_m



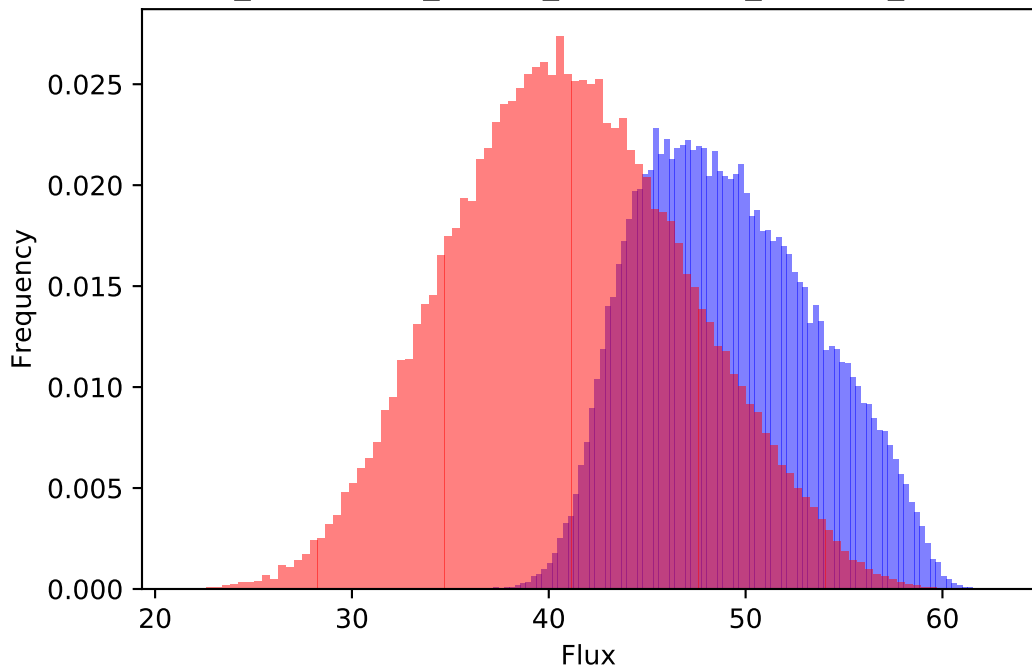
78 : Fum_m + H2O_m --> Mal_m



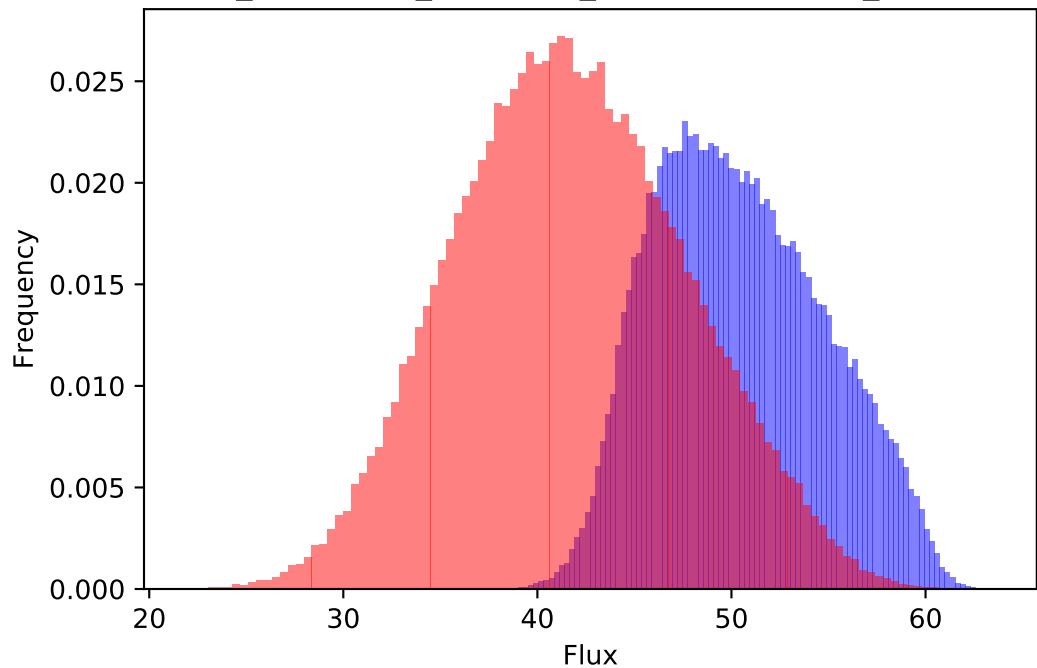
79 : Mal_m + NAD_m <=> H_m + NADH_m + OAA_m



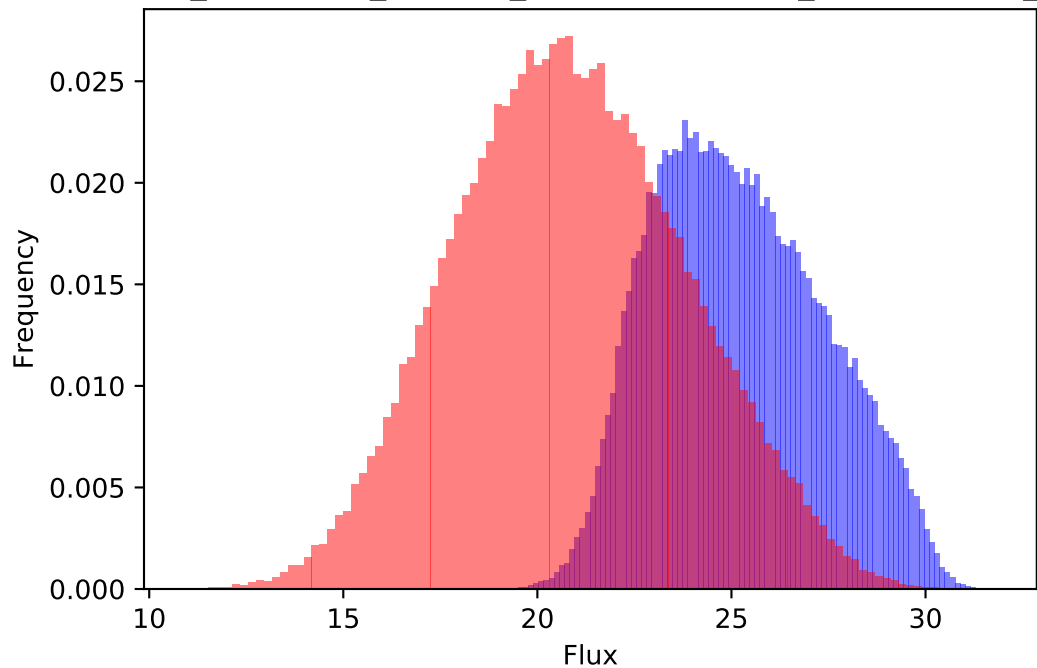
80 : 5.0 H_m + NADH_m + Q_m --> 4.0 H_i + NAD_m + QH2_m



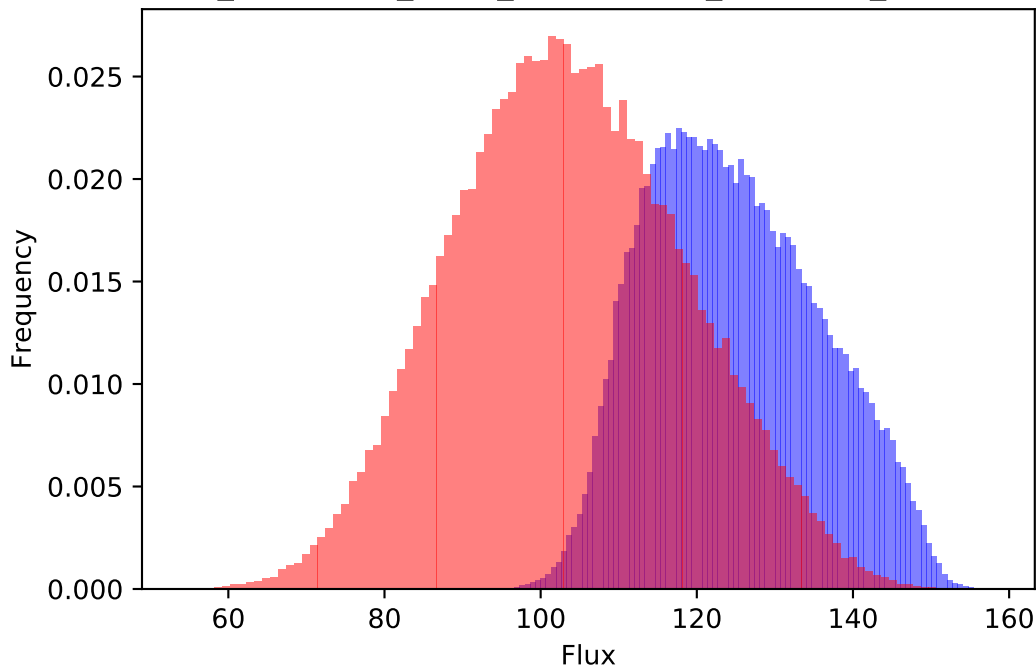
B1 : 2.0 Cytcox_m + 2.0 H_m + QH2_m --> 2.0 Cytcrd_m + 4.0 H_i + Q_



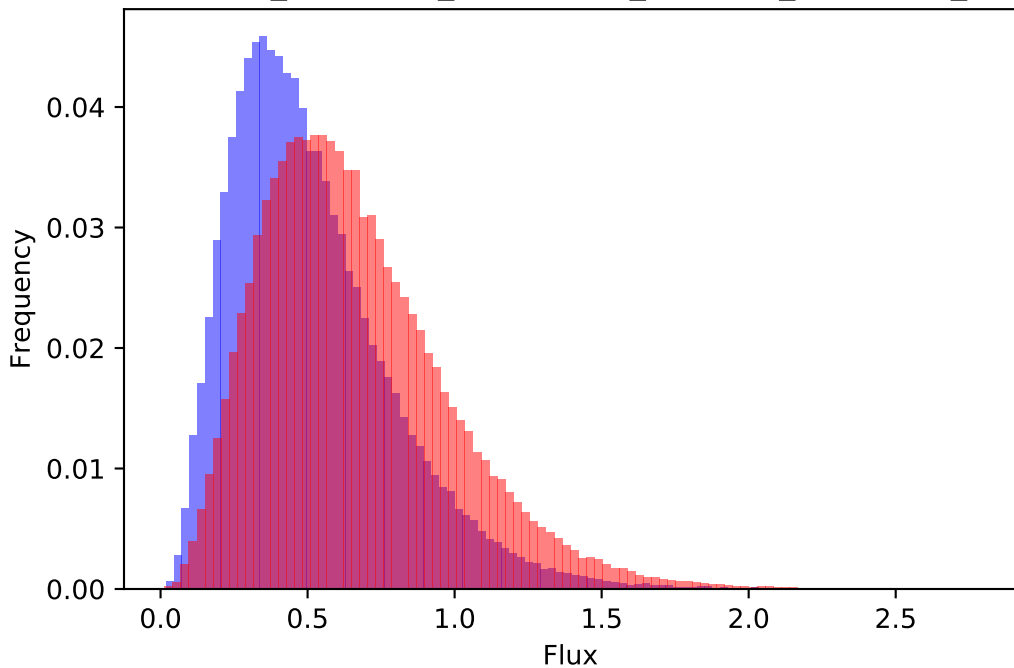
: 4.0 Cytcrd_m + 8.0 H_m + O2_m --> 4.0 Cytcox_m + 2.0 H2O_m + 4.0



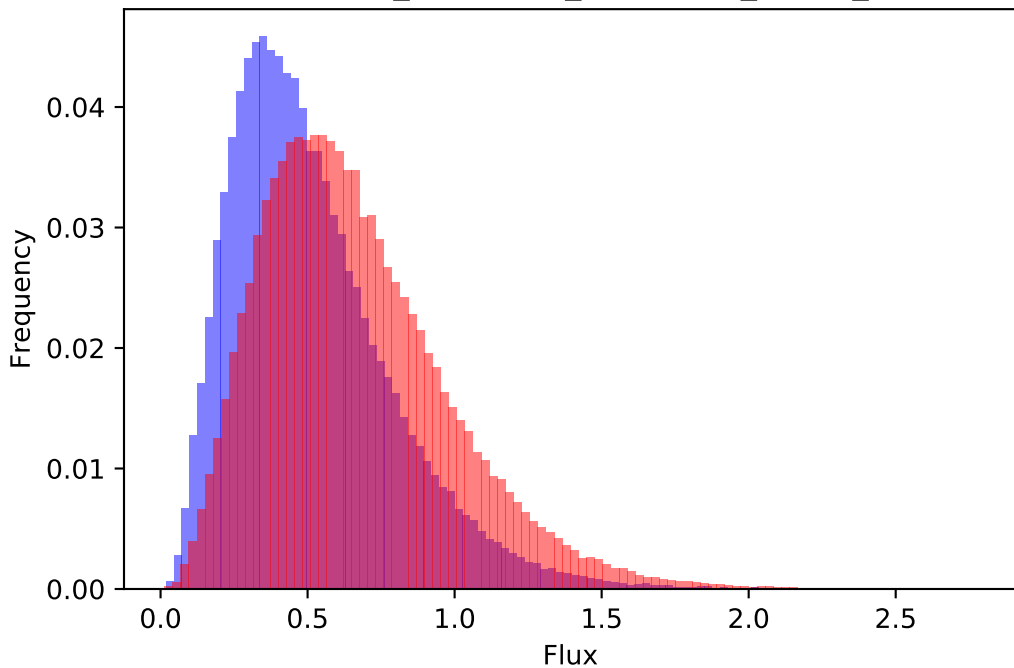
83 : $\text{ADP}_m + 4.0 \text{ H}_i + \text{Pi}_m \rightleftharpoons \text{ATP}_m + \text{H}_2\text{O}_m + 3.0 \text{ H}_m$



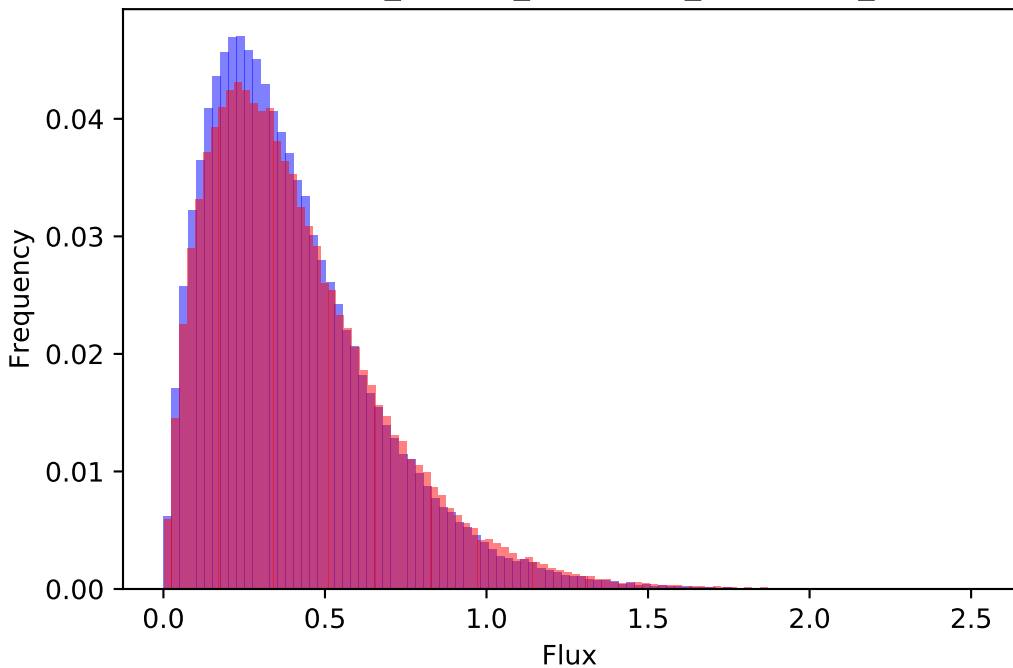
84 : O2_h + RuBP_h --> 2.0 H_h + PGA_h + PGCA_h



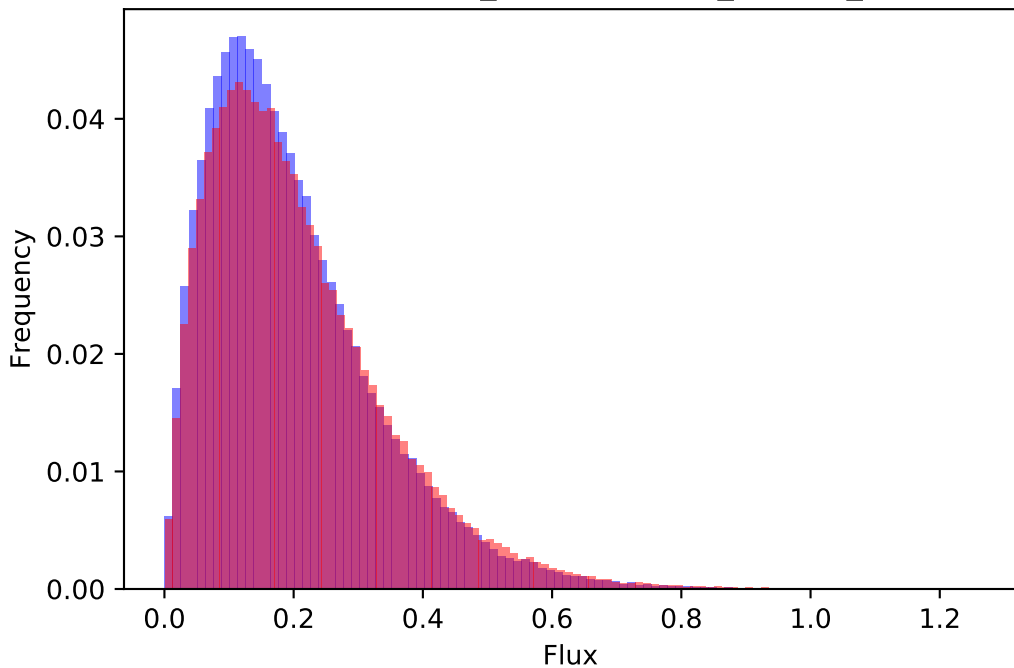
85 : H2O_h + PGCA_h --> GCA_h + Pi_h



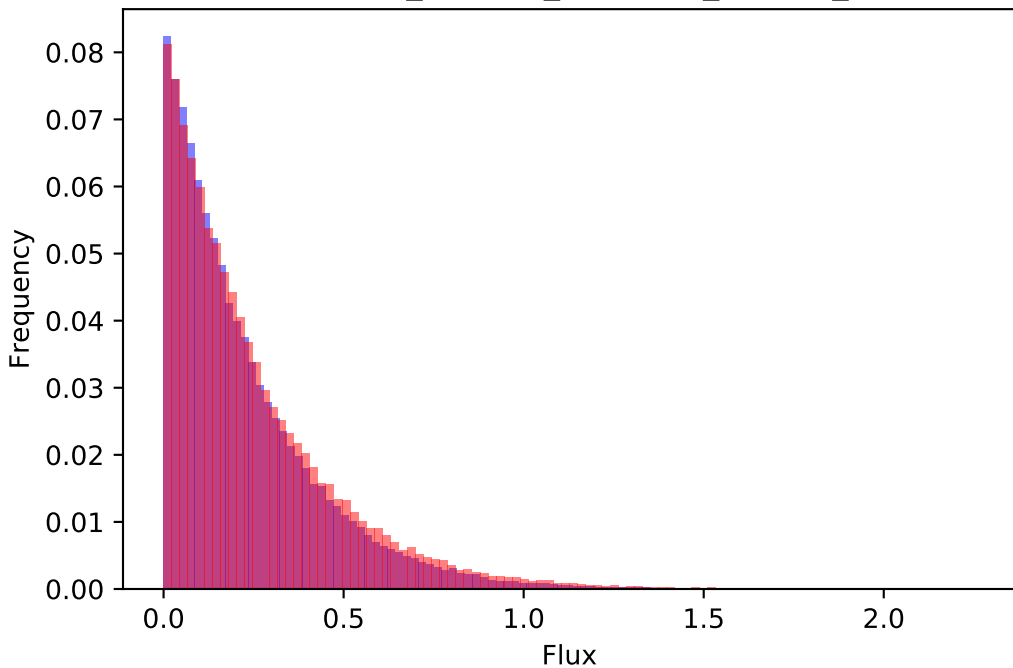
86 : GCA_p + O2_p --> GLX_p + H2O2_p



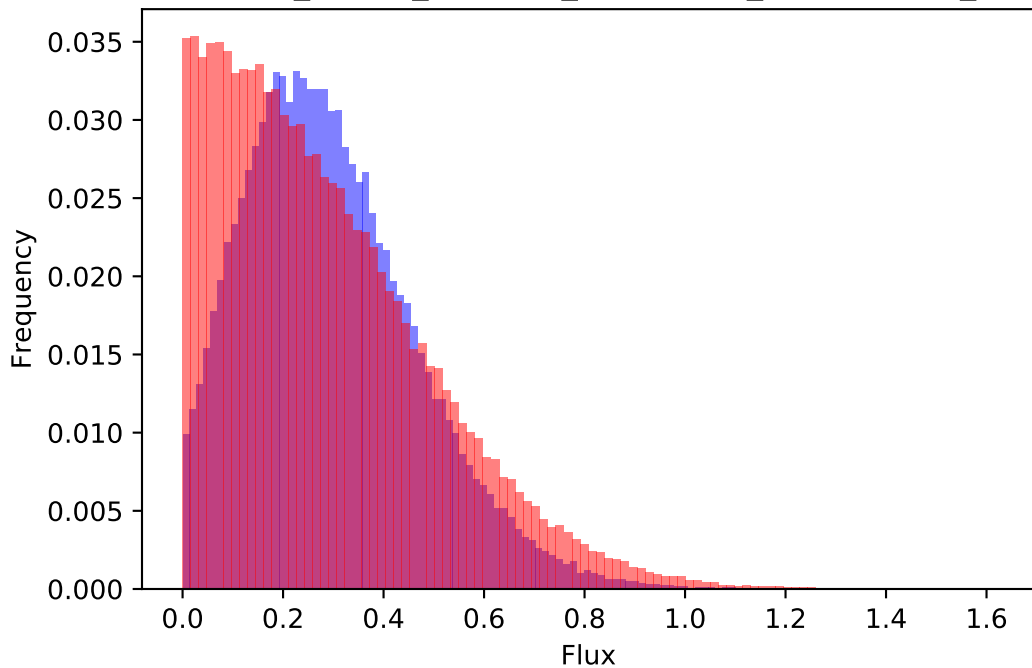
87 : 2.0 H2O2_p --> 2.0 H2O_p + O2_p



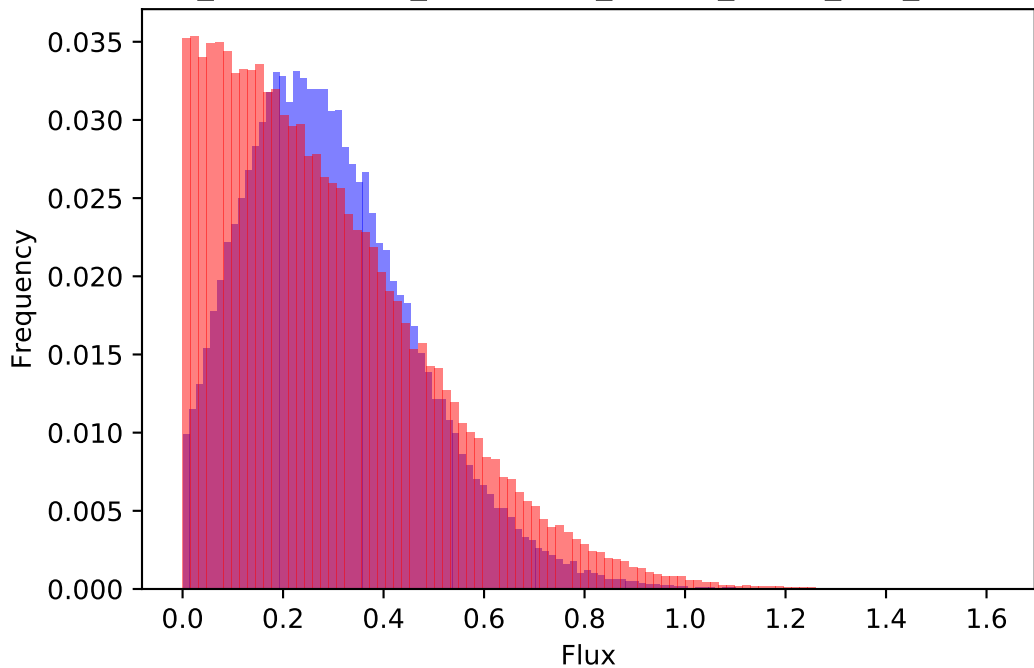
88 : GLX_p + Glu_p --> Gly_p + KG_p



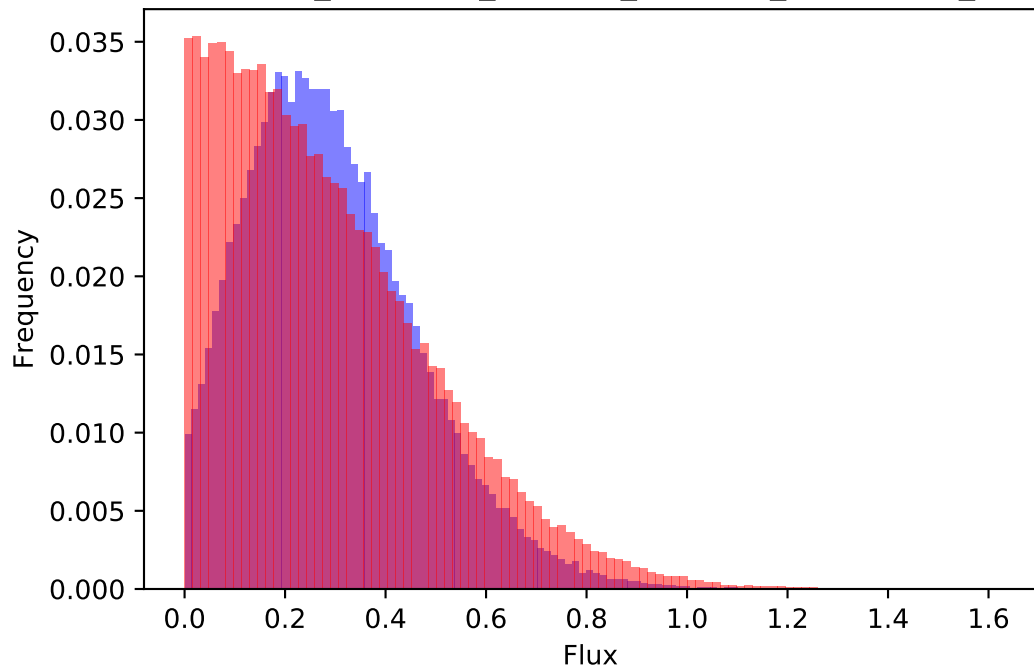
89 : Gly_m + H_m + LPL_m --> CO2_m + amDHP_m



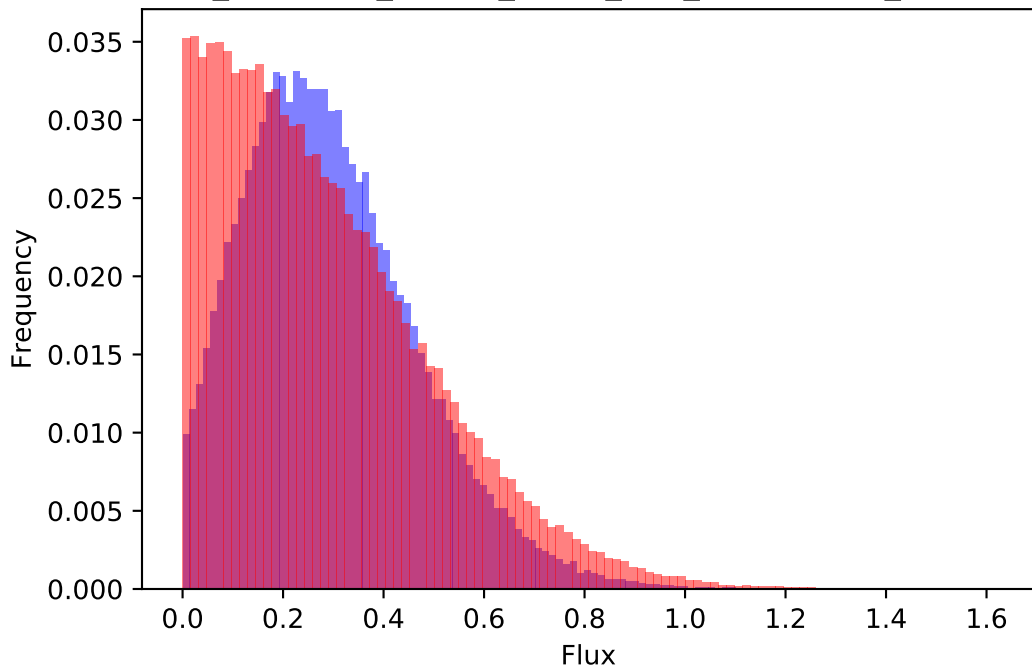
90 : THF_m + amDHP_m --> DHP_m + M_DASH_THF_m + NH4_m



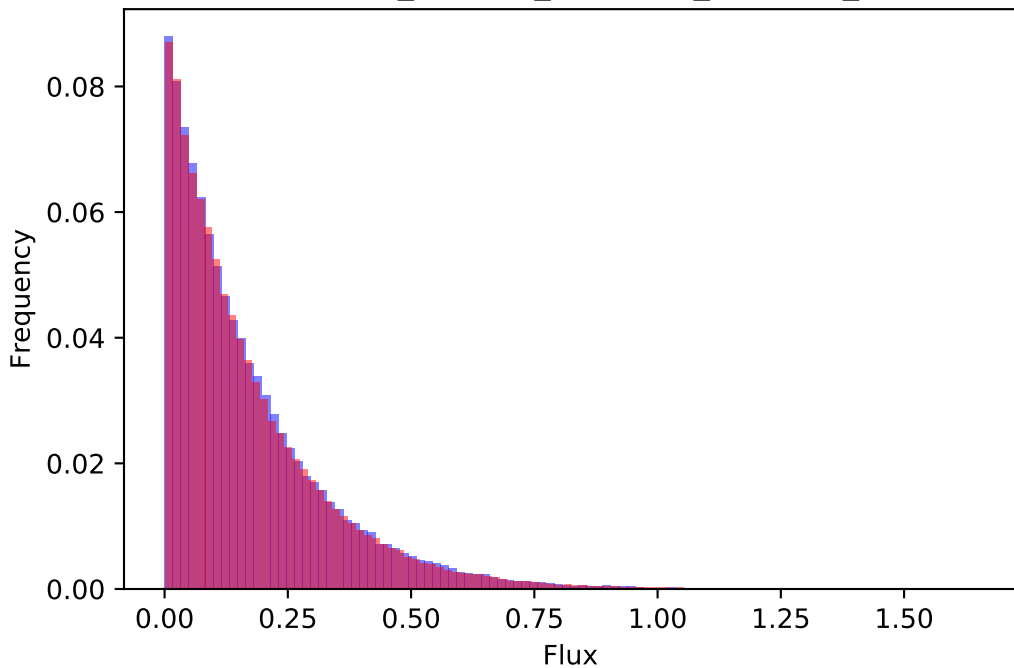
91 : DHP_m + NAD_m --> H_m + LPL_m + NADH_m



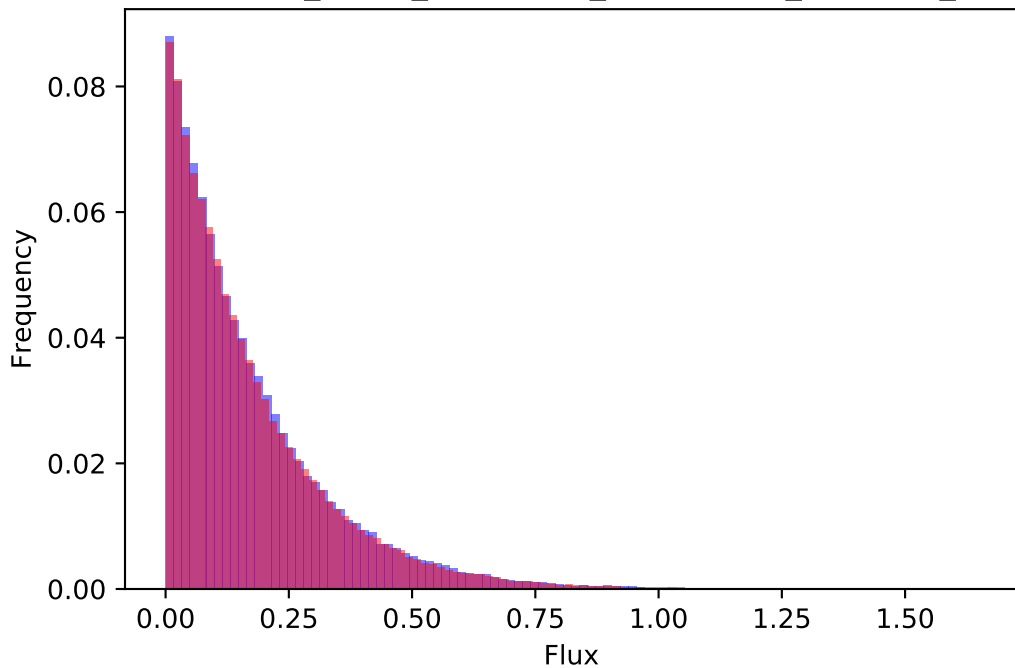
92 : Gly_m + H2O_m + M_DASH_THF_m <=> Ser_m + THF_m



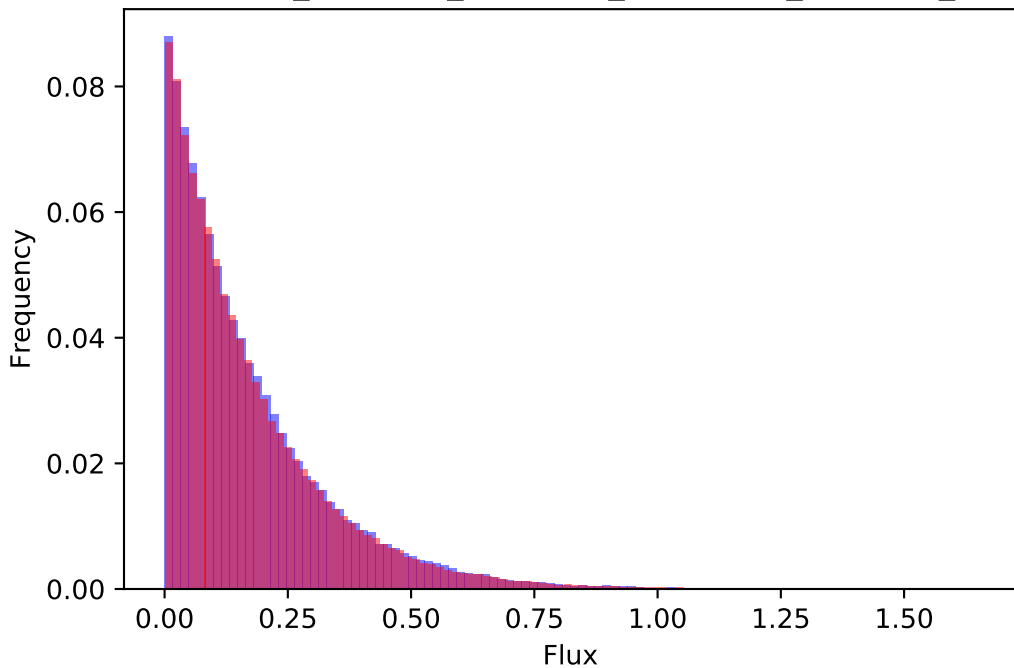
93 : GLX_p + Ser_p --> Gly_p + HPR_p



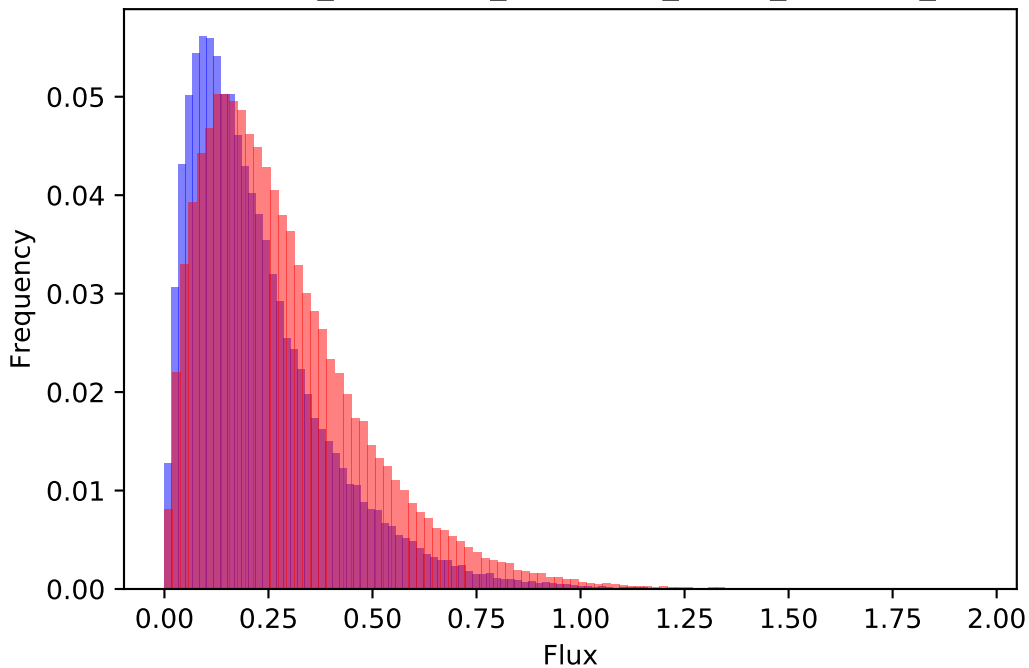
94 : HPR_p + H_p + NADH_p --> GCEA_p + NAD_p



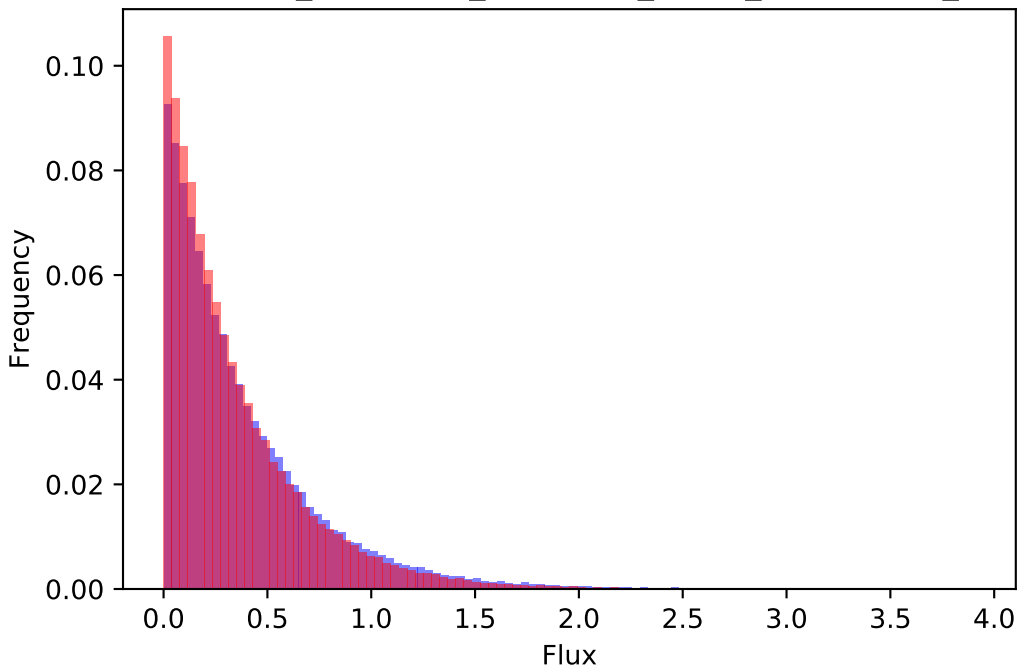
95 : Mal_p + NAD_p \rightleftharpoons H_p + NADH_p + OAA_p



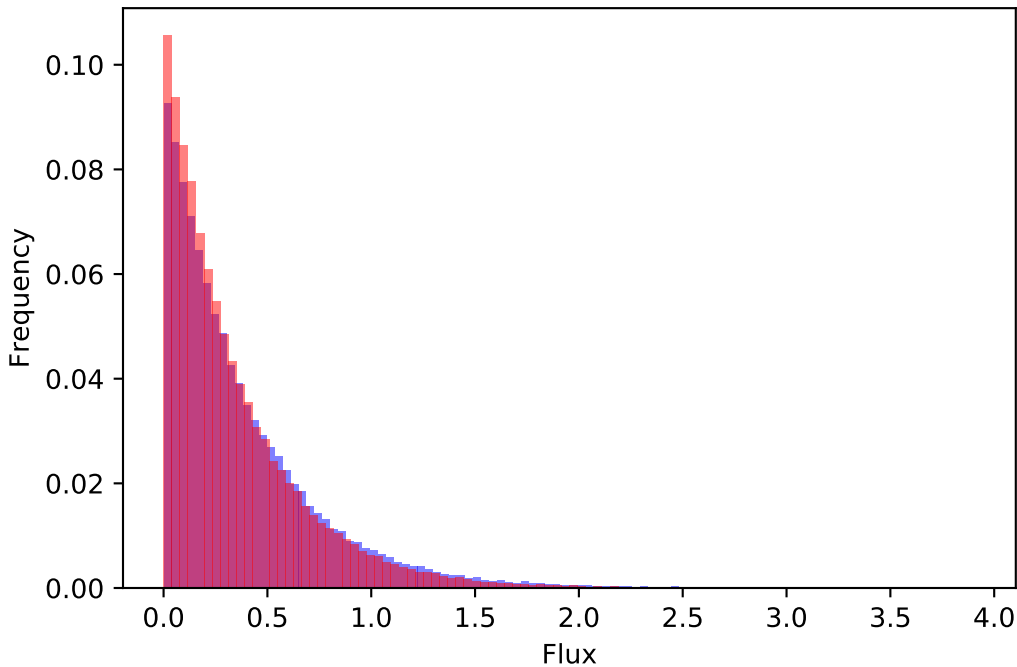
96 : ATP_h + GCEA_h --> ADP_h + H_h + PGA_h



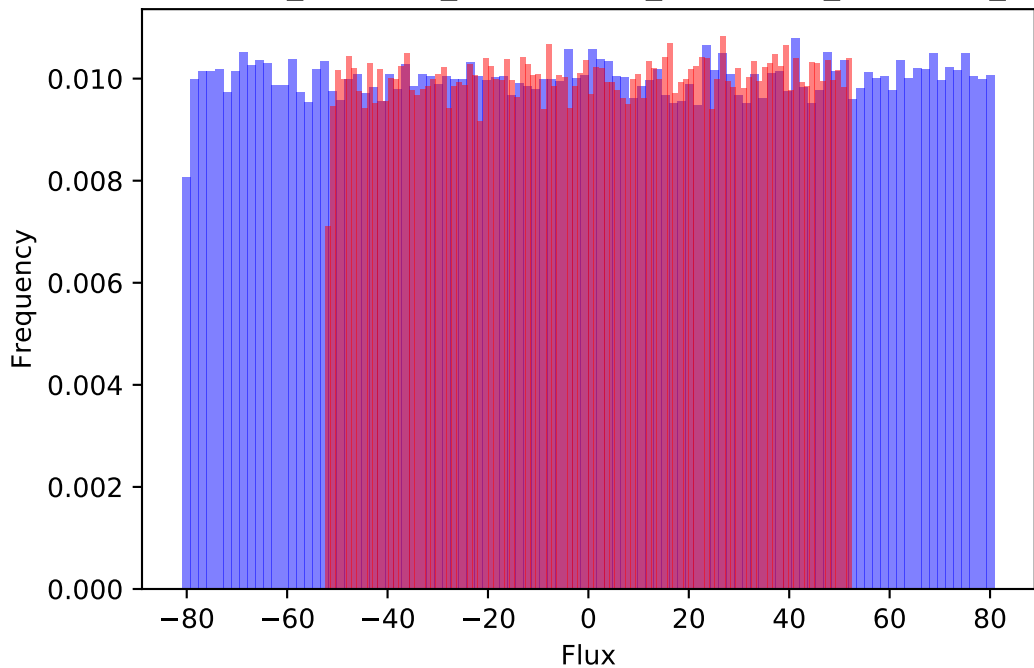
97 : G6P_h + NADP_h --> GLP_h + H_h + NADPH_h



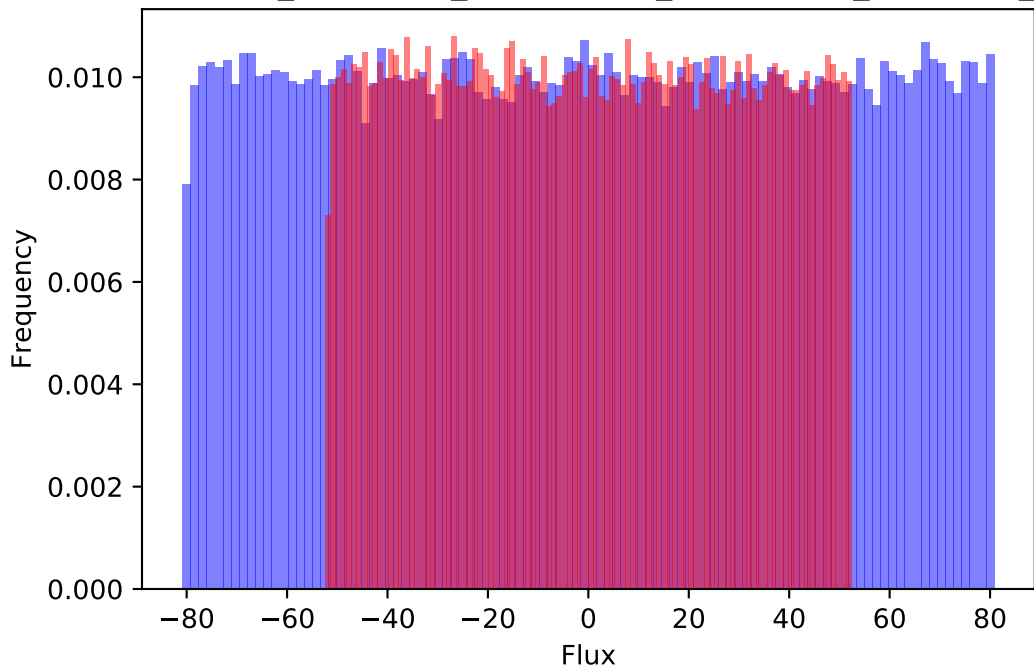
98 : GLP_h + H2O_h --> 6PG_h + H_h



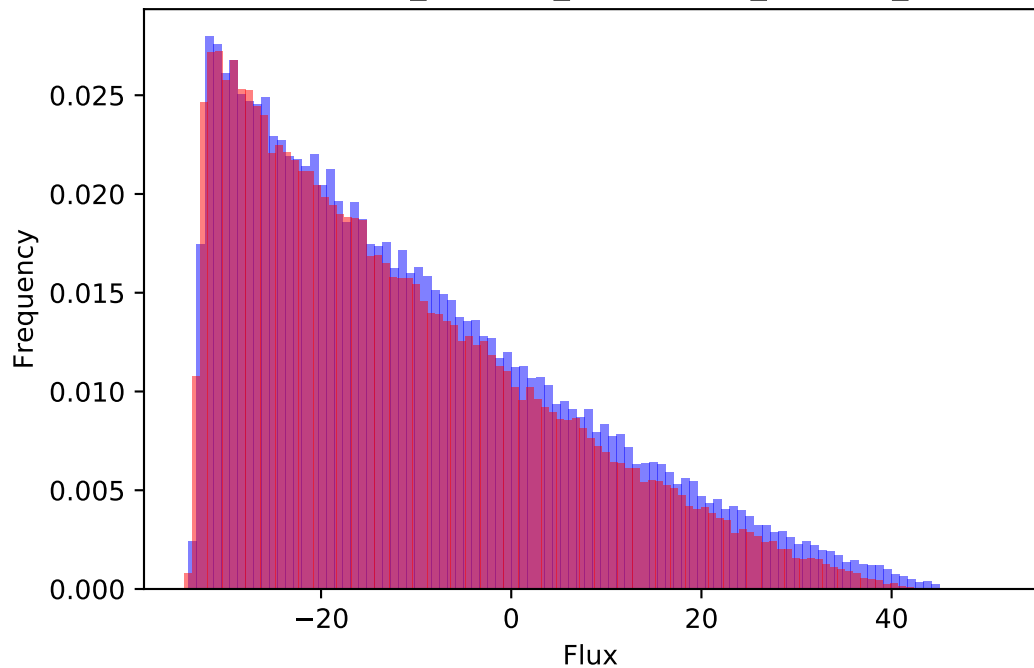
99 : 6PG_h + NAD_h \rightleftharpoons CO2_h + NADH_h + Ru5P_h



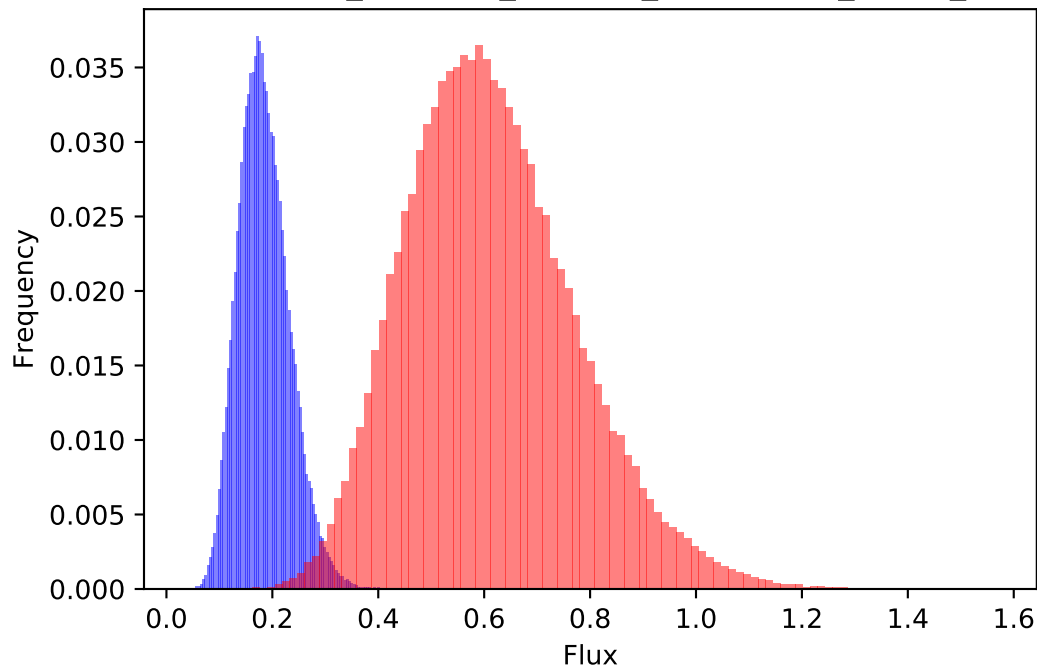
100 : 6PG_h + NADP_h <=> CO2_h + NADPH_h + Ru5P_h



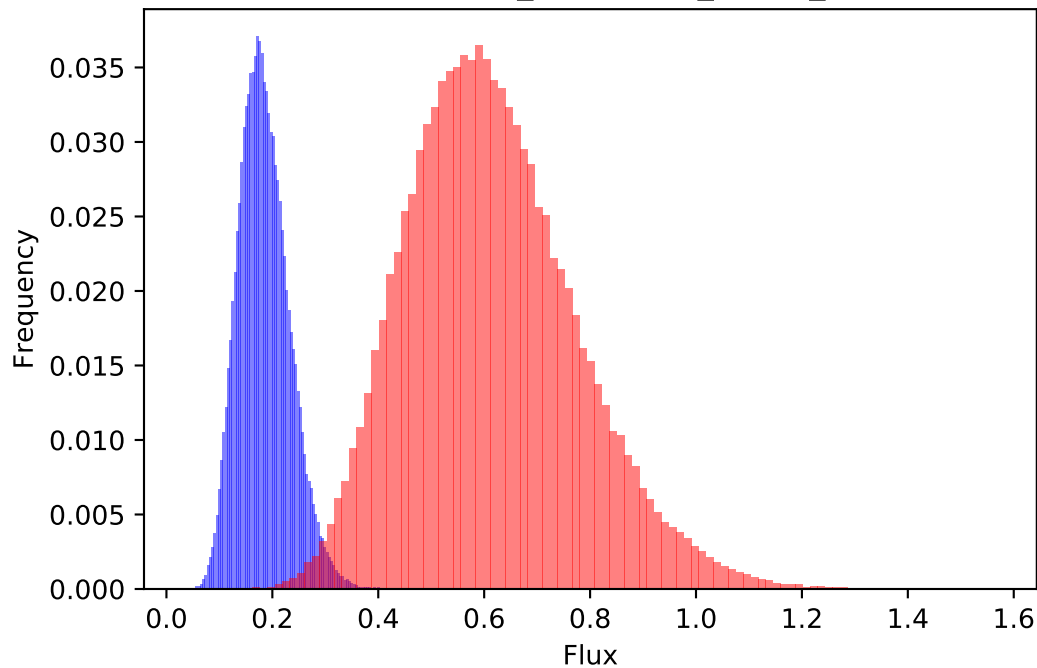
101 : GAP_h + S7P_h <=> E4P_h + F6P_h



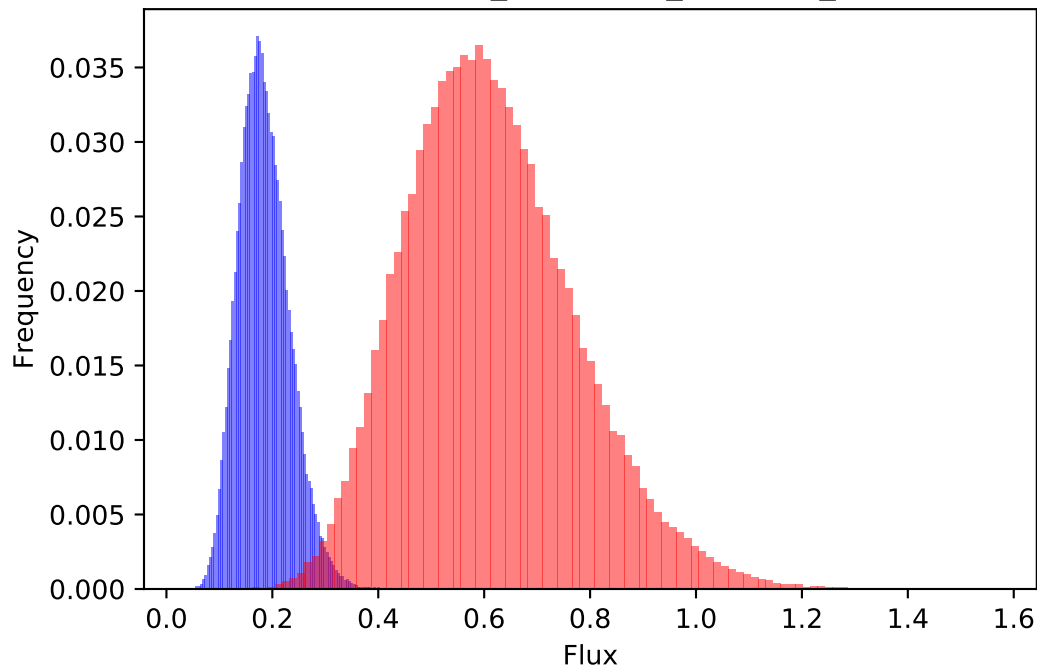
102 : E4P_h + H2O_h + PEP_h --> DAHP_h + Pi_h



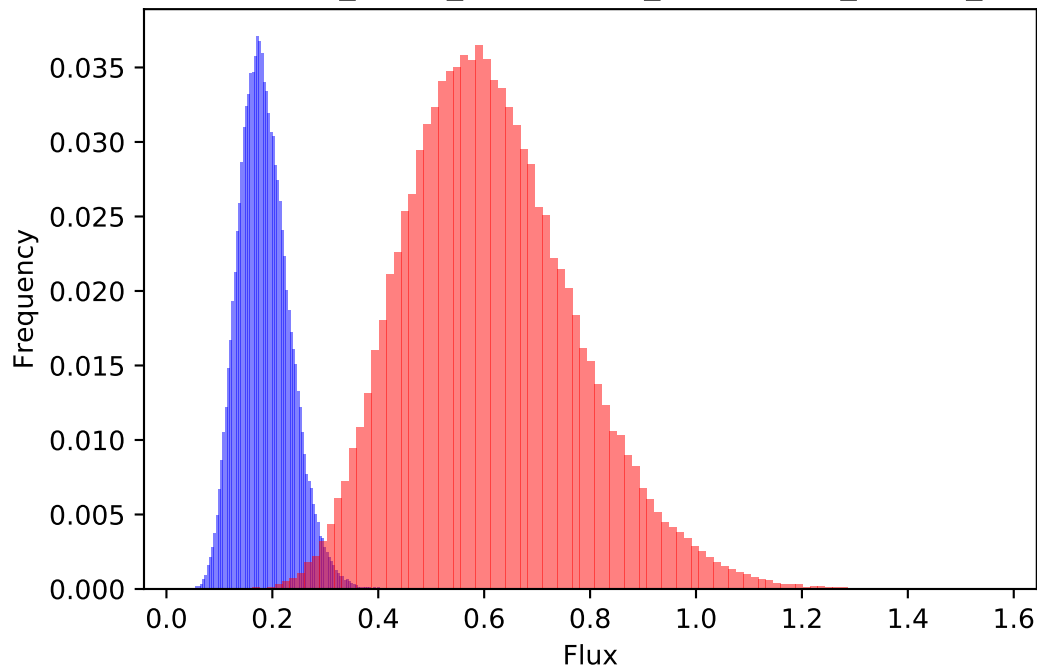
103 : DAHP_h --> DHQ_h + Pi_h



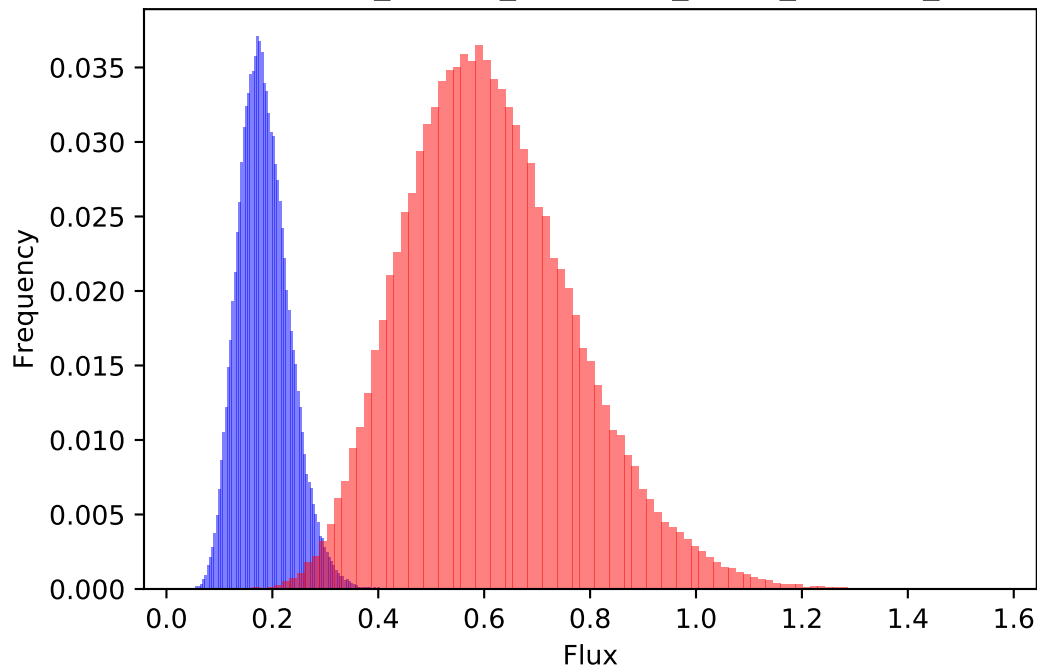
104 : DHQ_h --> DHS_h + H2O_h



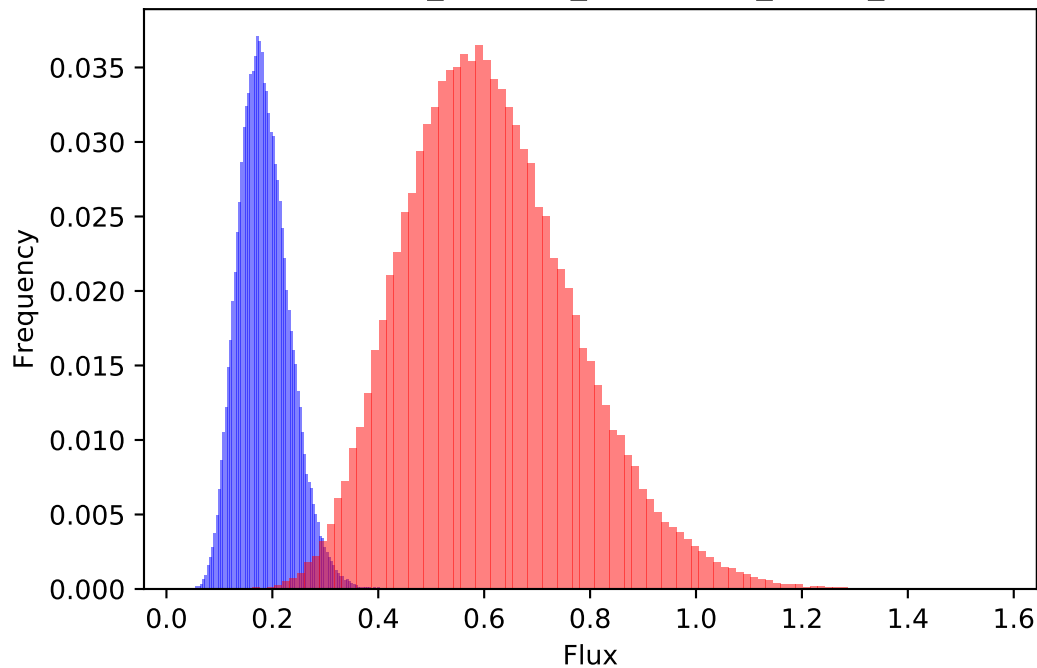
105 : DHS_h + H_h + NADPH_h --> NADP_h + SA_h



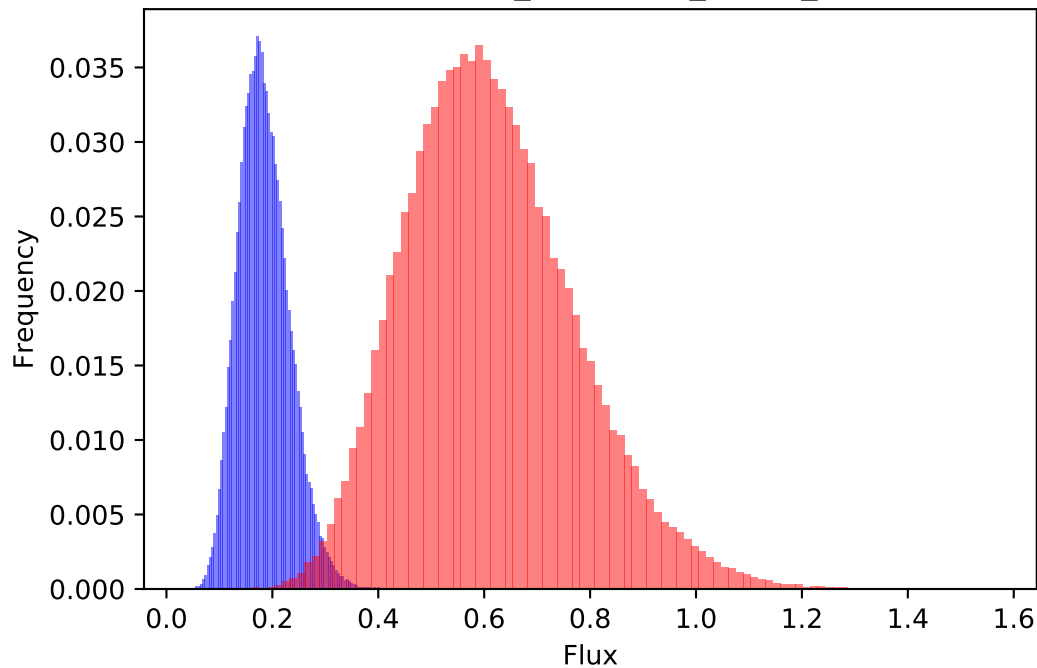
106 : ATP_h + SA_h --> ADP_h + H_h + S3P_h



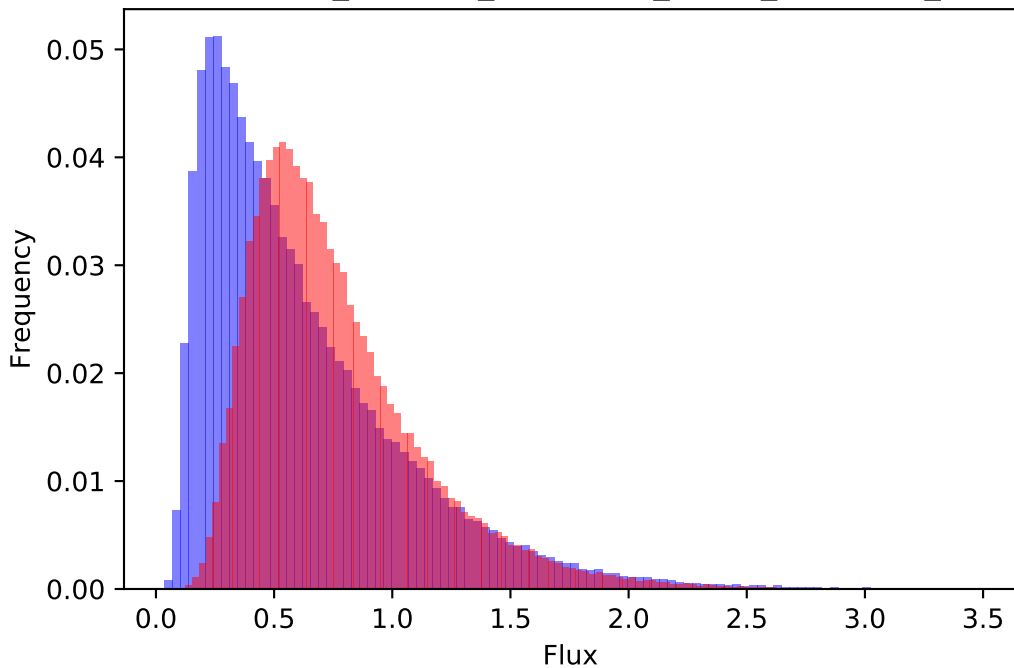
107 : PEP_h + S3P_h --> EPSP_h + Pi_h



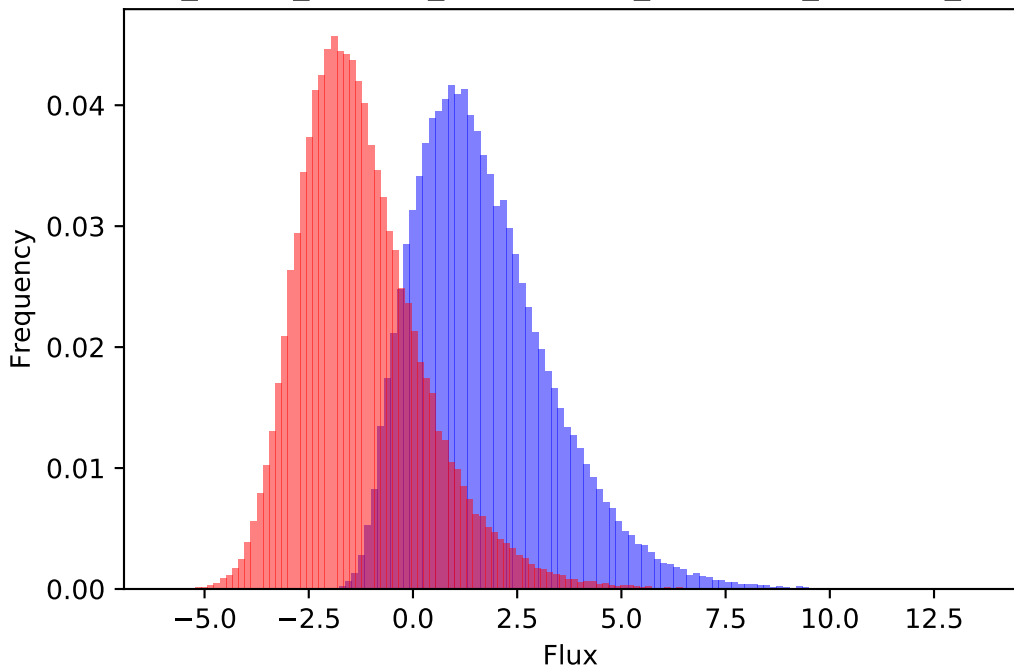
108 : EPSP_h --> CHR_h + Pi_h



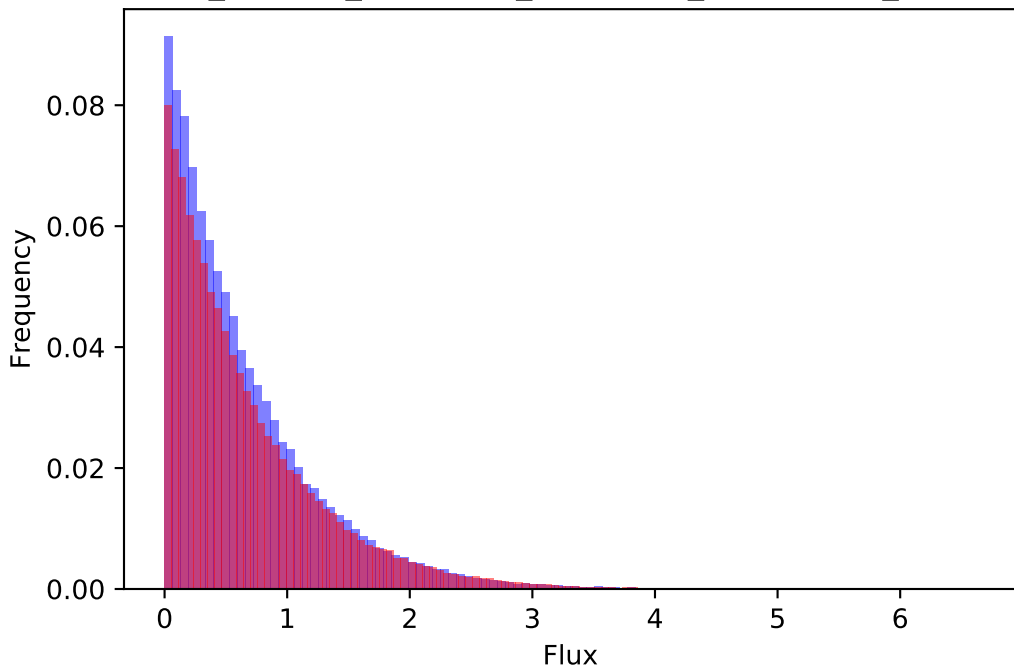
109 : ATP_h + R5P_h --> AMP_h + H_h + PRPP_h



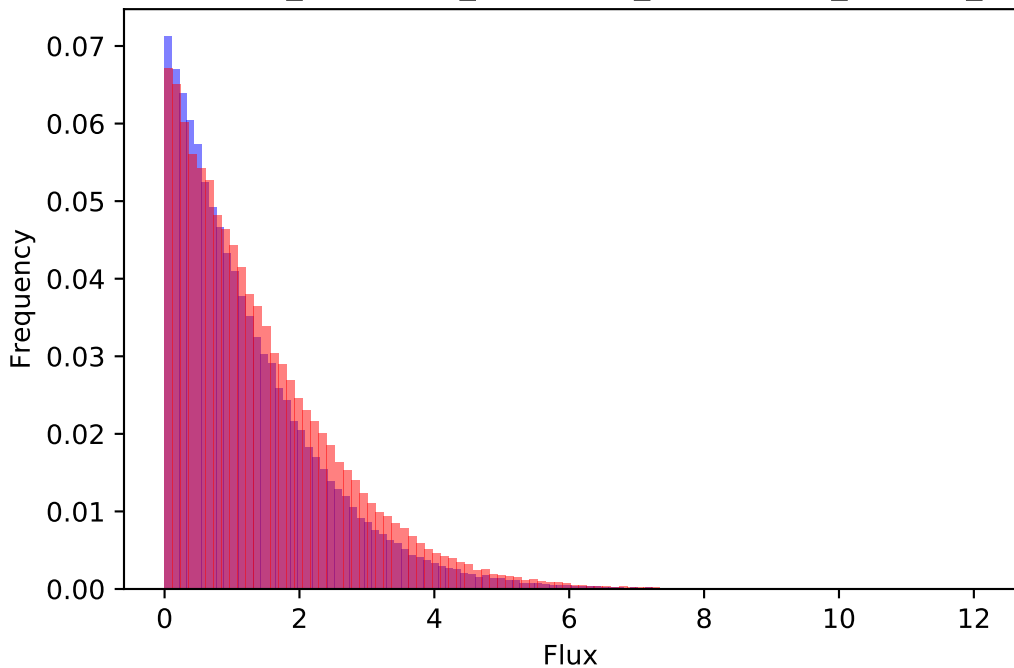
110 : $\text{ATP_h} + \text{Pi_h} + \text{Pyr_h} \rightleftharpoons \text{AMP_h} + 2.0 \text{ H_h} + \text{PEP_h} + \text{PPi_h}$



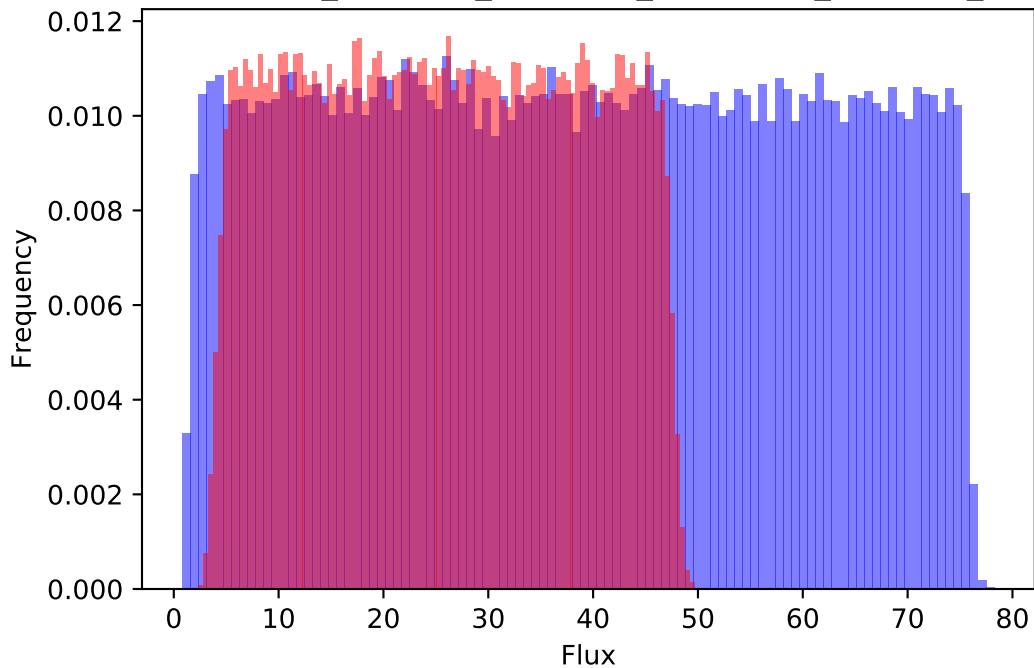
111 : H_c + Mal_c + NADP_c --> CO2_c + NADPH_c + Pyr_c



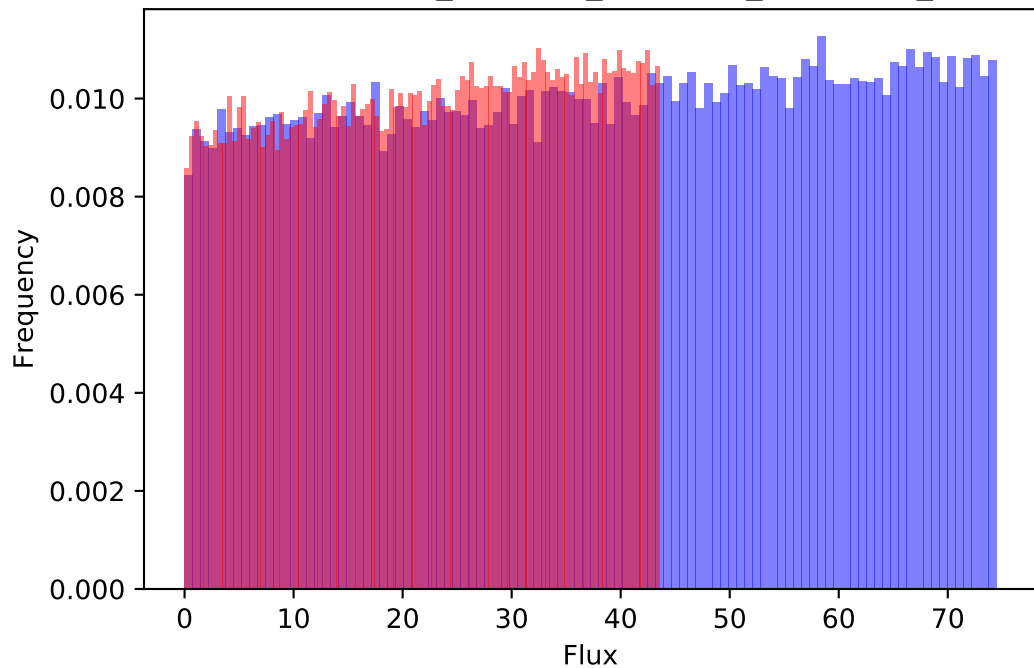
112 : Mal_h + NADP_h --> CO2_h + NADPH_h + Pyr_h



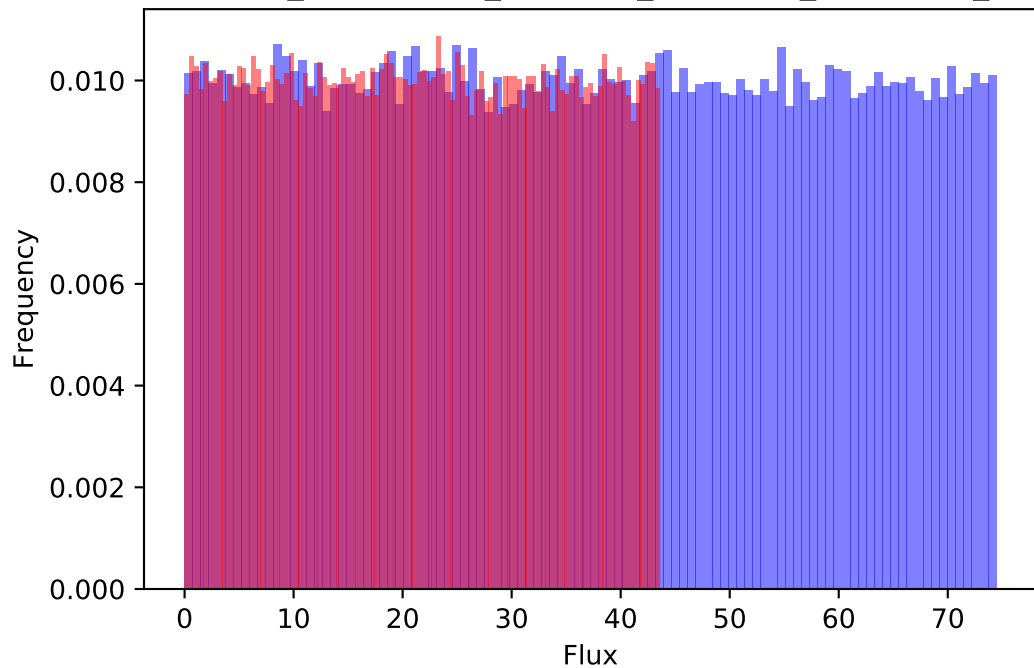
113 : Mal_h + NAD_h <=> H_h + NADH_h + OAA_h



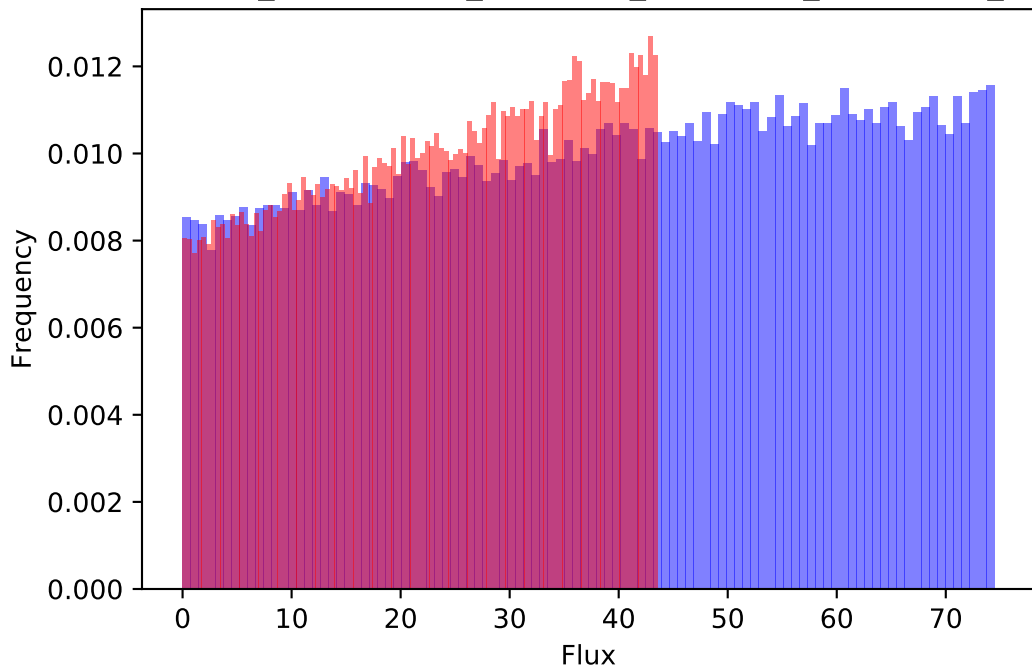
114 : NADPH_c + OAA_c --> Mal_c + NADP_c



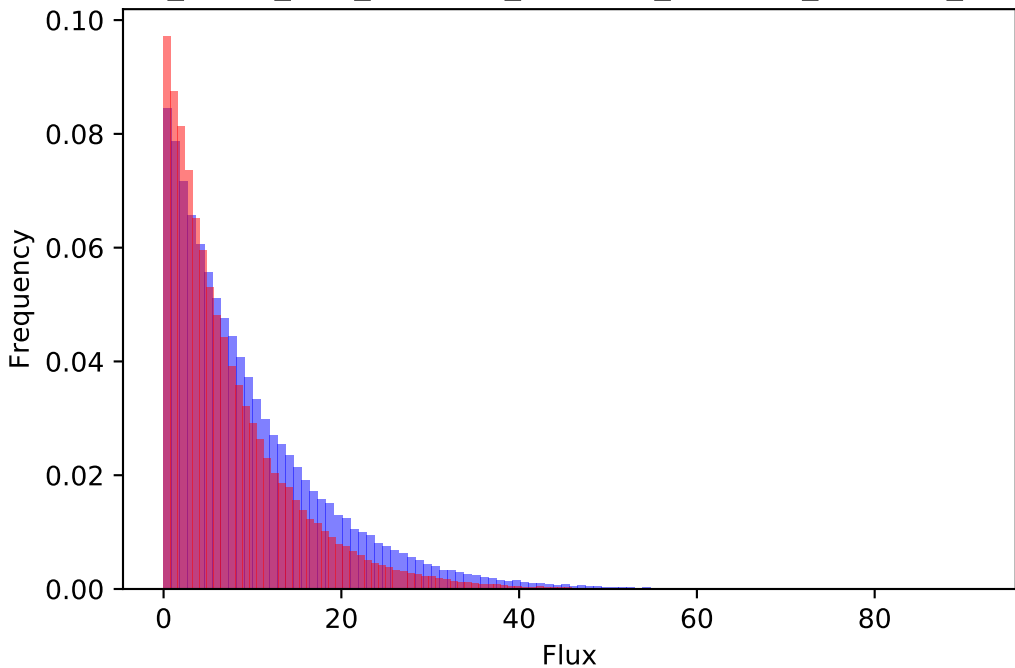
115 : H_h + NADPH_h + OAA_h --> Mal_h + NADP_h



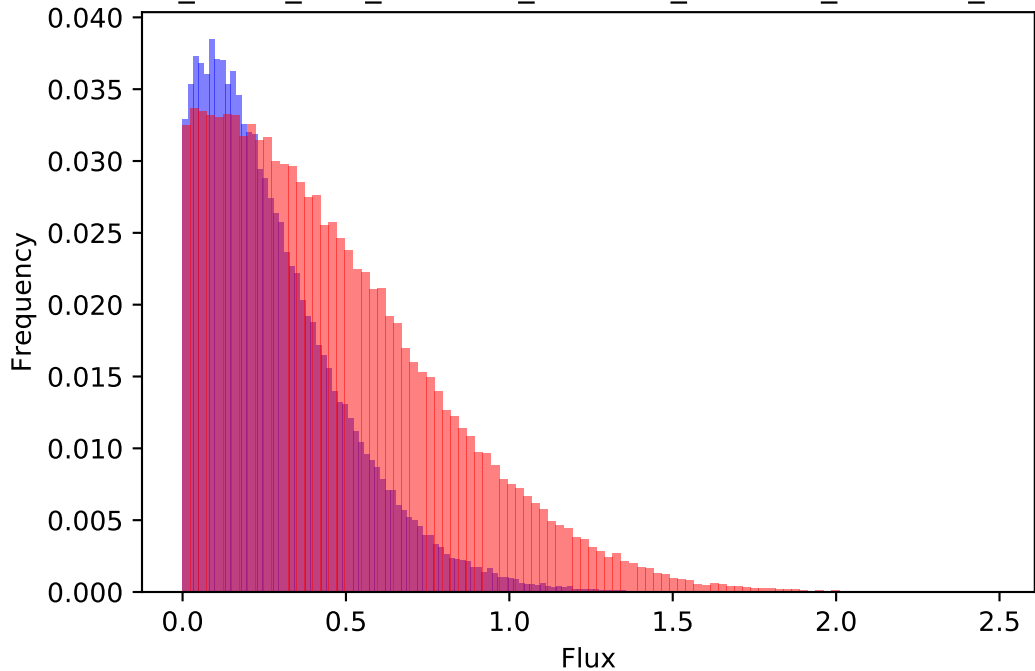
116 : H_m + NADPH_m + OAA_m --> Mal_m + NADP_m



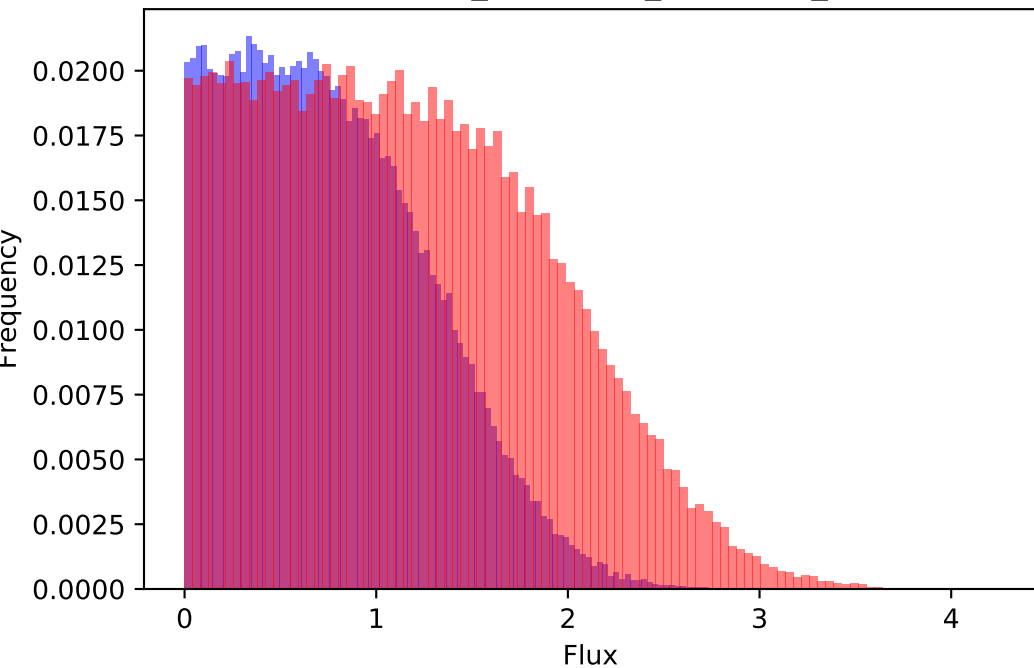
117 : A_DASH_CoA_c + H2O_c + OAA_c --> Cit_c + CoA_c + H_c



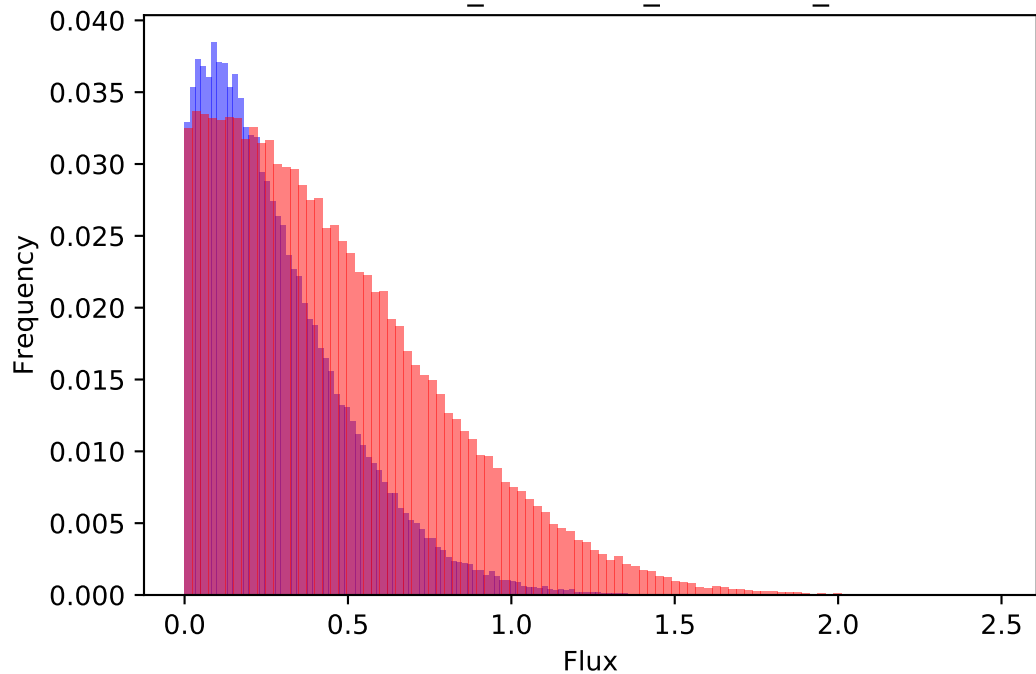
118 : A_DASH_CoA_h + H2O_h + OAA_h --> Cit_h + CoA_h + H_h



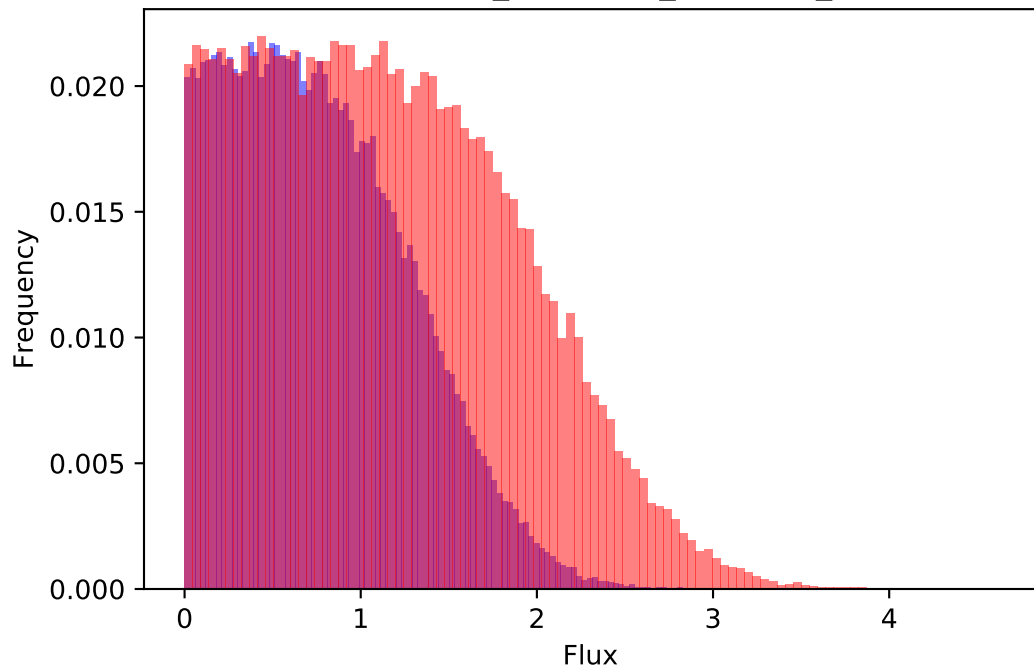
119 : Cit_c --> H2O_c + cACN_c



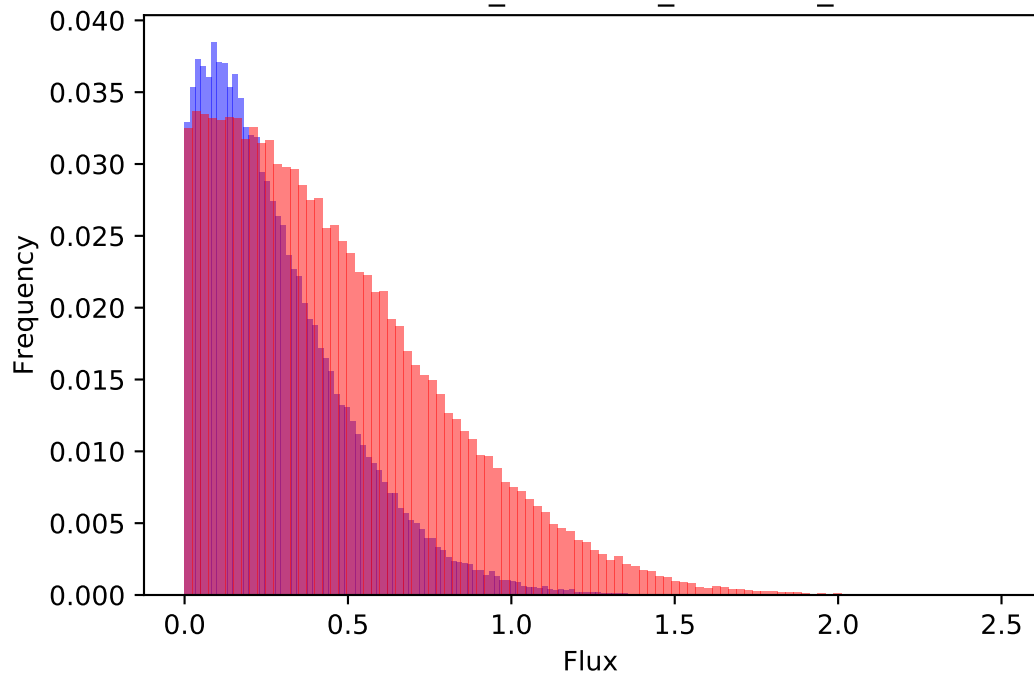
120 : Cit_h --> H2O_h + cACN_h



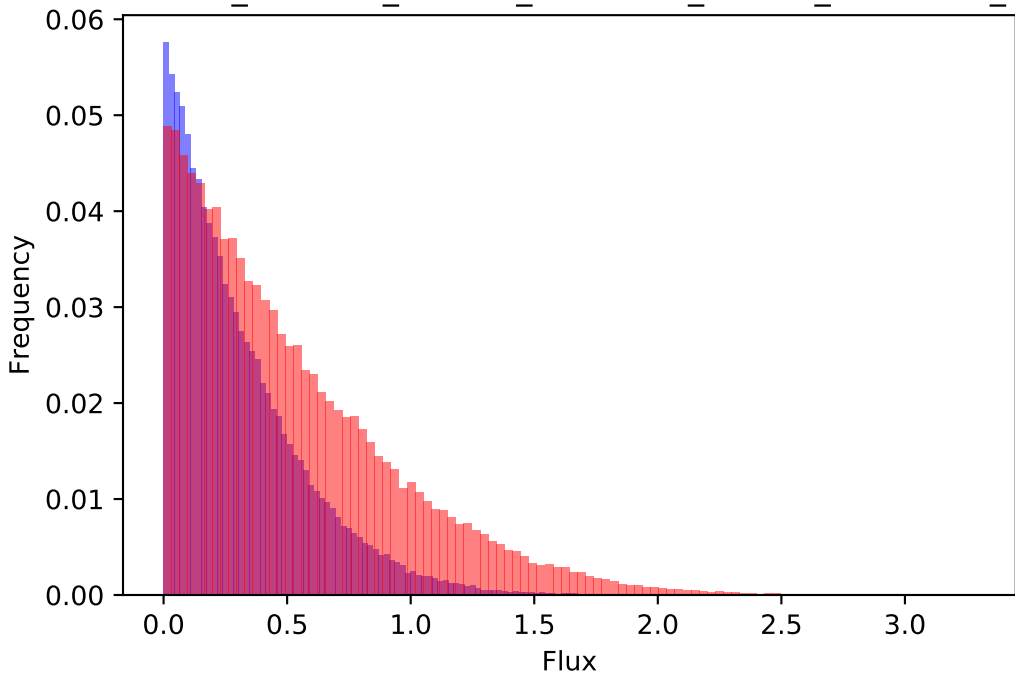
121 : H2O_c + cACN_c --> iCit_c



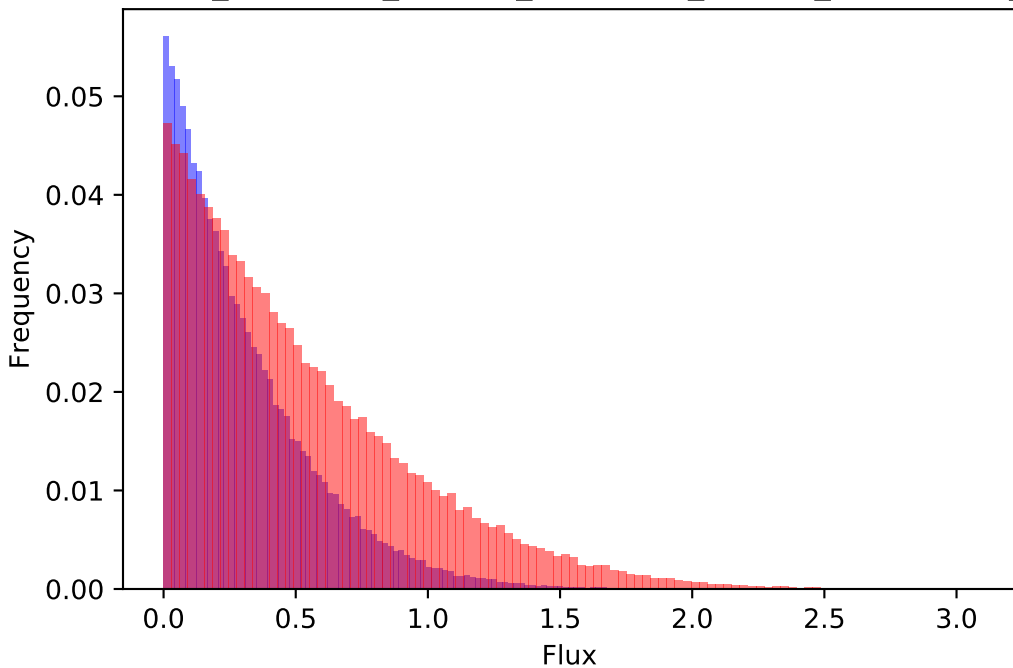
122 : H2O_h + cACN_h --> iCit_h



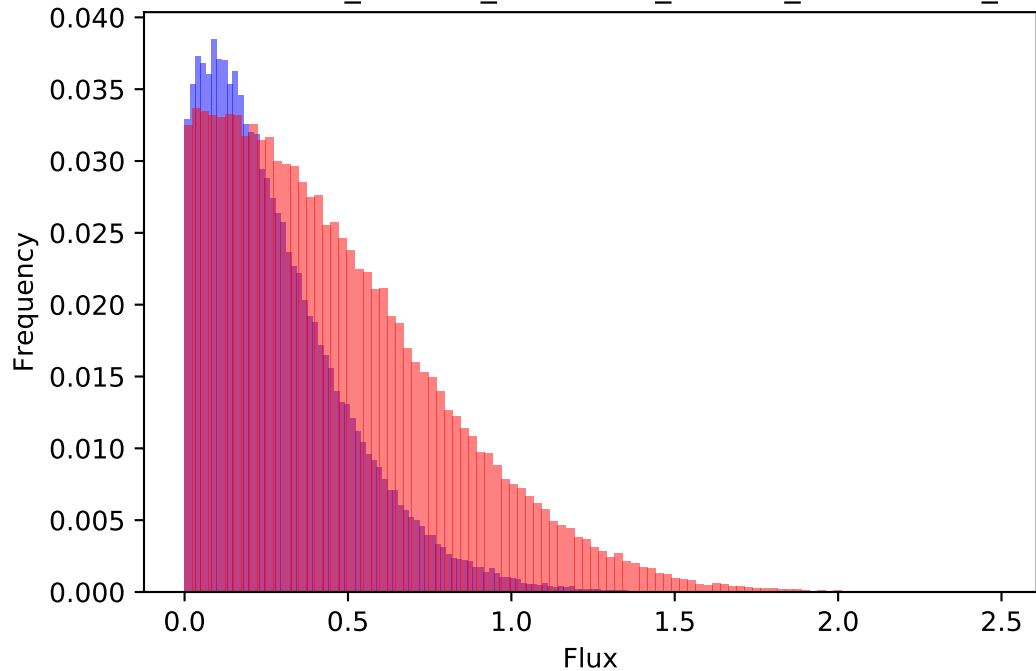
123 : $\text{H_c} + \text{NAD_c} + \text{iCit_c} \rightarrow \text{CO2_c} + \text{KG_c} + \text{NADH_c}$



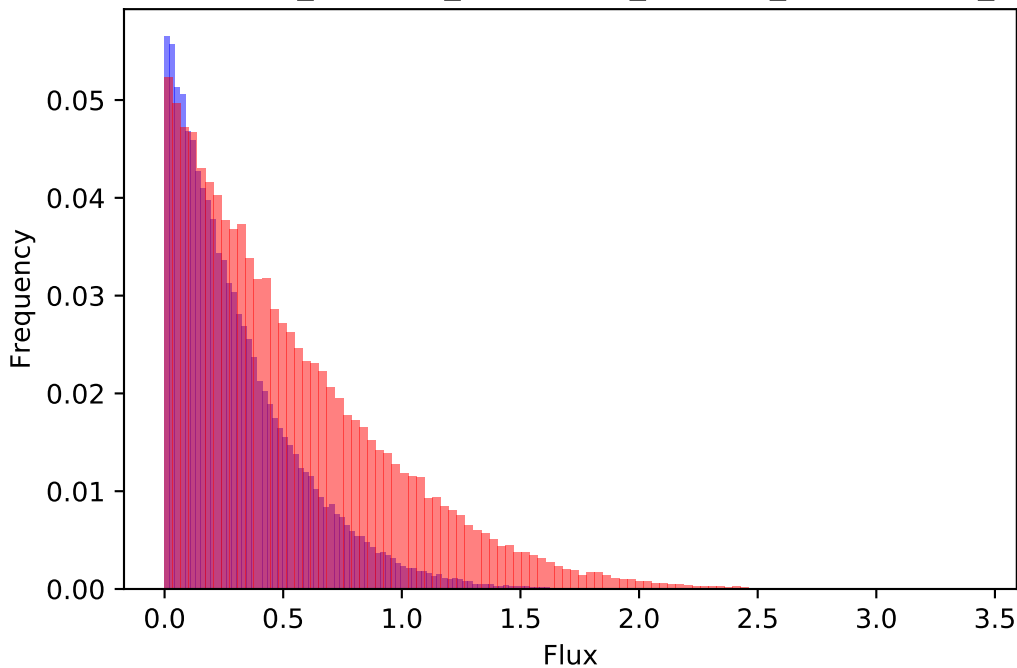
124 : $\text{H_c} + \text{NADP_c} + \text{iCit_c} \rightarrow \text{CO2_c} + \text{KG_c} + \text{NADPH_c}$



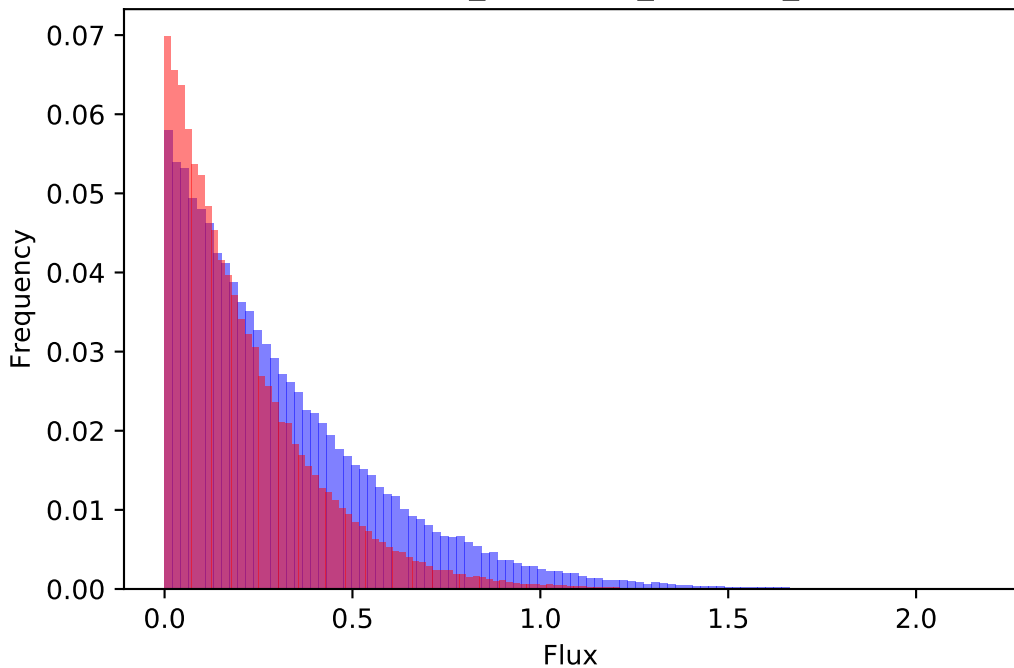
125 : NADP_h + iCit_h --> CO2_h + KG_h + NADPH_h



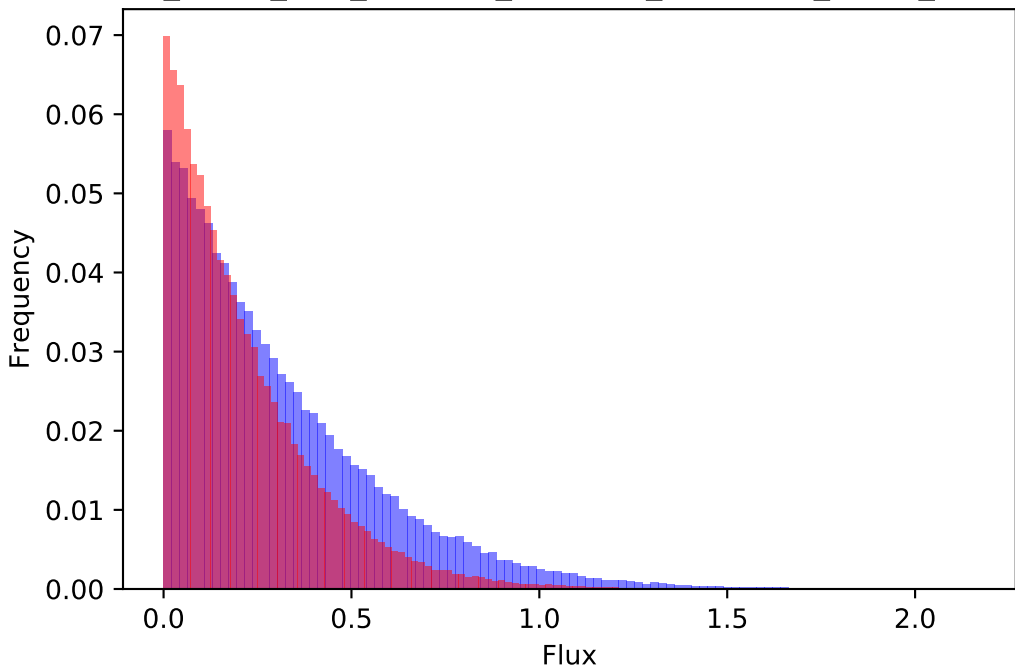
126 : NADP_m + iCit_m --> CO2_m + KG_m + NADPH_m



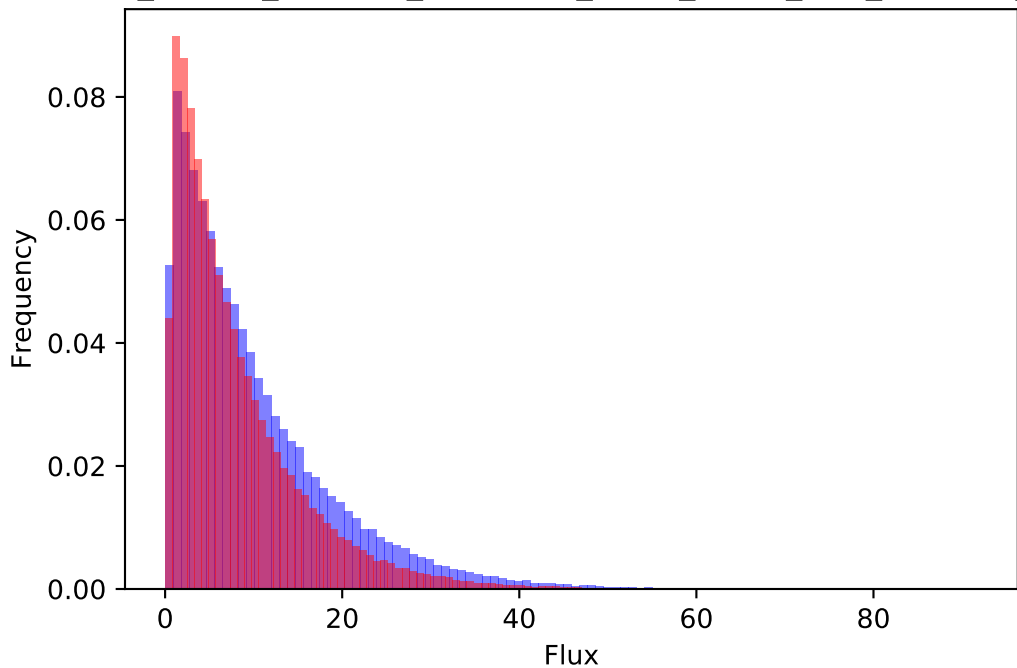
127 : iCit_c --> GLX_c + SCA_c



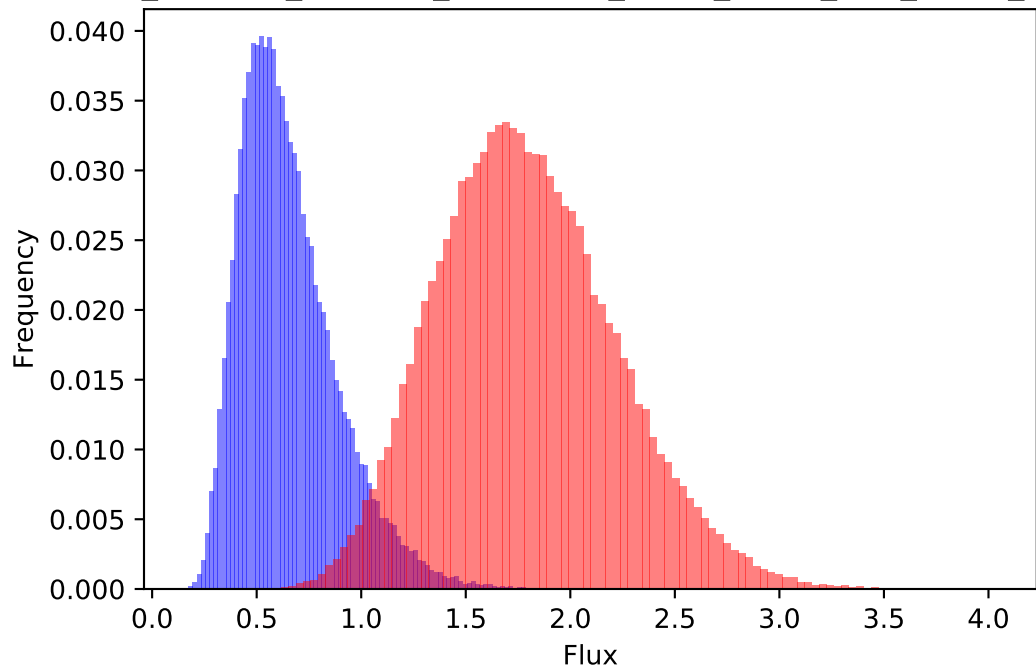
128 : A_DASH_CoA_c + GLX_c + H2O_c --> CoA_c + H_c + Mal_c

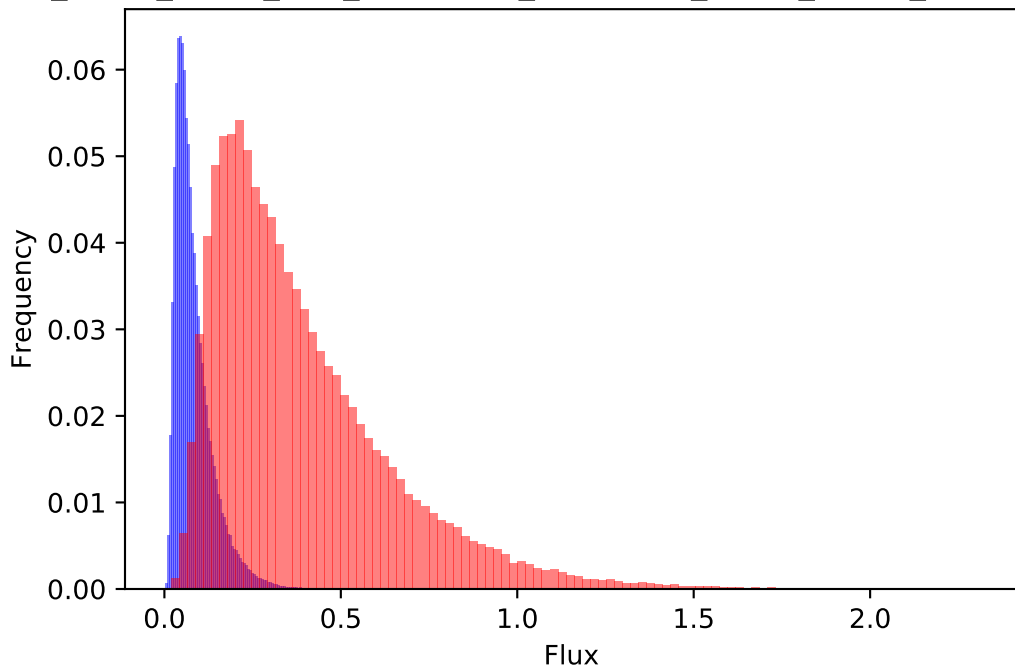
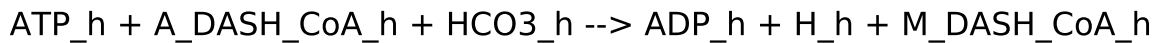


129 : ATP_c + Cit_c + CoA_c --> ADP_c + A_DASH_CoA_c + OAA_c + Pi_c

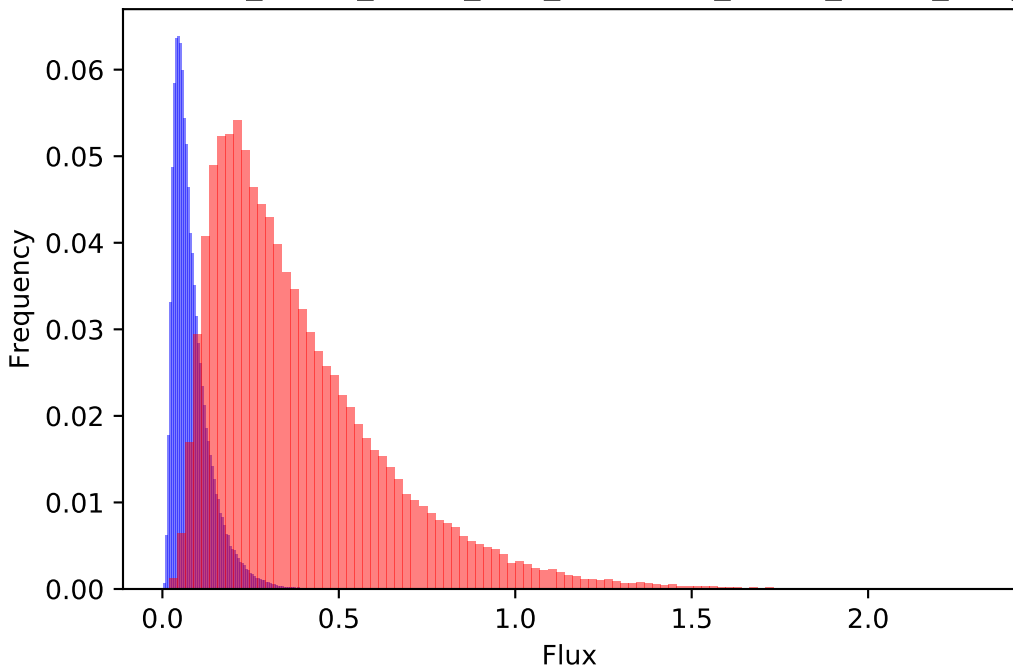


130 : AC_h + ATP_h + CoA_h --> AMP_h + A_DASH_CoA_h + H_h + PPi_h

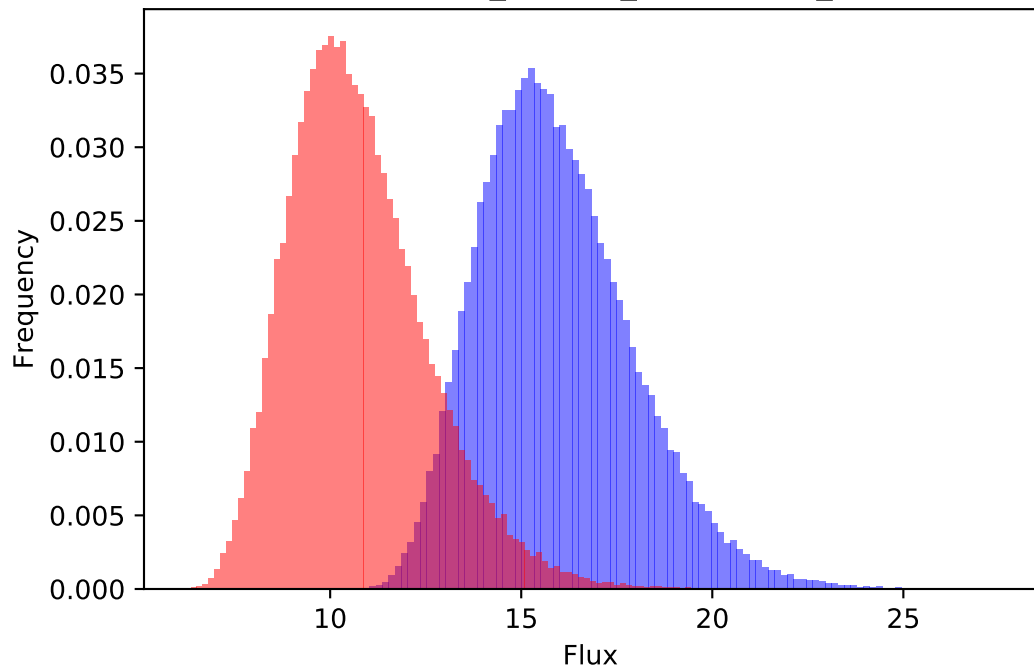




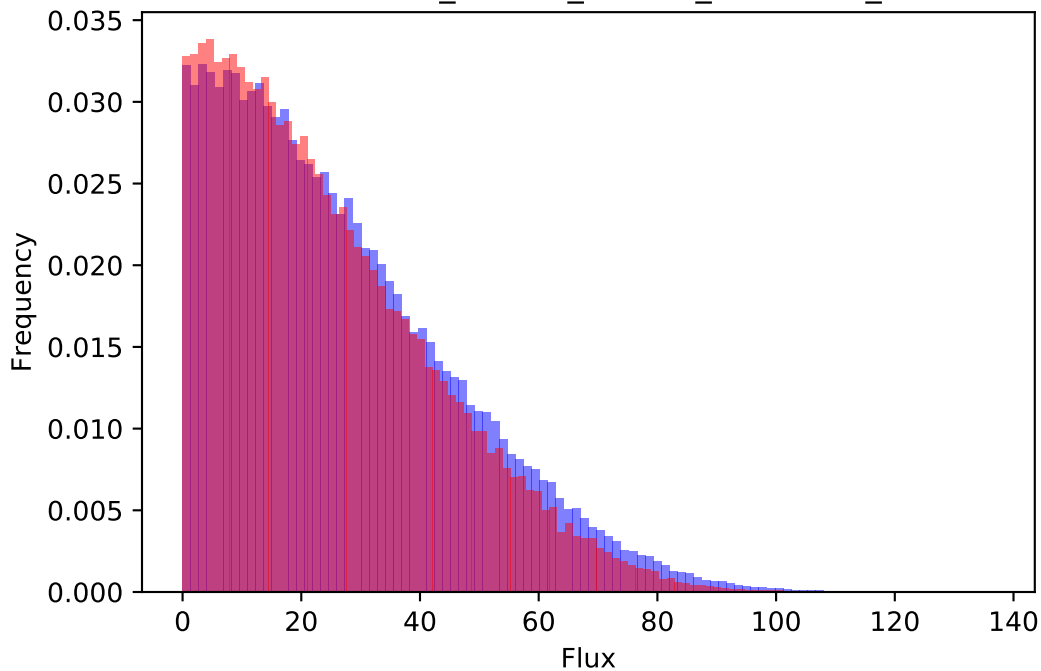
132 : ACP_h + M_DASH_CoA_h --> CoA_h + M_DASH_ACP_h



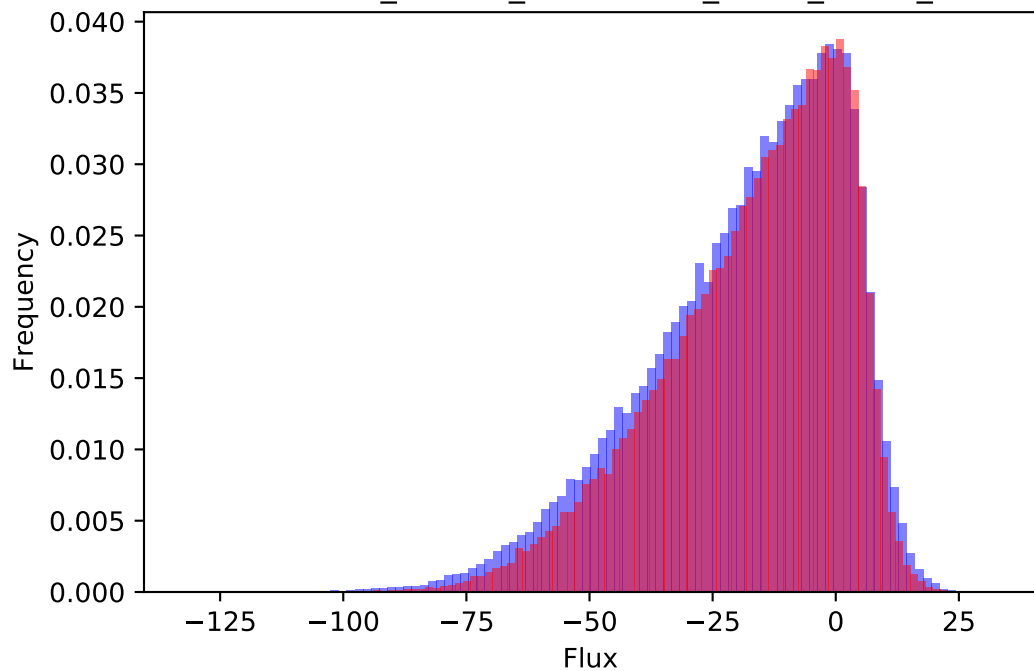
133 : H2O_h + PPI_h --> 2.0 Pi_h



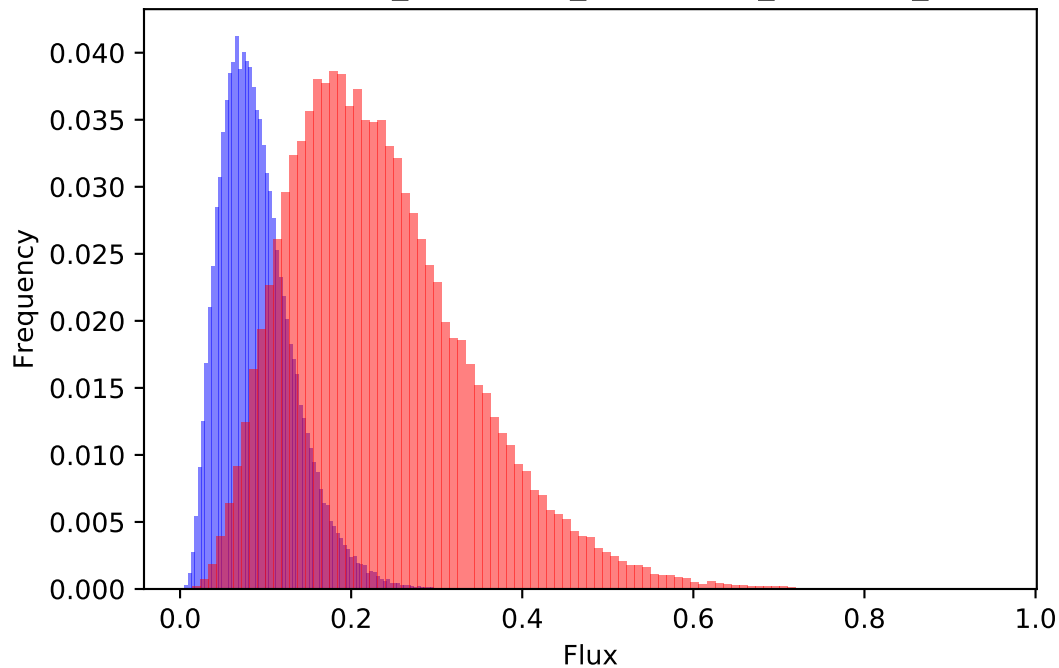
134 : H₂O_c + P*Pi*_c --> H_c + 2.0 P*i*_c



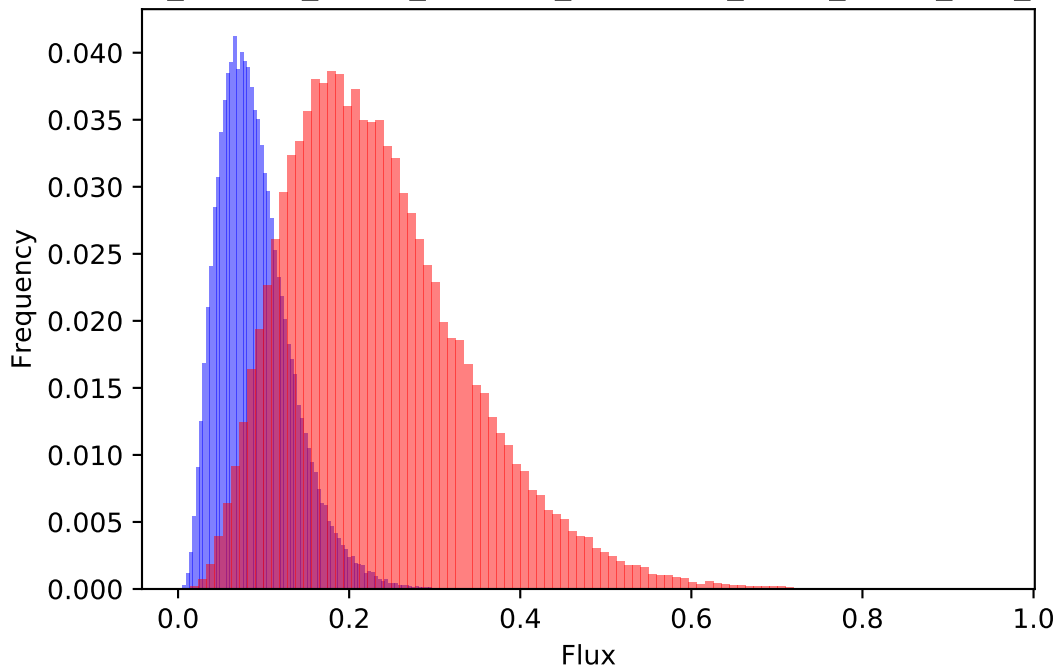
135 : $\text{F6P}_c + \text{PPi}_c \rightleftharpoons \text{FBP}_c + \text{H}_c + \text{Pi}_c$



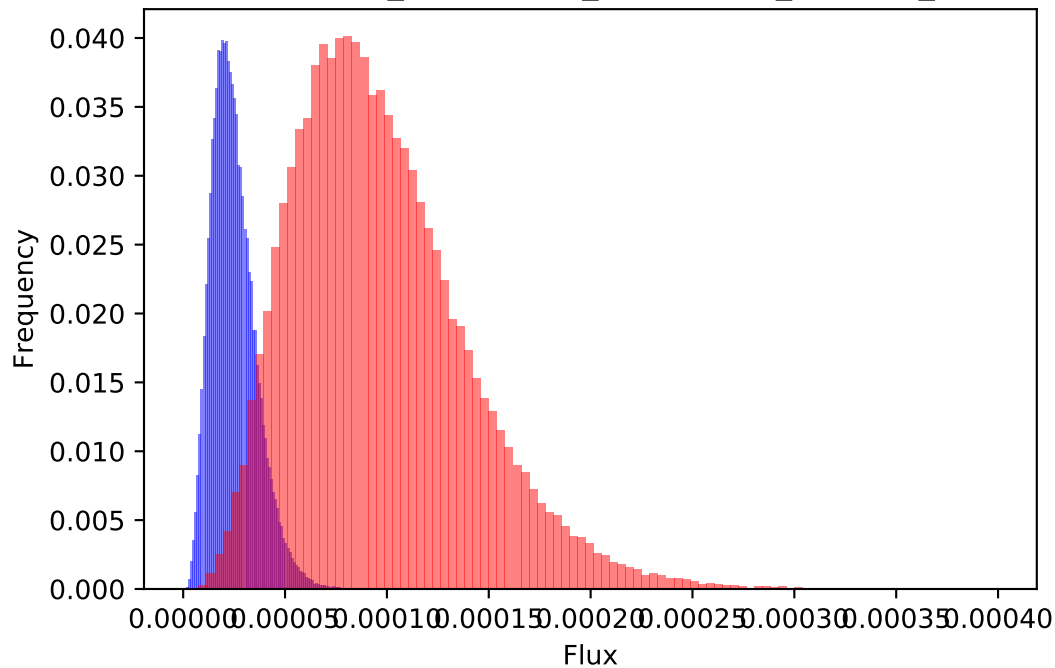
136 : CO2_h + NADH_h <=> For_h + NAD_h



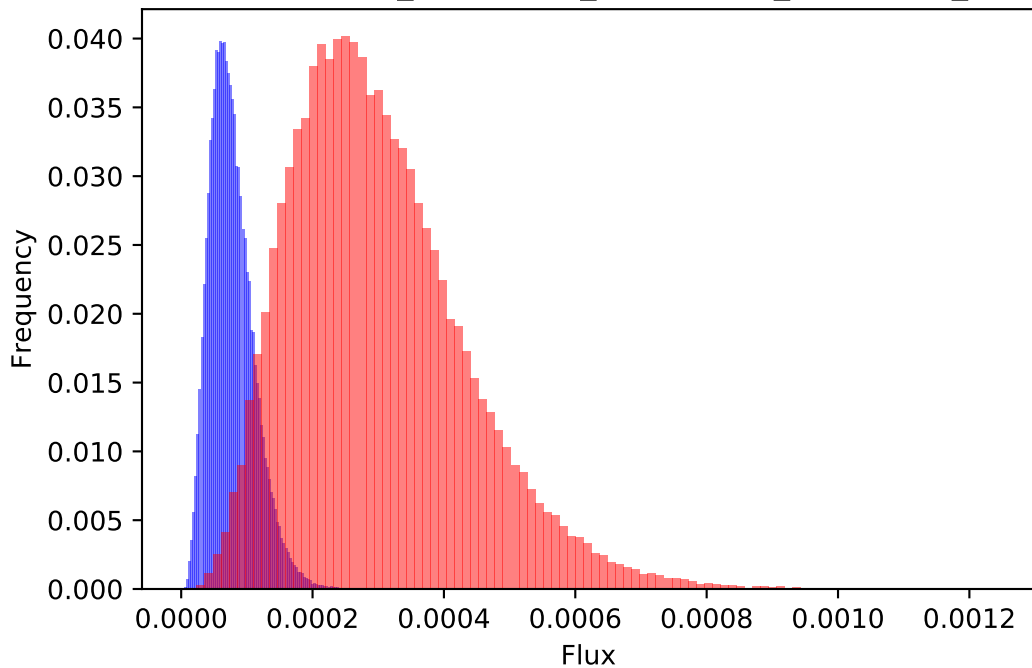
137 : ATP_h + For_h + H_h + THF_h --> ADP_h + F_DASH_THF_h + Pi_h



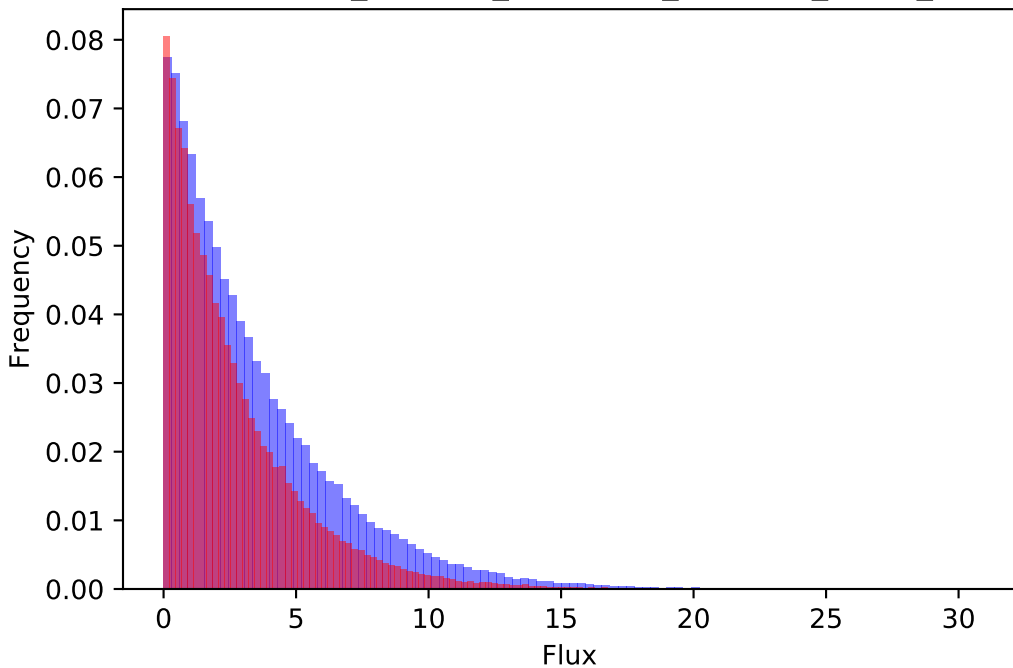
138 : DHF_c + NADPH_c --> NADP_c + THF_c



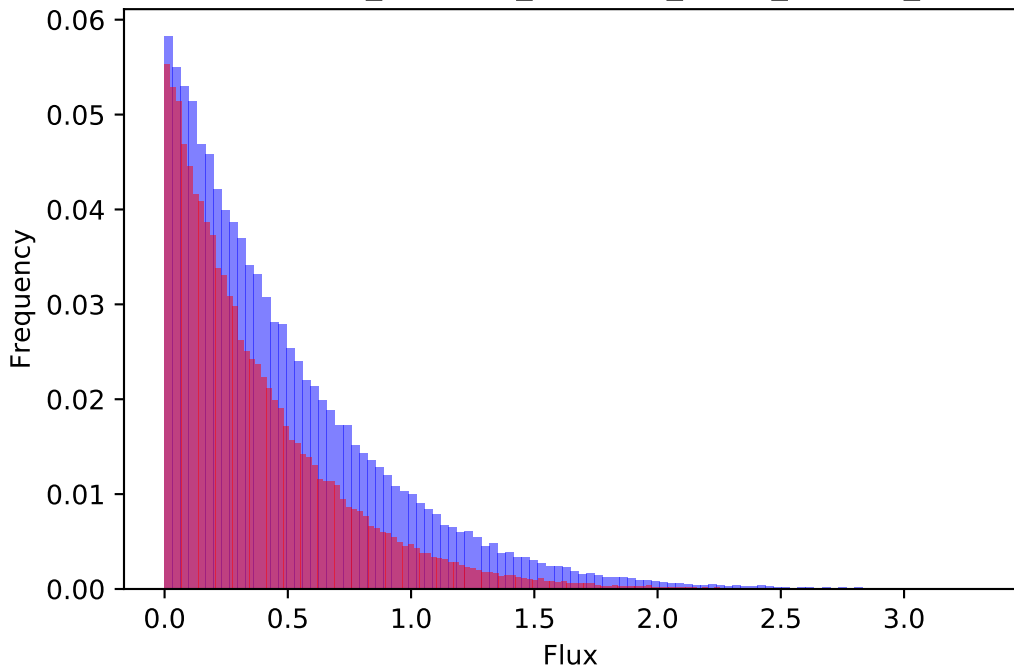
139 : NADPH_c + TRXox_c --> NADP_c + TRXrd_c



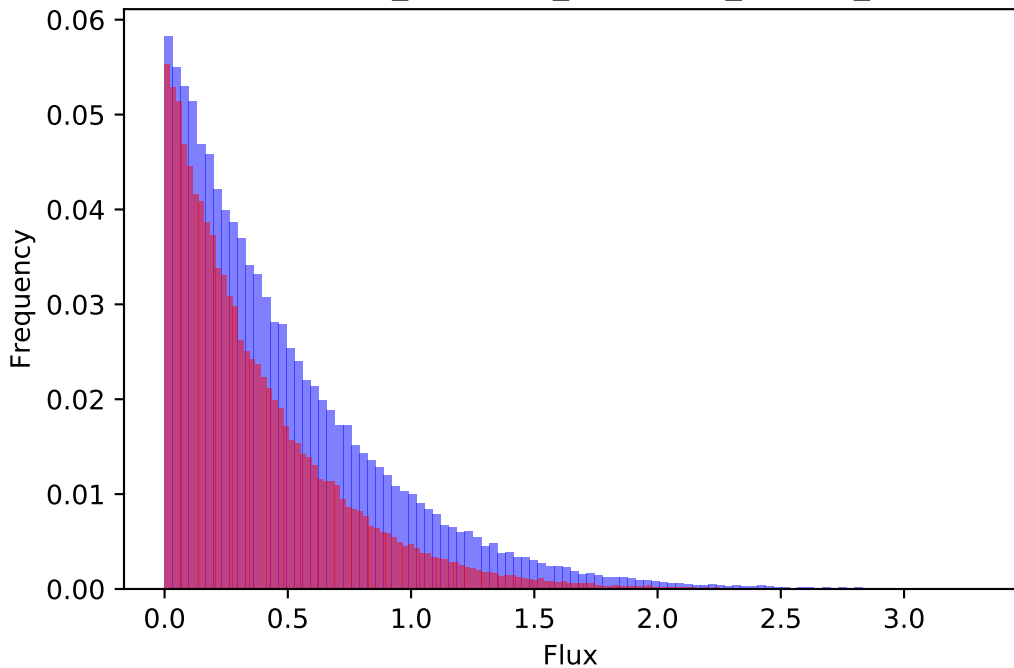
140 : $\text{ADN}_c + \text{ATP}_c \rightarrow \text{ADP}_c + \text{AMP}_c + \text{H}_c$



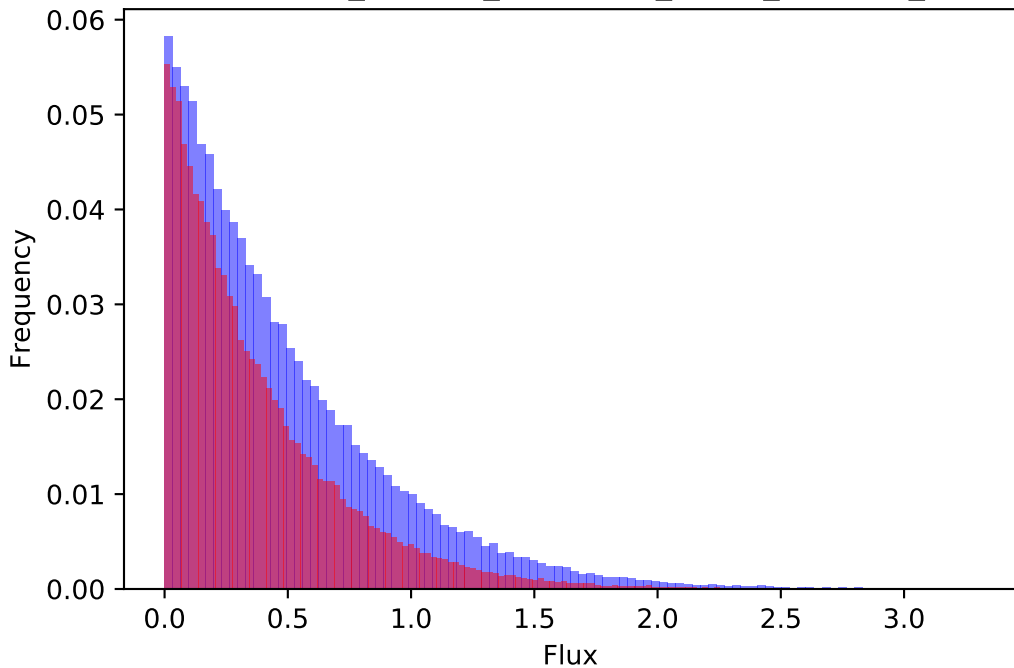
141 : $\text{ADN_c} + \text{H}_2\text{O_c} \rightarrow \text{AD_c} + \text{H_c} + \text{Rib_c}$



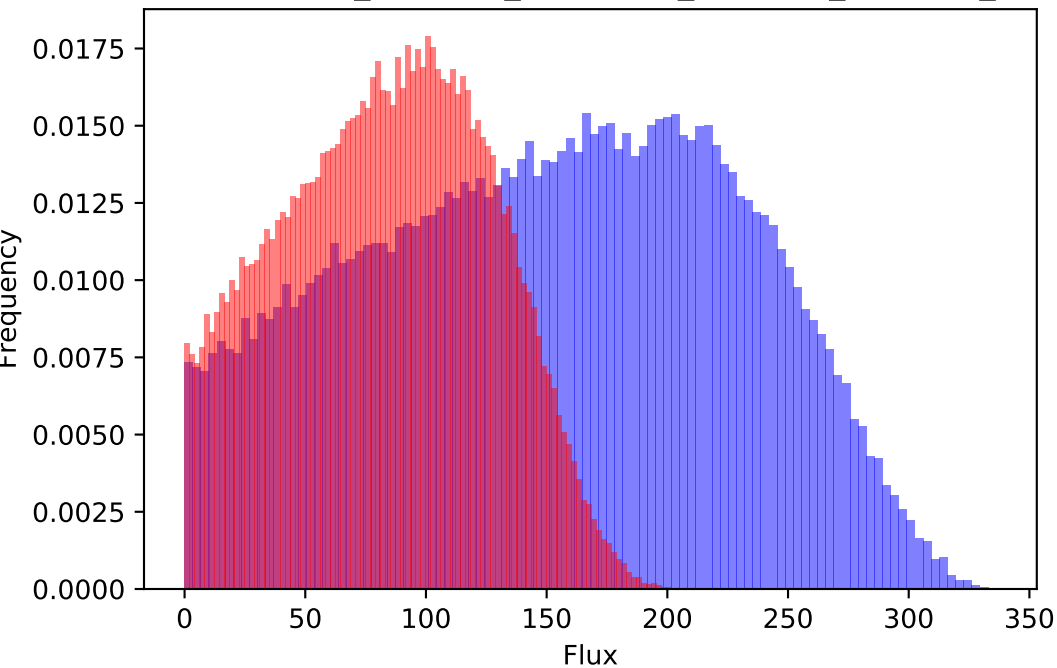
142 : AD_c + PRPP_c --> AMP_c + PPI_c



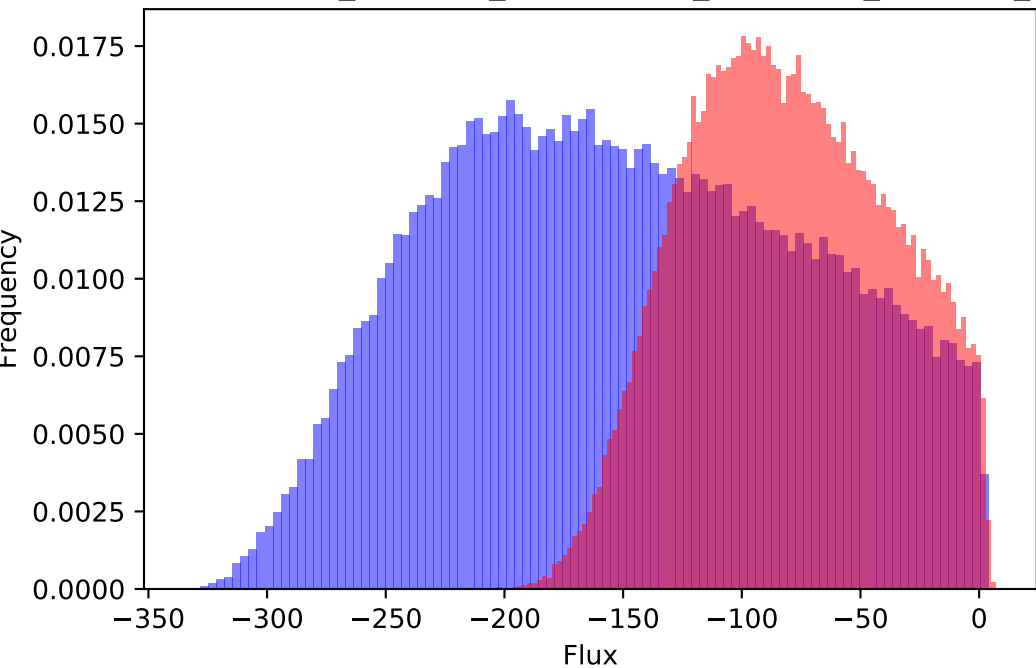
143 : ATP_h + Rib_h --> ADP_h + H_h + R5P_h



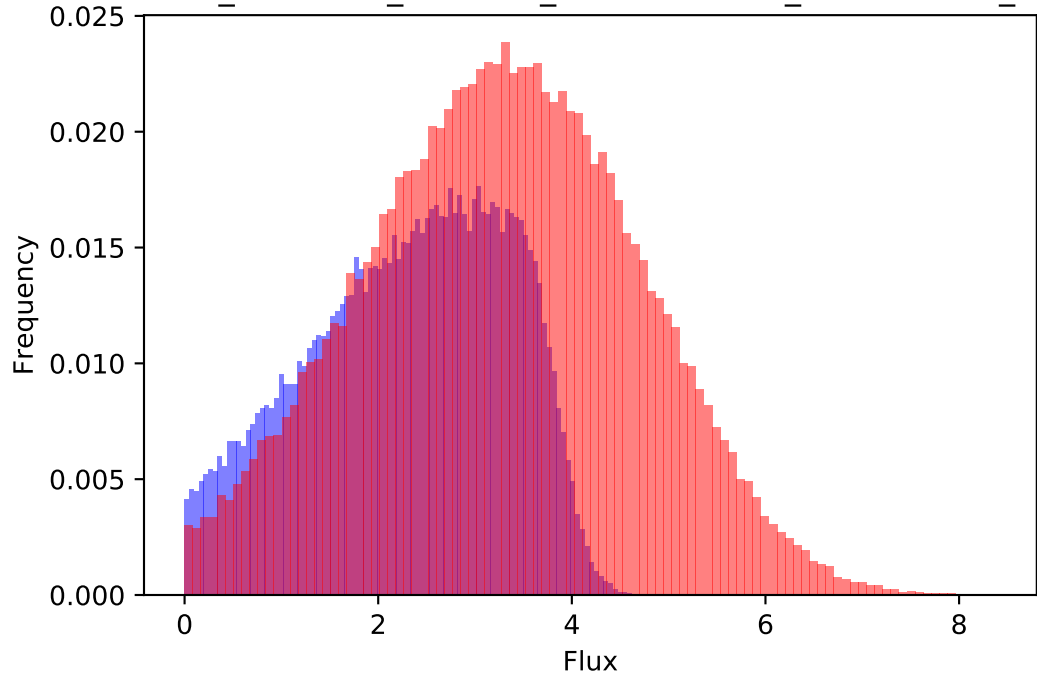
144 : $\text{NADH}_c + \text{NO3}_c \rightarrow \text{H2O}_c + \text{NAD}_c + \text{NO2}_c$



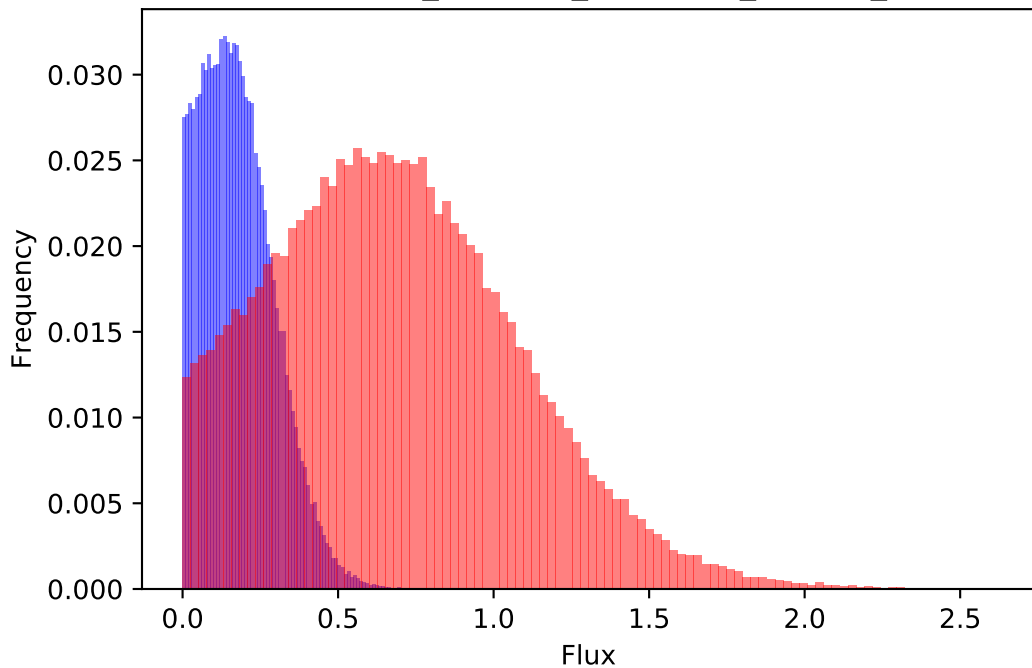
145 : $\text{NADPH}_c + \text{NO3}_c \rightleftharpoons \text{H2O}_c + \text{NADP}_c + \text{NO2}_c$



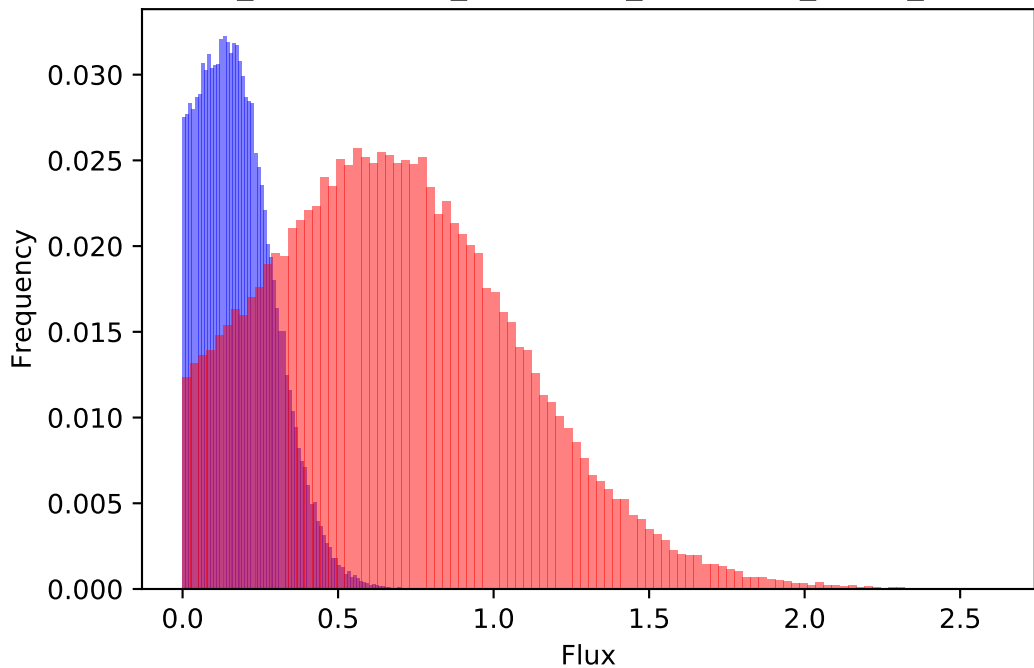
146 : 6.0 Fdrd_h + 8.0 H_h + NO2_h --> 6.0 Fdox_h + 2.0 H2O_h + NH4_h



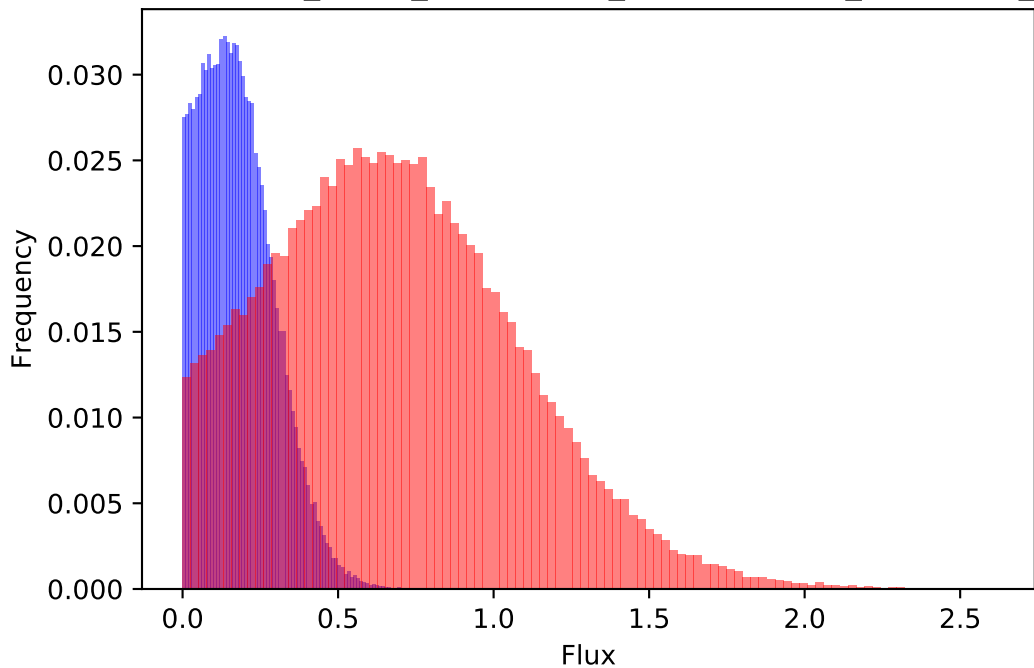
147 : ATP_h + SO4_h --> APS_h + PPI_h



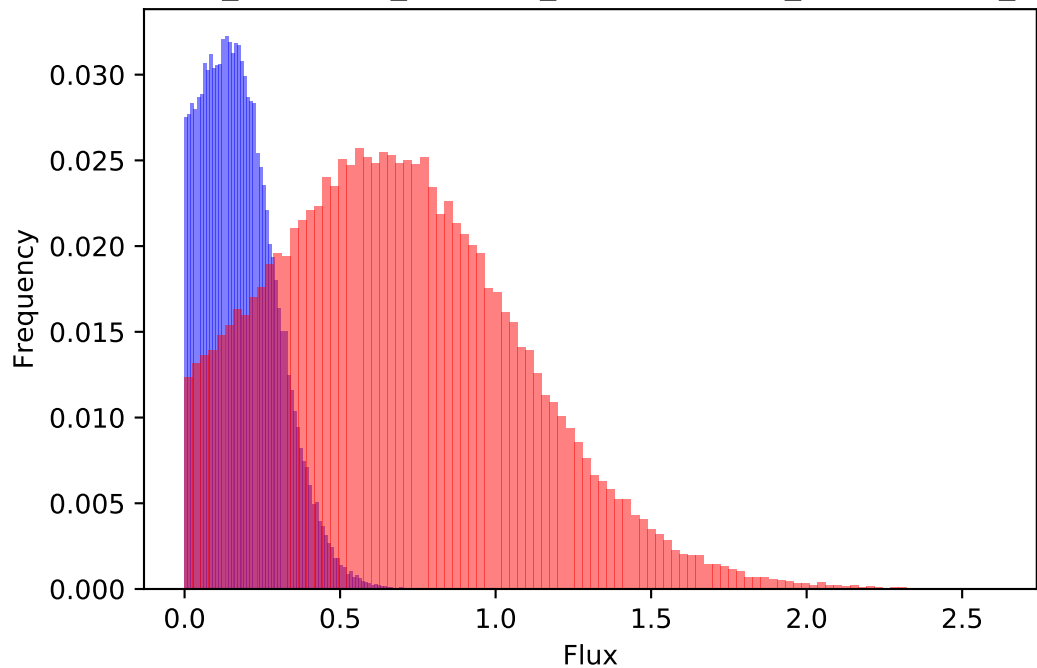
148 : APS_h + 2.0 GSH_h --> AMP_h + GSSG_h + H_h + SO3_h



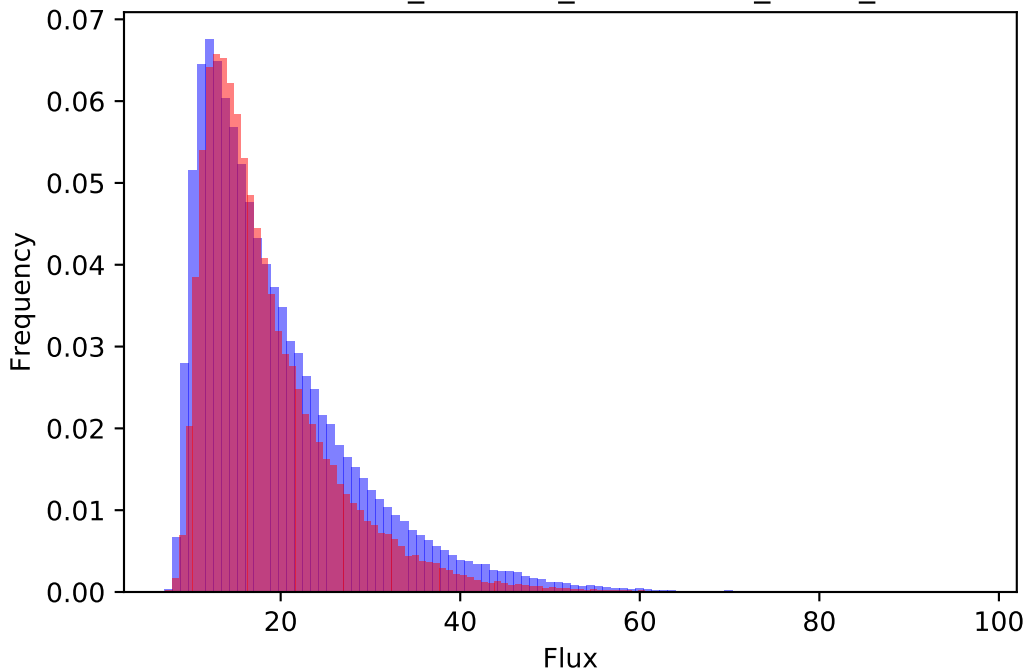
149 : GSSG_h + H_h + NADPH_h --> 2.0 GSH_h + NADP_h



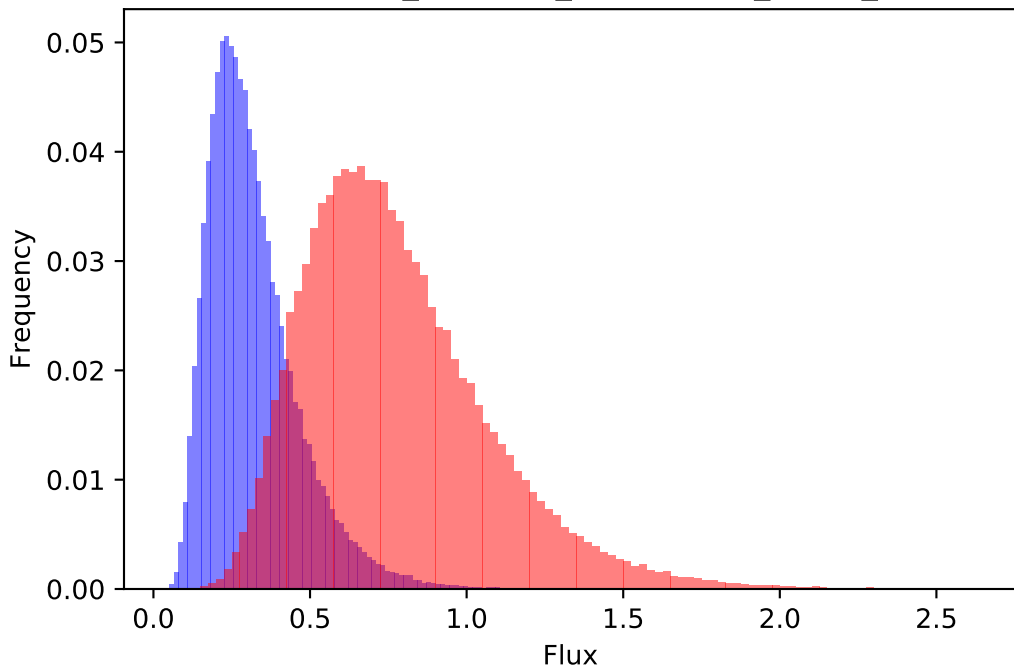
150 : 3.0 Fdrd_h + 7.0 H_h + SO3_h --> 3.0 Fdox_h + 3.0 H2O_h + H2S_h



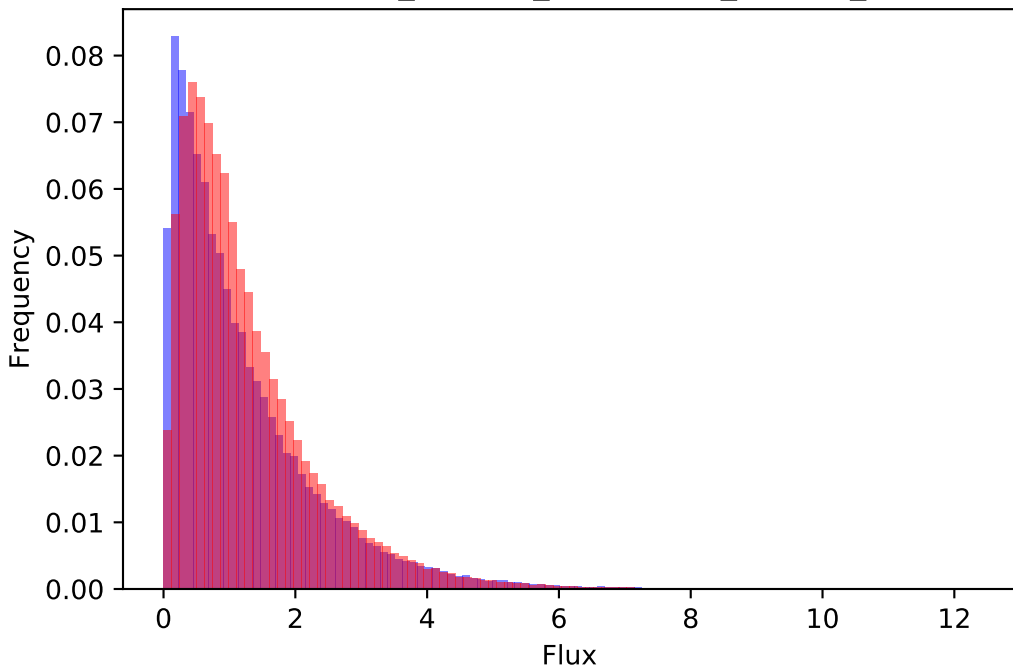
151 : CO2_c + H2O_c --> HCO3_c + H_c



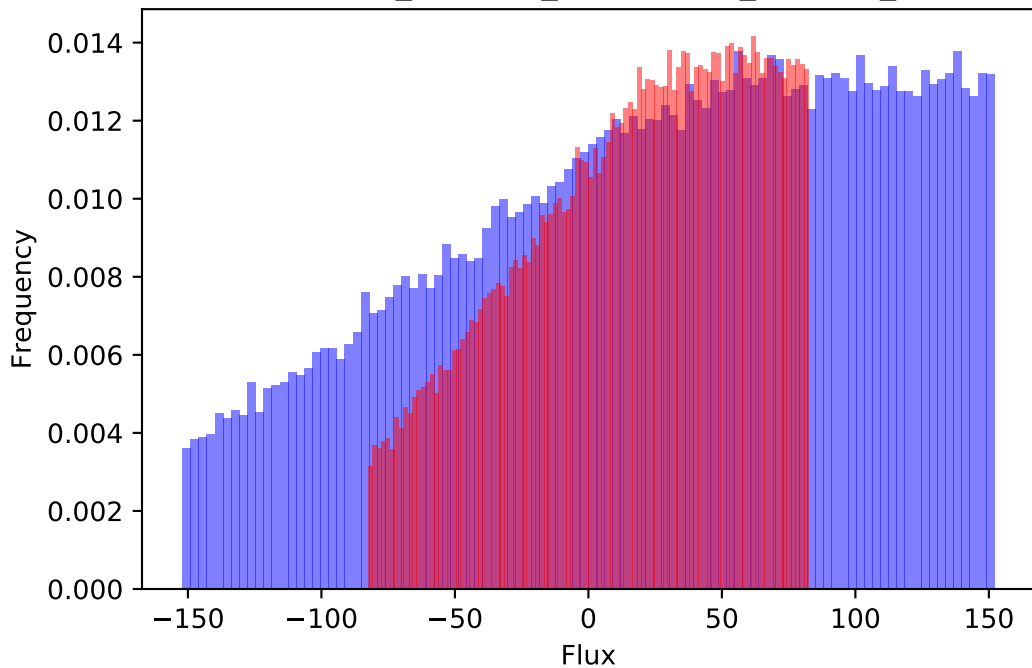
152 : CO₂_h + H₂O_h --> HCO₃_h + H_h



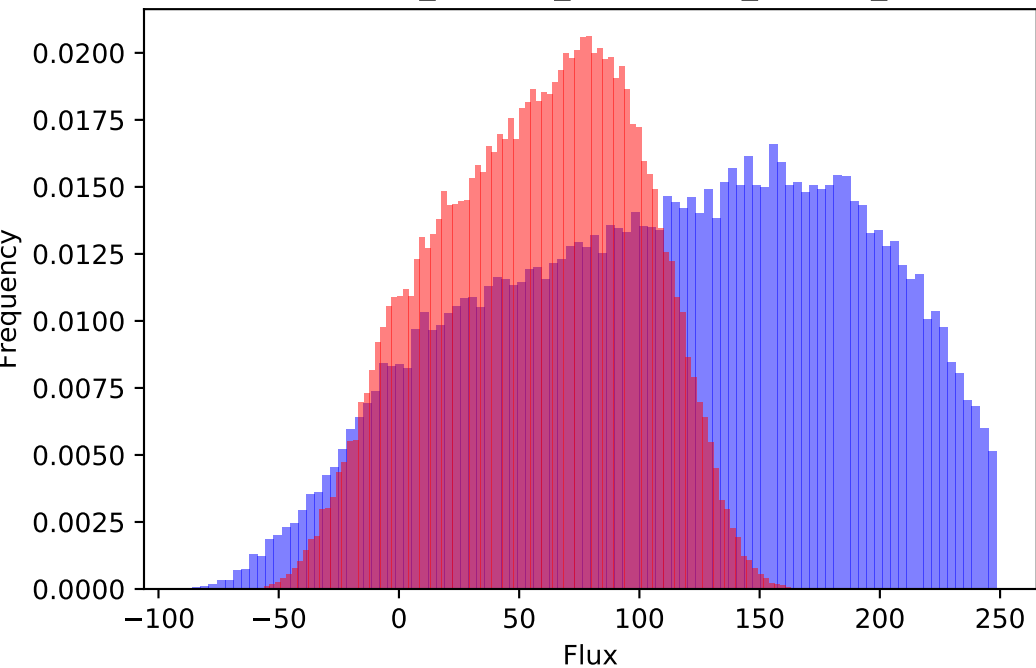
153 : Glu_h + Pyr_h \rightleftharpoons Ala_h + KG_h



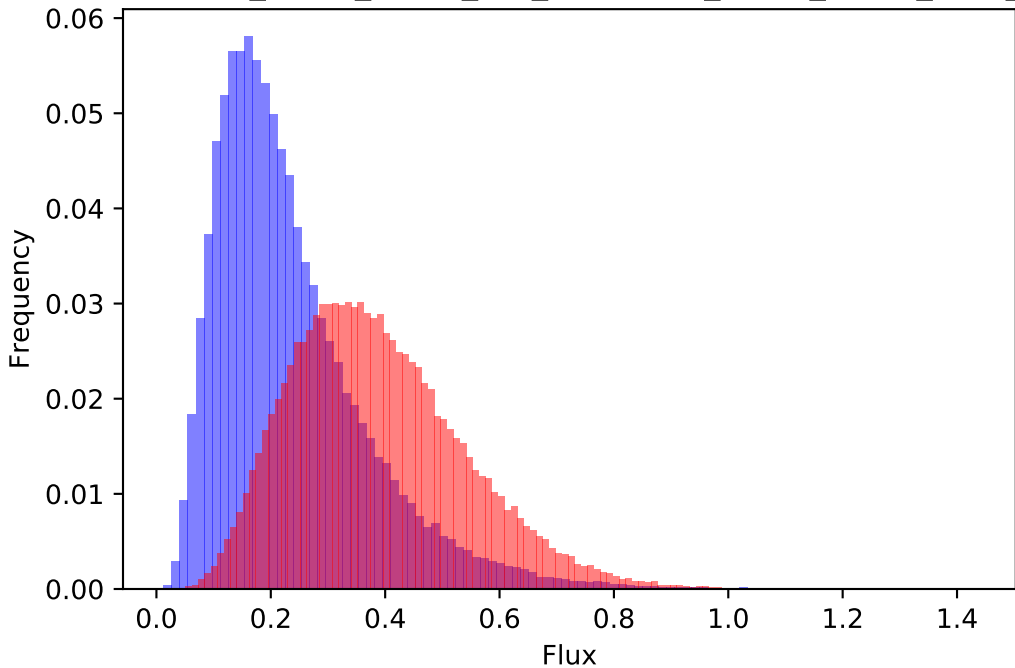
154 : Glu_m + Pyr_m \rightleftharpoons Ala_m + KG_m



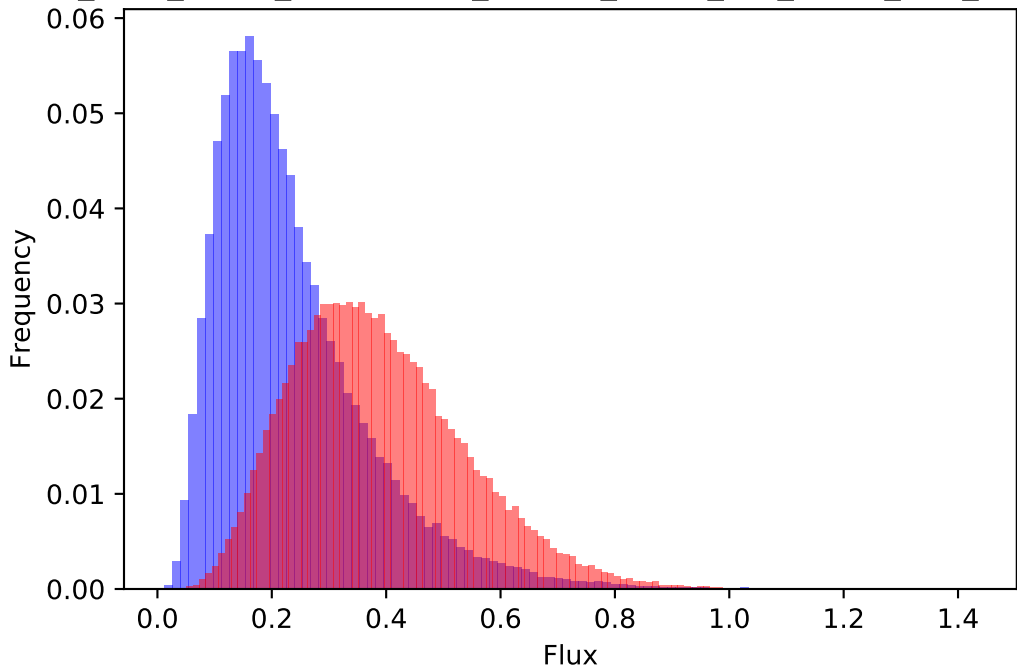
155 : Glu_p + Pyr_p \rightleftharpoons Ala_p + KG_p



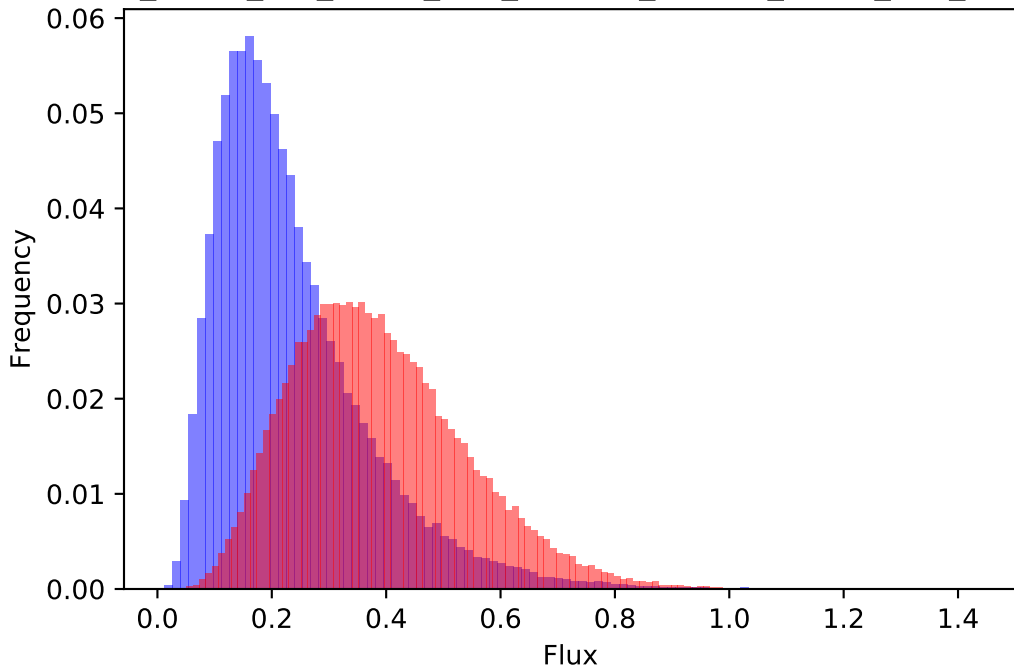
156 : ATP_h + A_DASH_Glu_h --> ADP_h + A_DASH_GluP_h



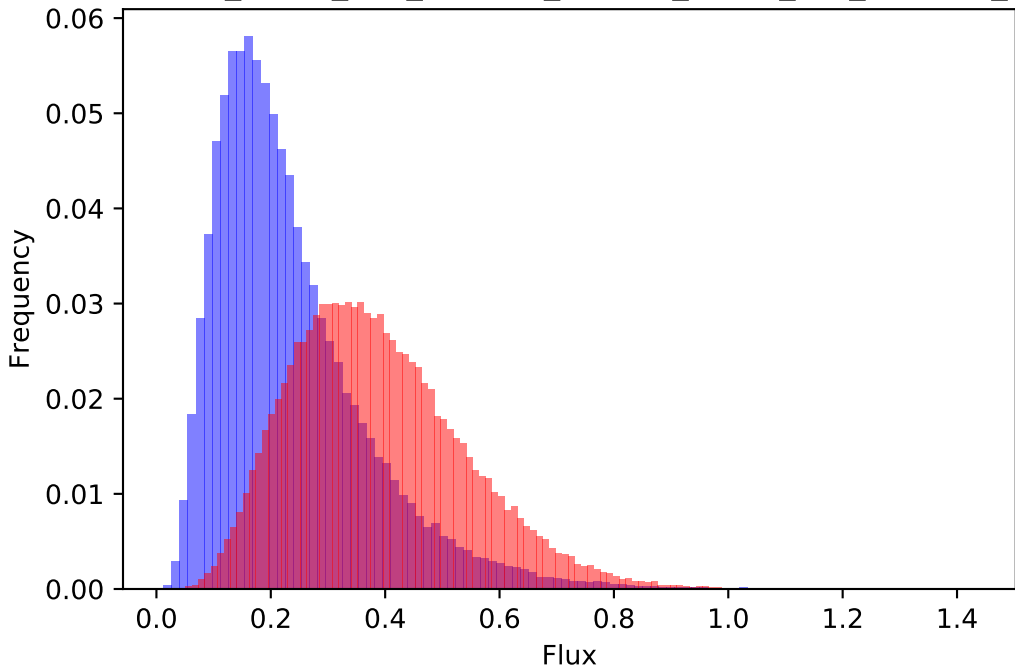
$\text{DASH_GluP_h} + \text{H_h} + \text{NADPH_h} \rightarrow \text{A_DASH_Glu_DASH_SeA_h} + \text{NADP}$



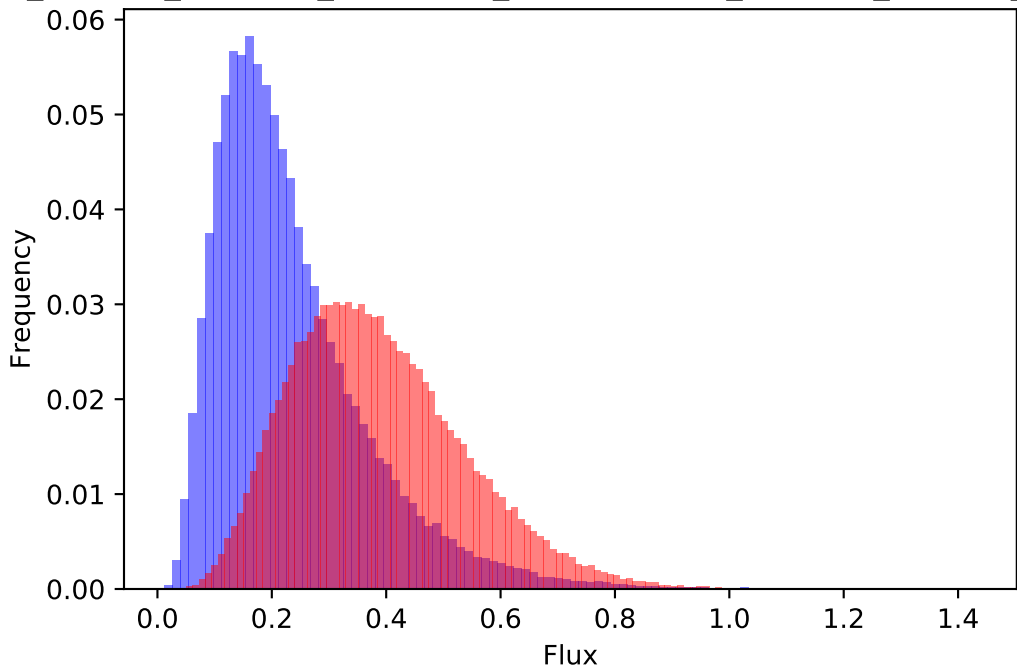
158 : A_DASH_Glu_DASH_SeA_h + Glu_h --> A_DASH_Orn_h + KG_h



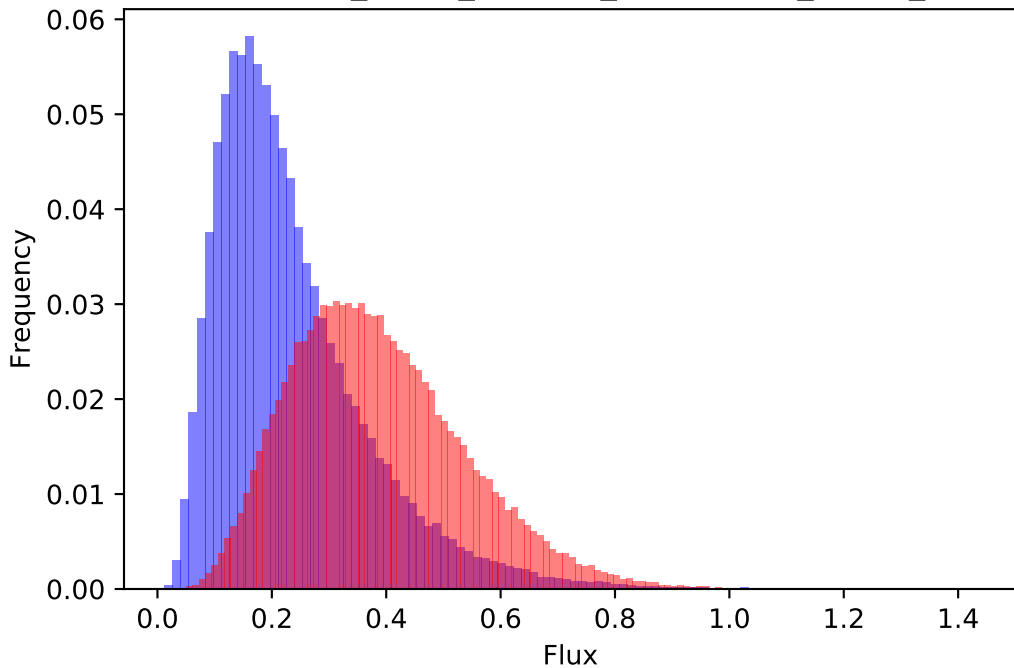
159 : A_DASH_Orn_h + Glu_h --> A_DASH_Glu_h + Orn_h



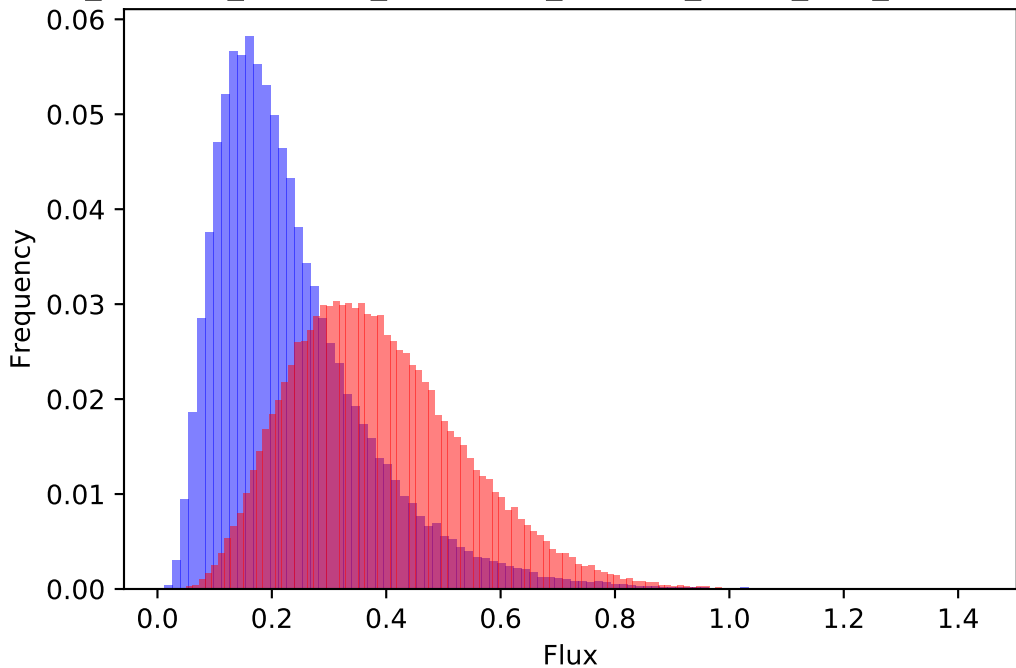
ATP_h + Gln_h + H2O_h + HCO3_h --> 2.0 ADP_h + CBP_h + Glu_h + 3.0



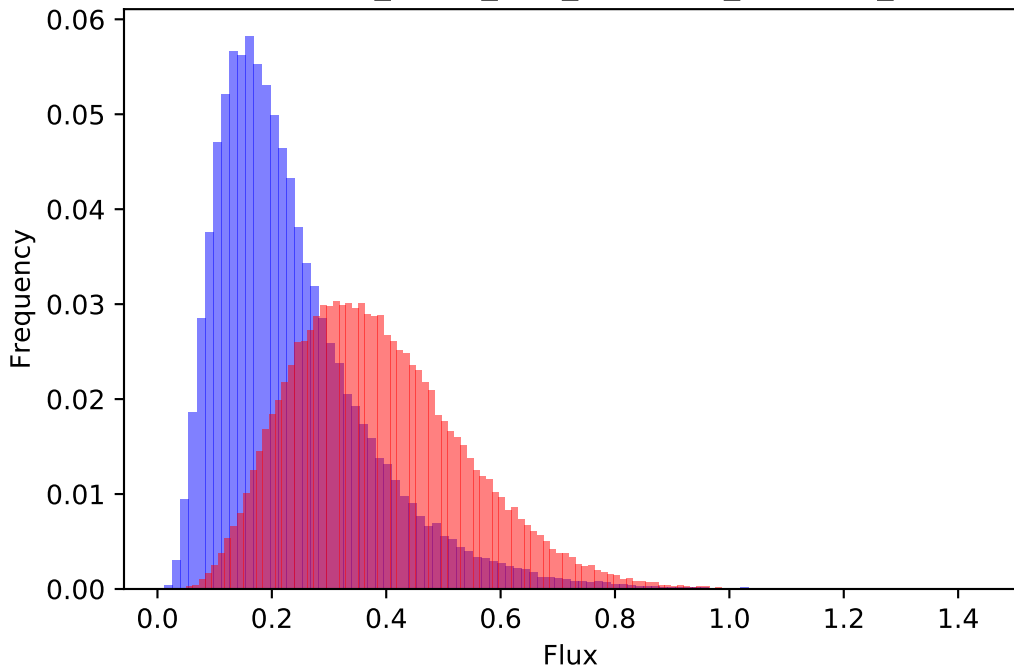
161 : CBP_h + H_h + Orn_h \leq CTL_h + Pi_h



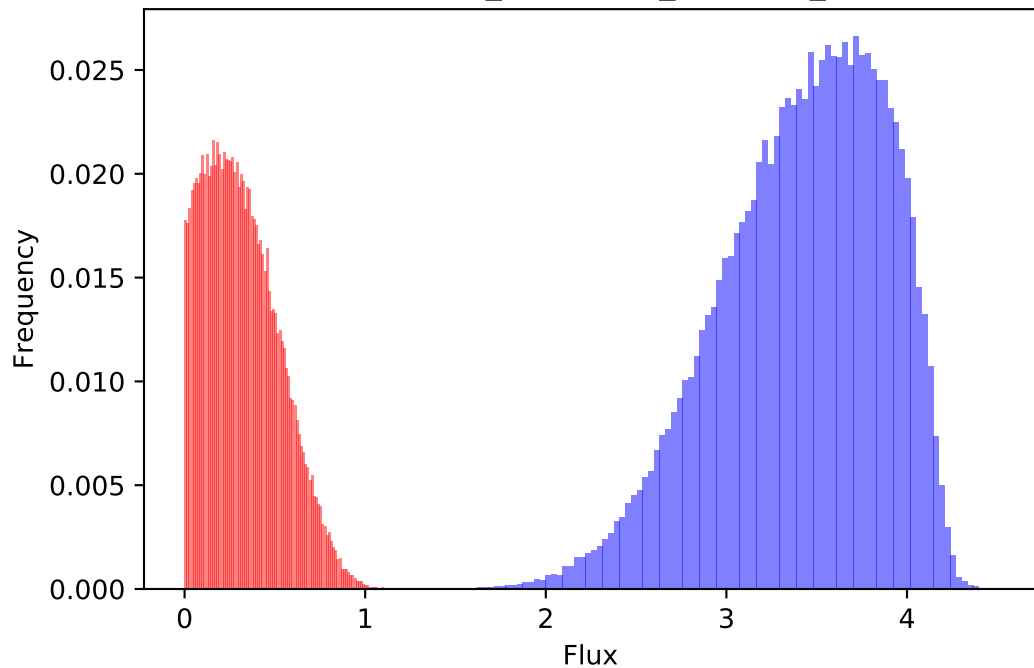
2 : ATP_h + Asp_h + CTL_h --> AMP_h + Arg_DASH_SCA_h + 3.0 H_h + P



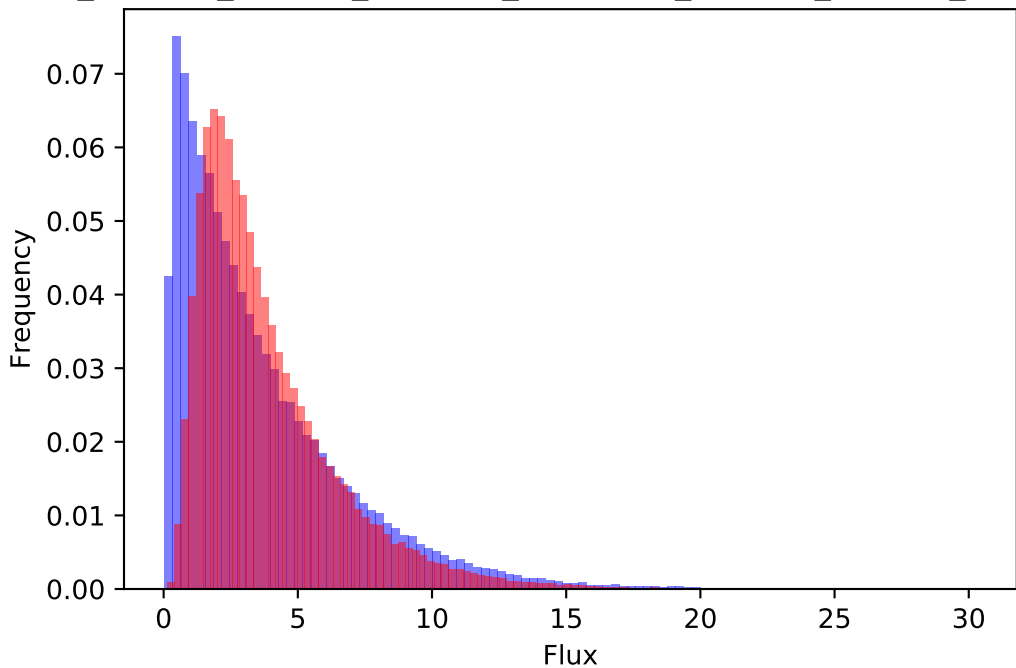
163 : Arg_DASH_SCA_h --> Arg_h + Fum_h



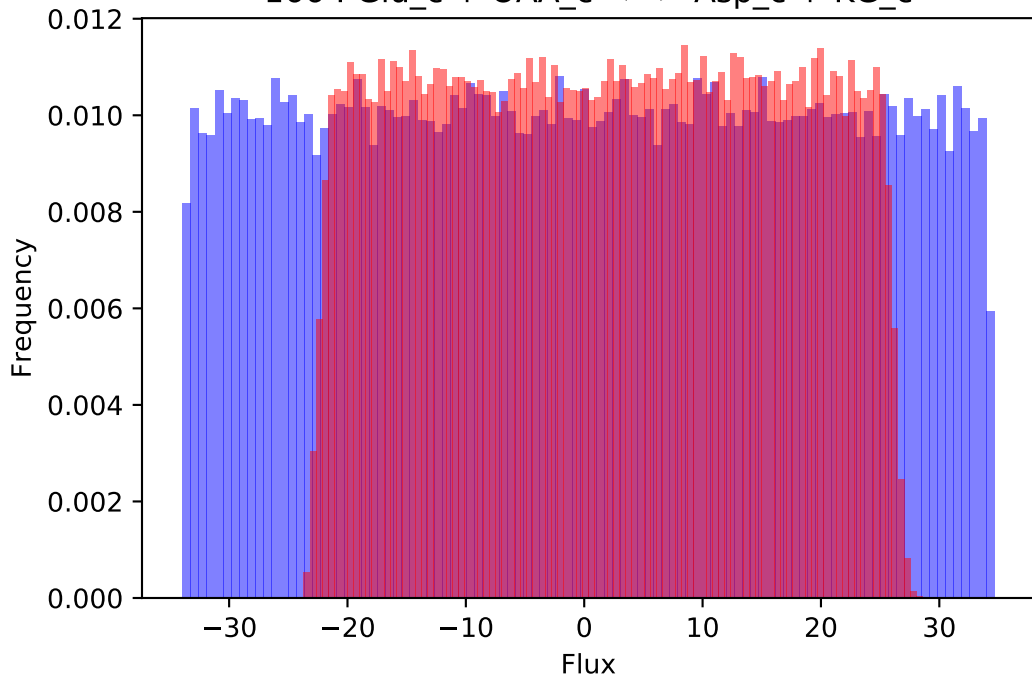
164 : Mal_c --> Fum_c + H2O_c



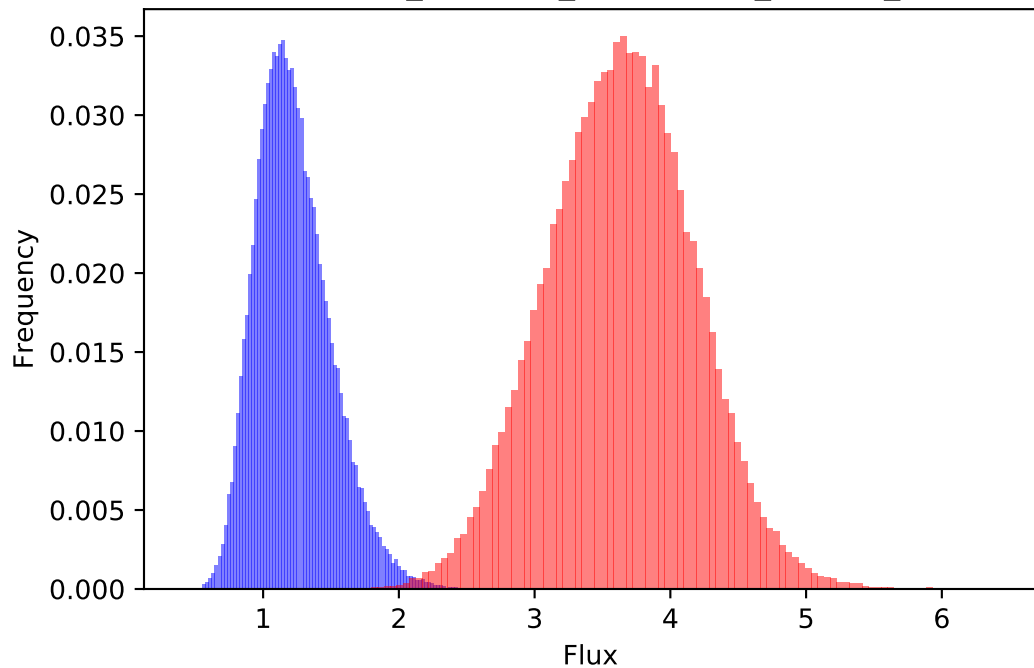
5 : ATP_c + Asp_c + Gln_c + H2O_c --> AMP_c + Asn_c + Glu_c + H_c +



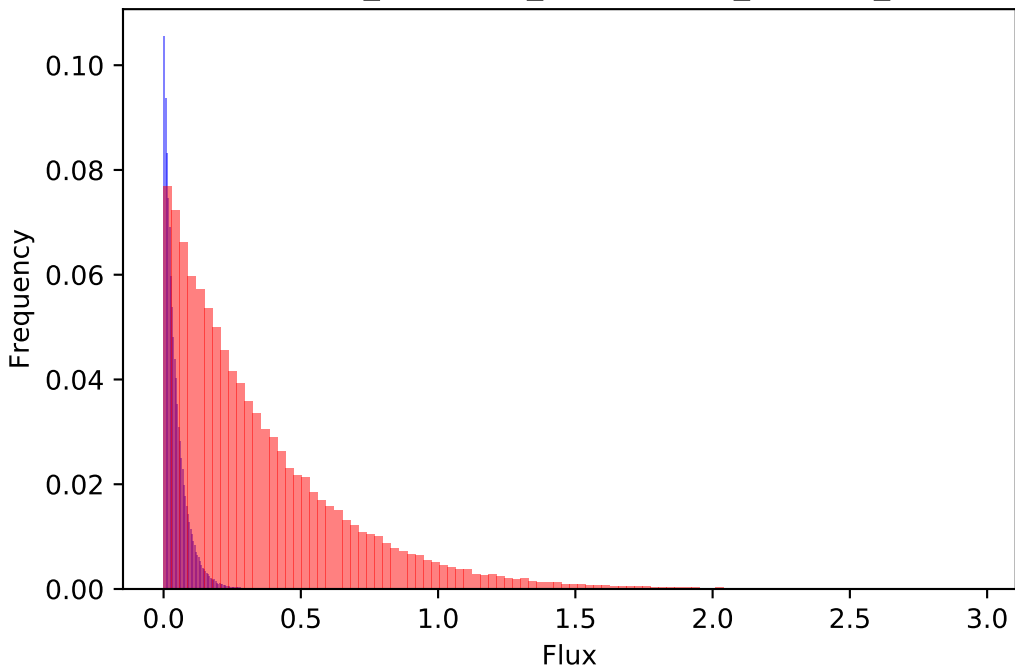
166 : Glu_c + OAA_c \rightleftharpoons Asp_c + KG_c



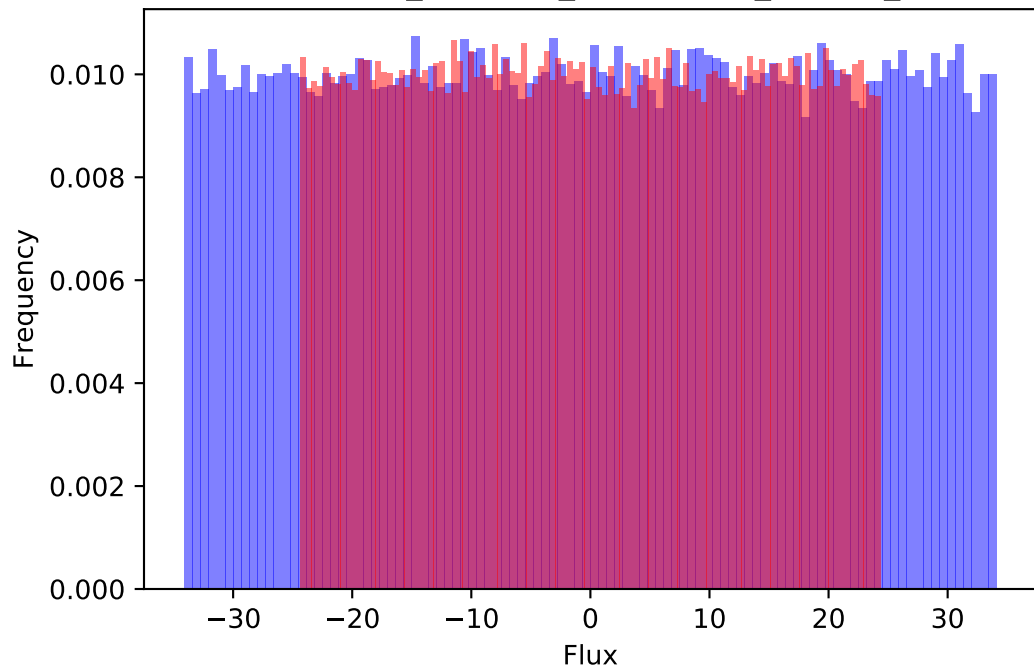
167 : Glu_h + OAA_h \rightleftharpoons Asp_h + KG_h



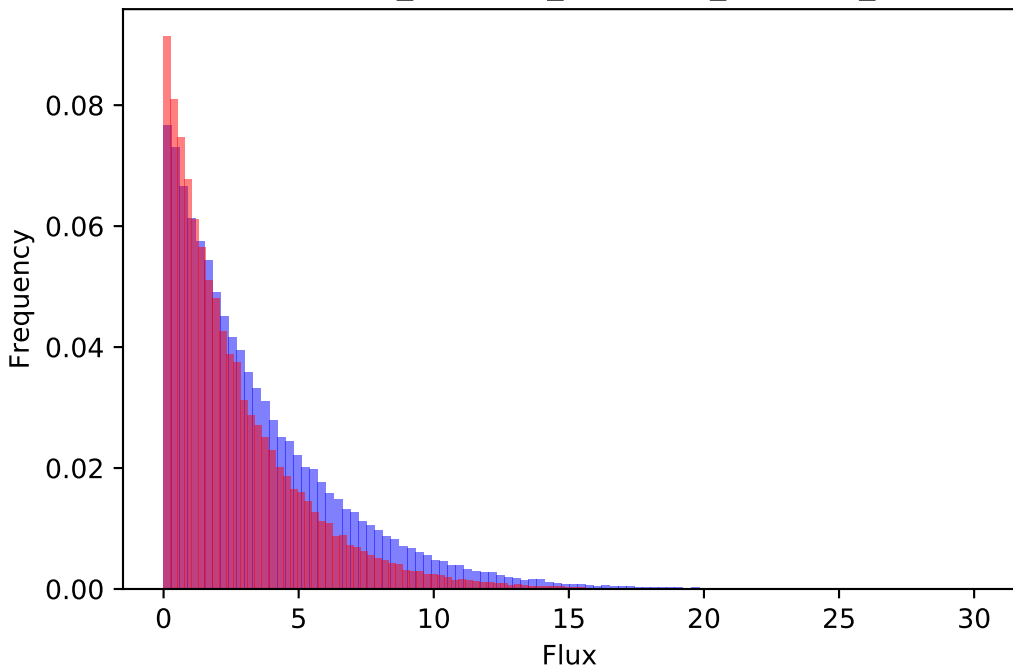
168 : Glu_m + OAA_m <=> Asp_m + KG_m



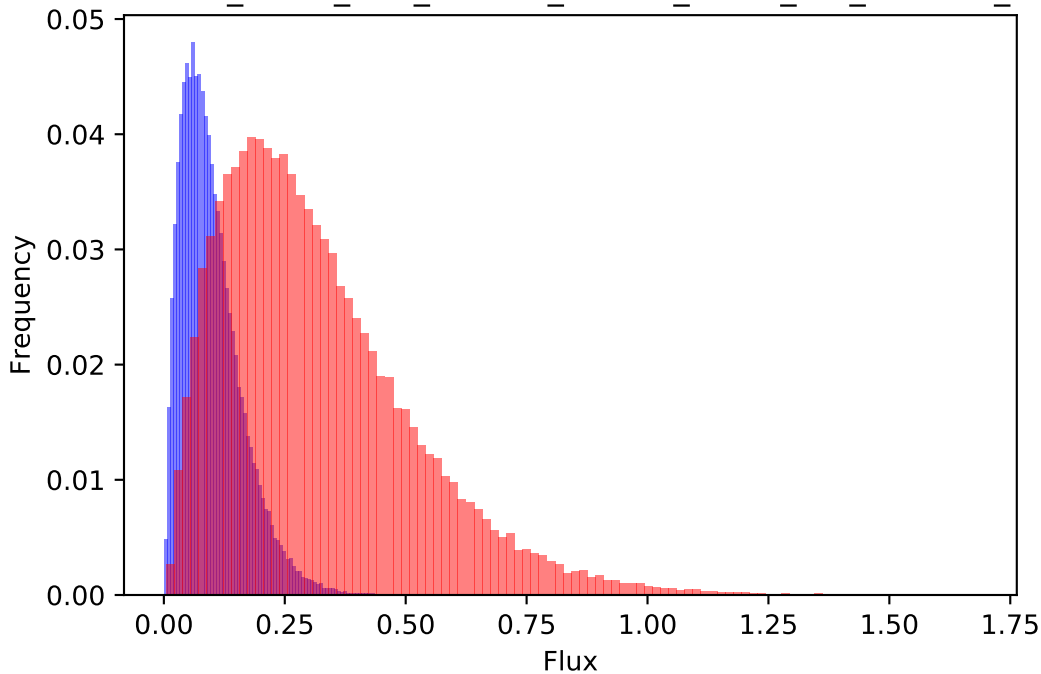
169 : Glu_p + OAA_p \rightleftharpoons Asp_p + KG_p



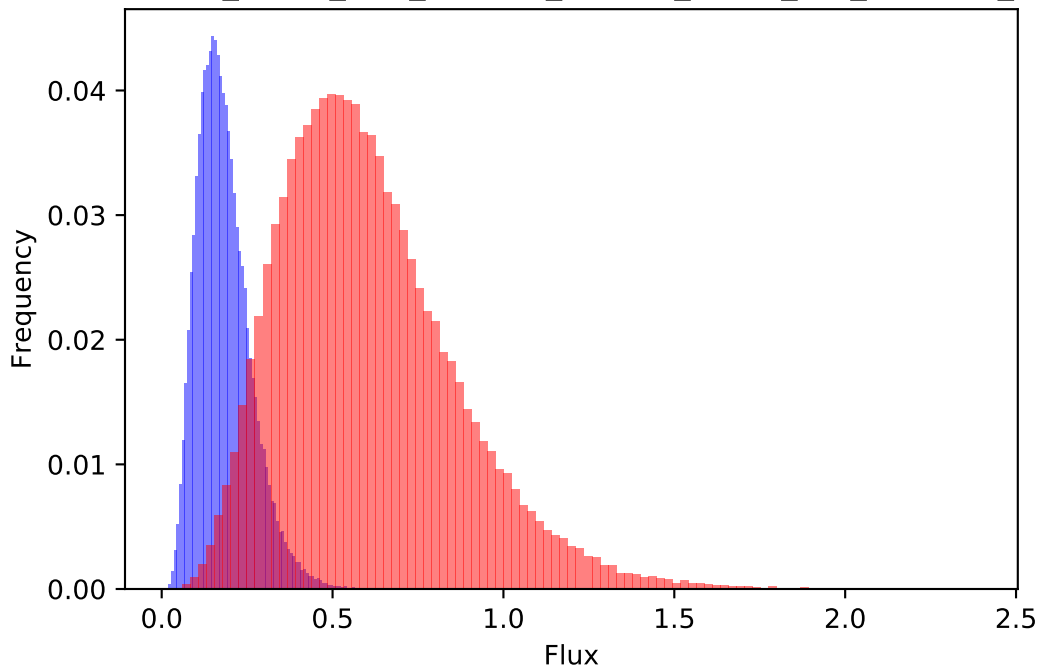
170 : Asn_c + H2O_c --> Asp_c + NH4_c



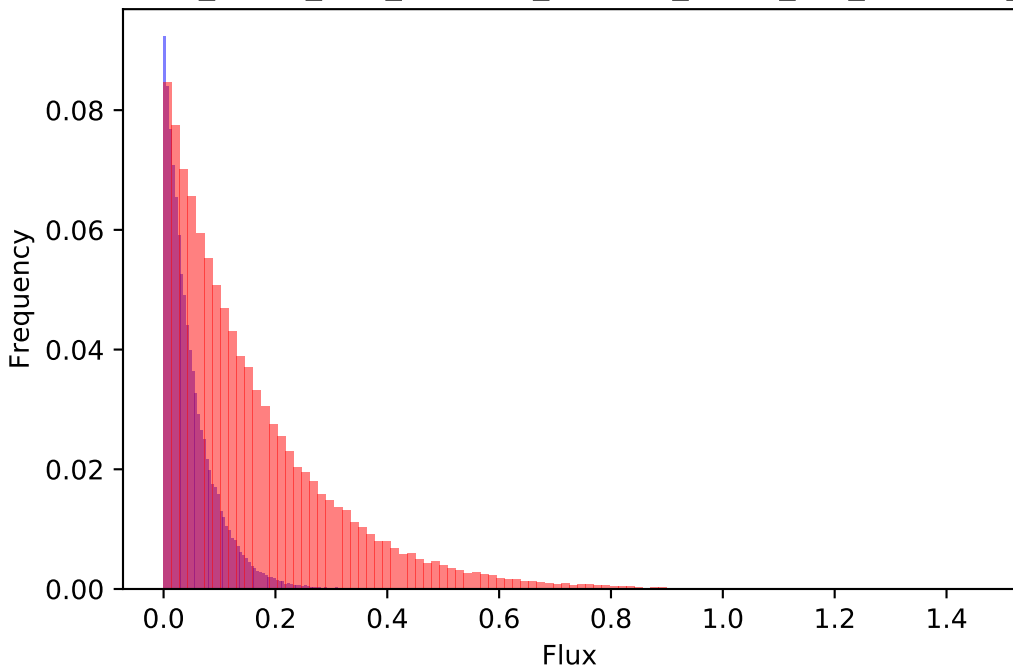
171 : A_DASH_CoA_c + Ser_c --> A_DASH_Ser_c + CoA_c



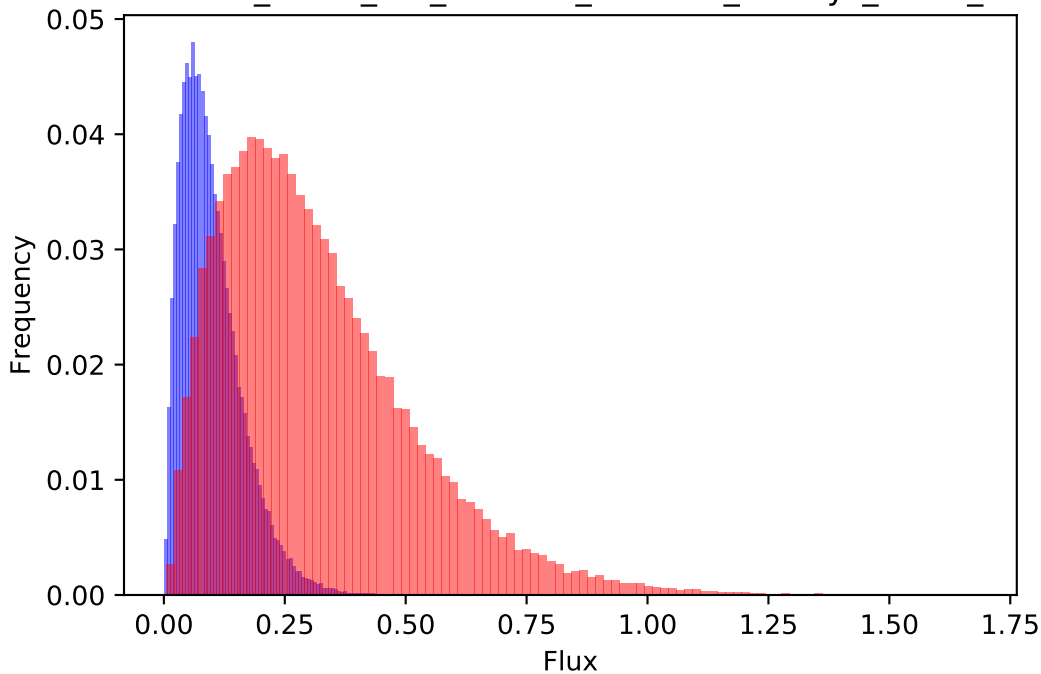
172 : A_DASH_CoA_h + Ser_h --> A_DASH_Ser_h + CoA_h



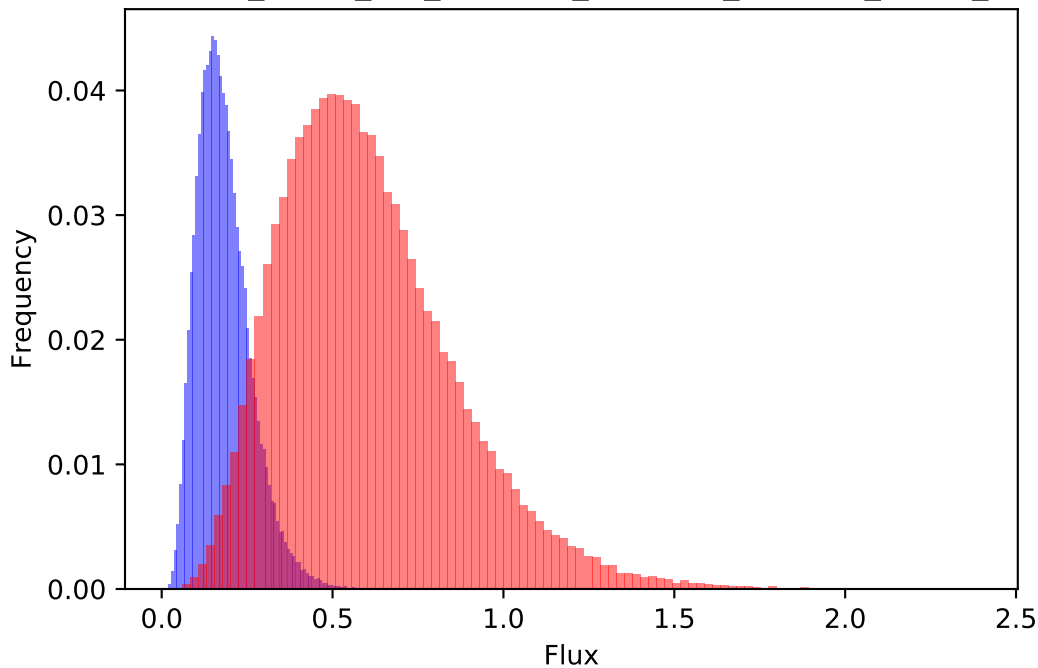
173 : A_DASH_CoA_m + Ser_m --> A_DASH_Ser_m + CoA_m



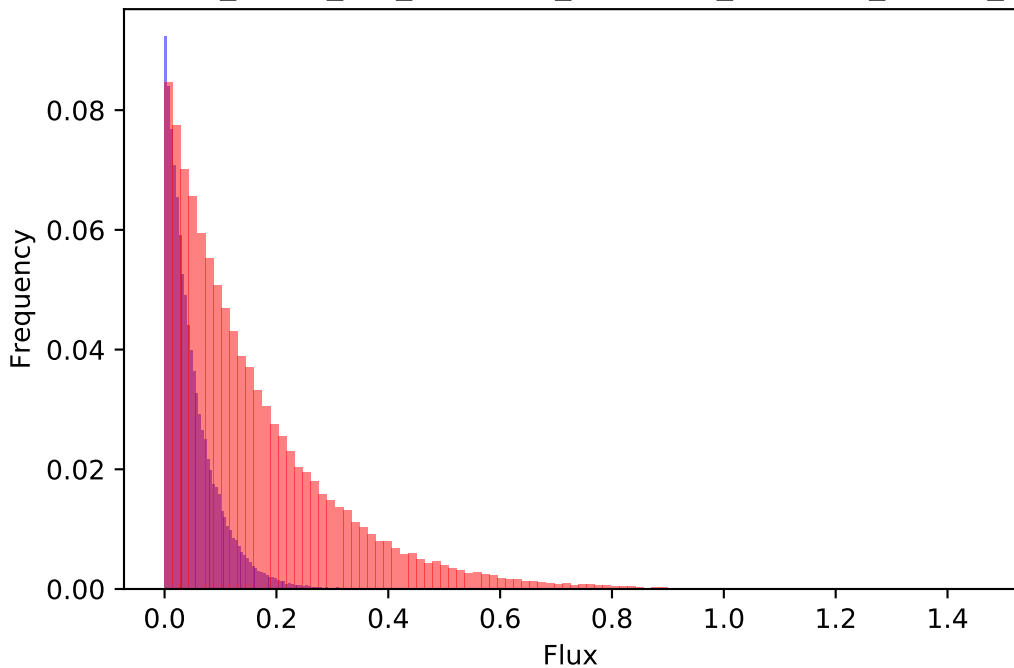
174 : A_DASH_Ser_c + H2S_c --> AC_c + Cys_c + H_c



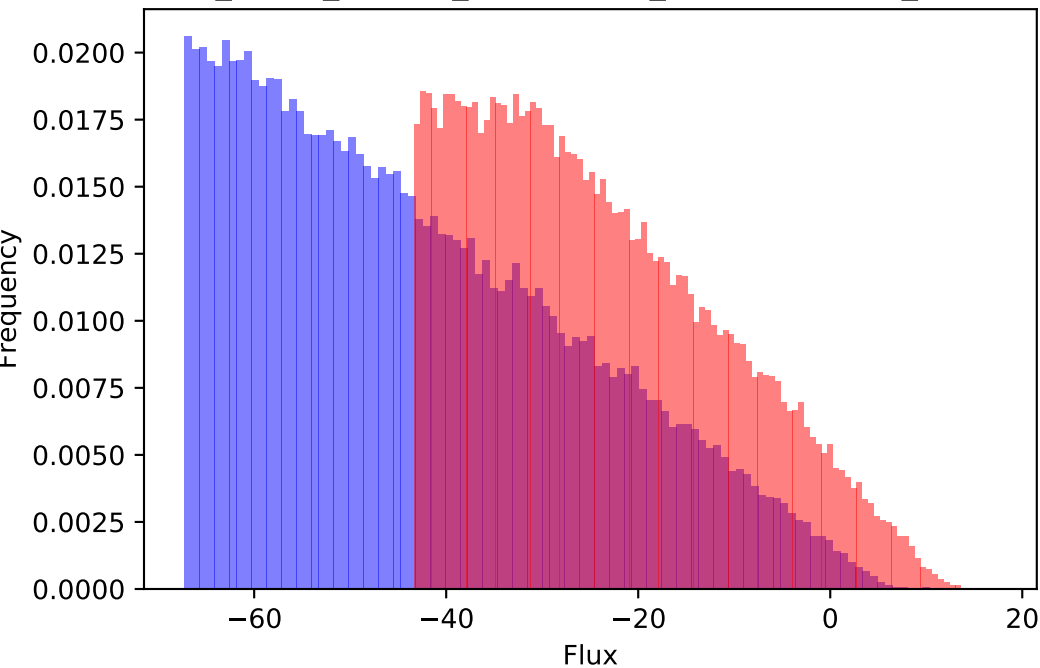
175 : A_DASH_Ser_h + H2S_h --> AC_h + Cys_h + H_h



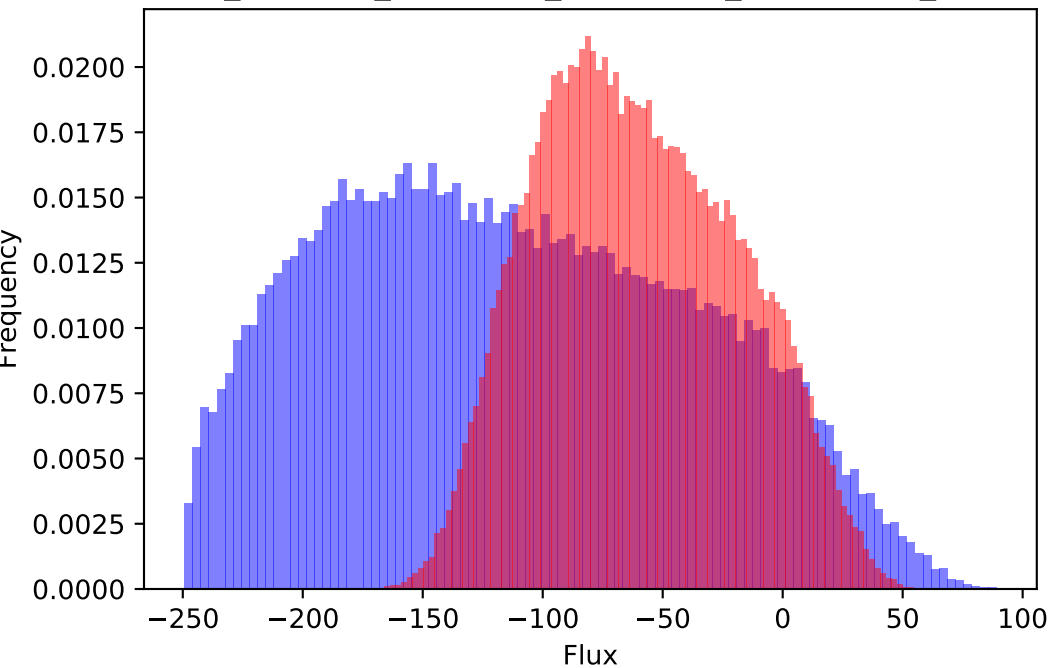
176 : A_DASH_Ser_m + H2S_m --> AC_m + Cys_m + H_m



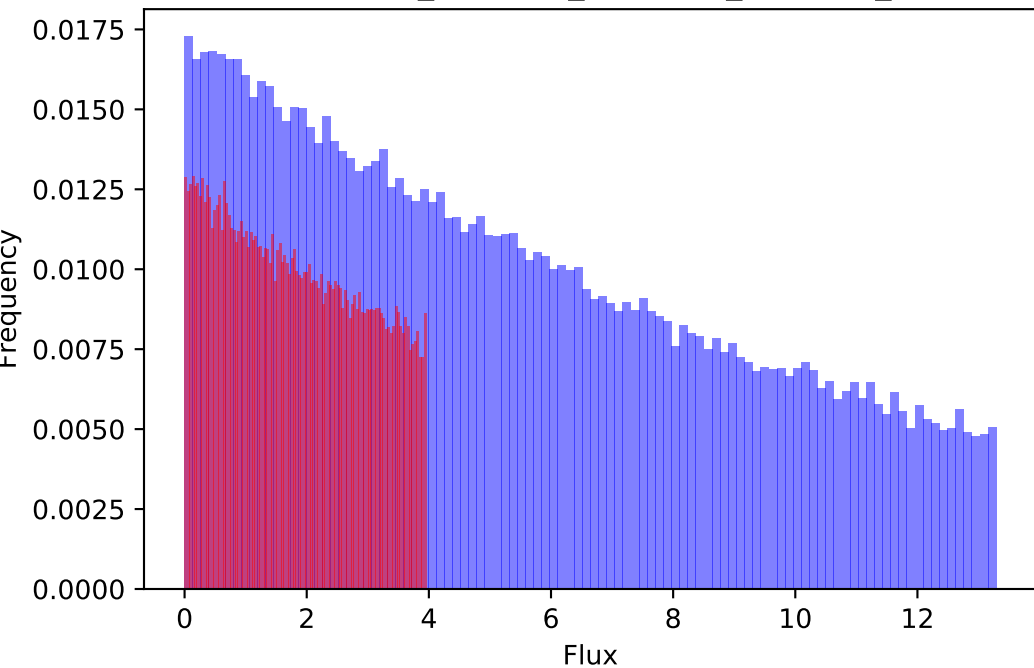
177 : $\text{Gln_h} + \text{H_h} + \text{KG_h} + \text{NADPH_h} \leq 2.0 \text{ Glu_h} + \text{NADP_h}$



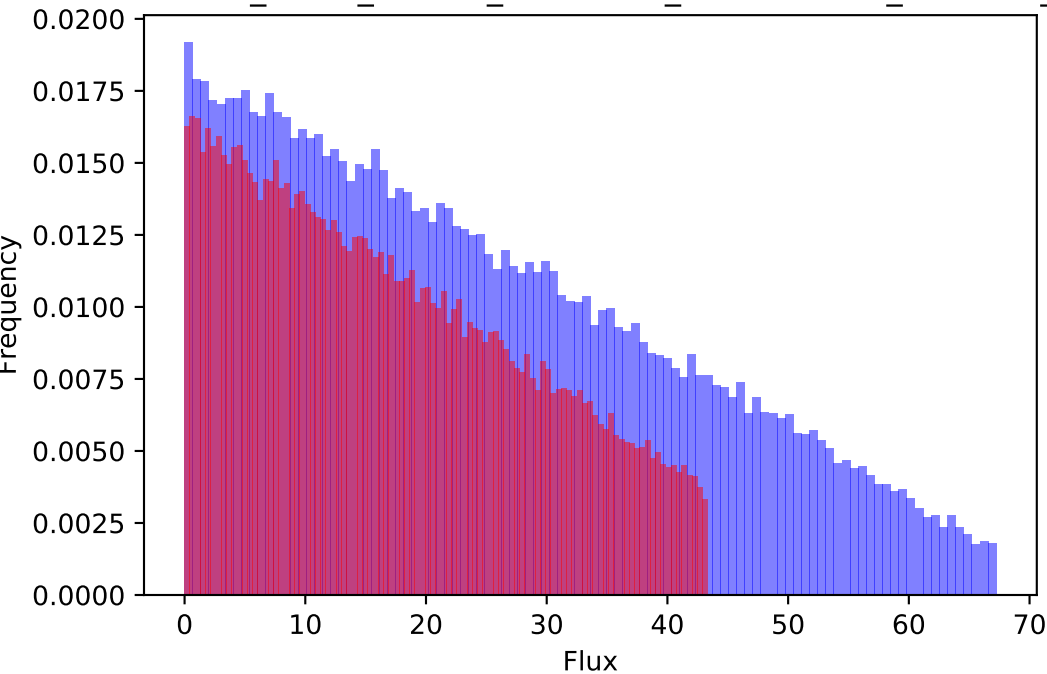
178 : Glu_c + H2O_c + NADP_c <=> KG_c + NADPH_c + NH4_c



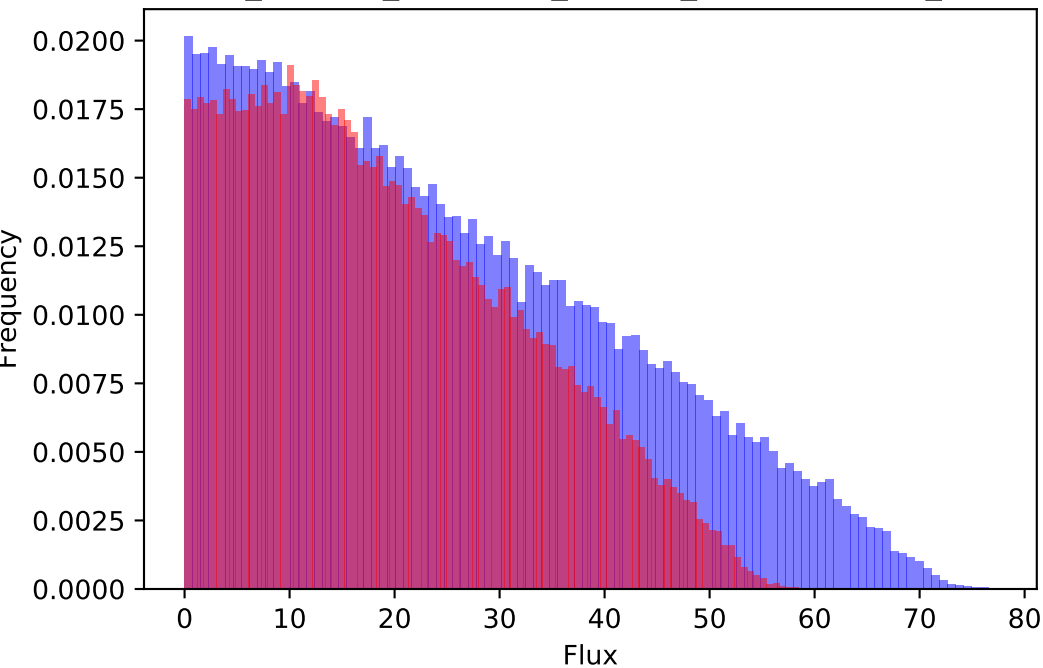
179 : Gln_c + H2O_c --> Glu_c + NH4_c

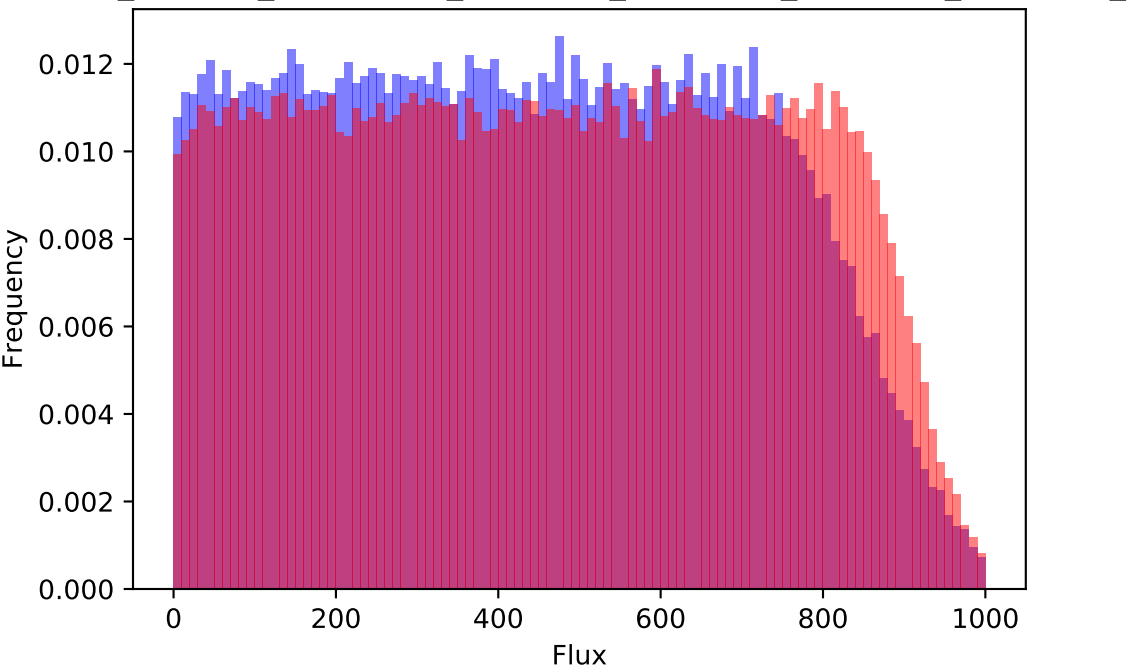


180 : Gln_h + H_h + KG_h + NADH_h --> 2.0 Glu_h + NAD_h

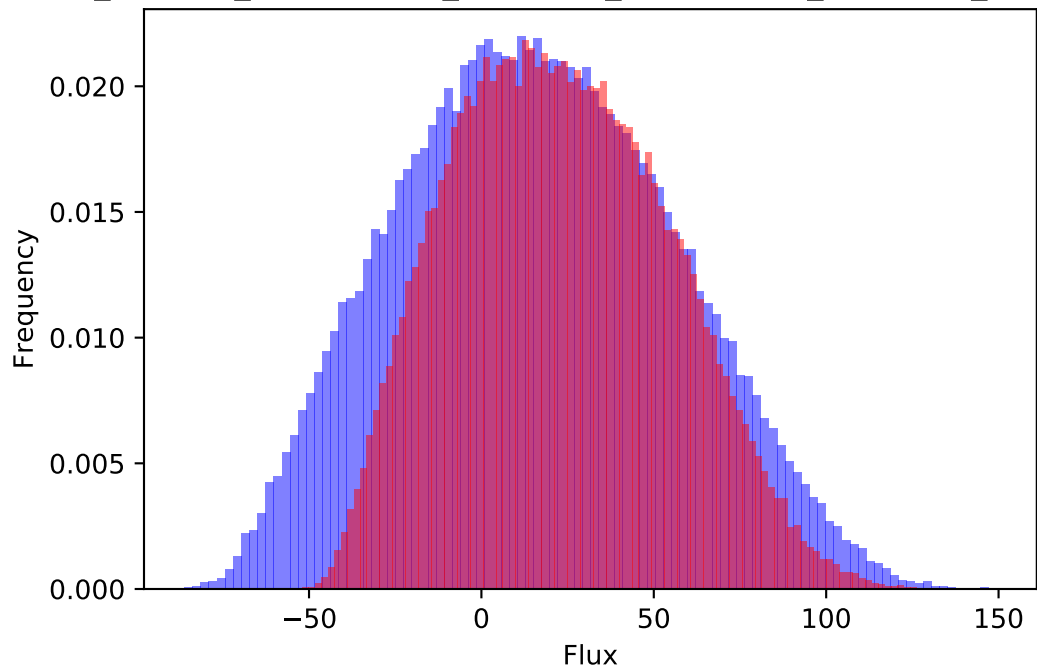


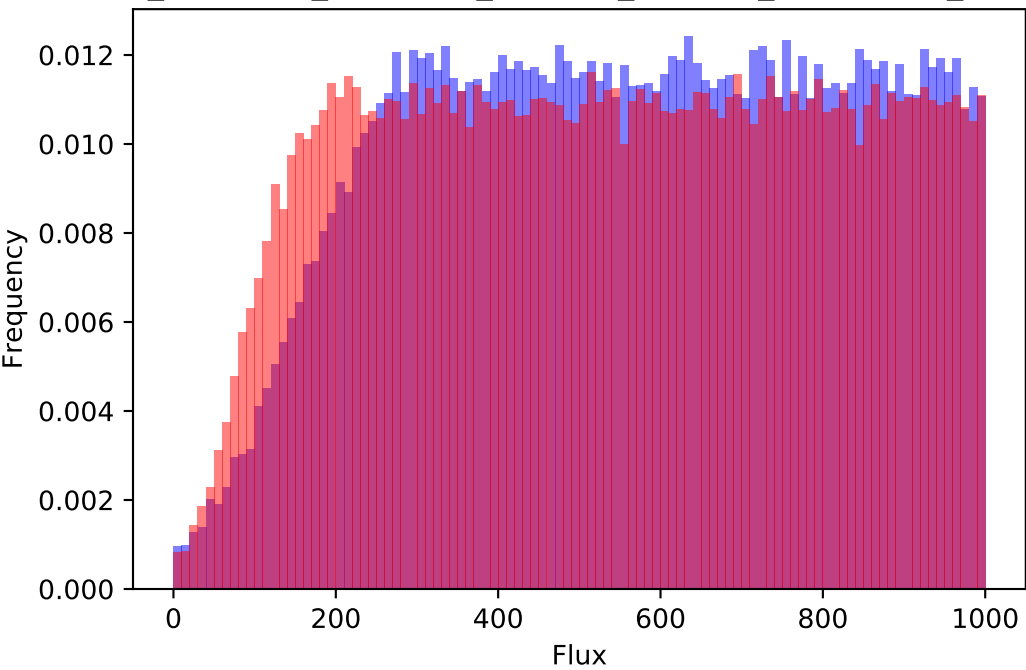
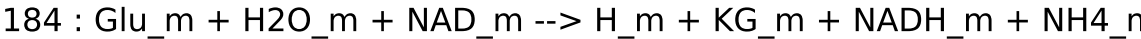
181 : 2.0 Fdrd_h + Gln_h + 2.0 H_h + KG_h --> 2.0 Fdox_h + 2.0 Glu_h



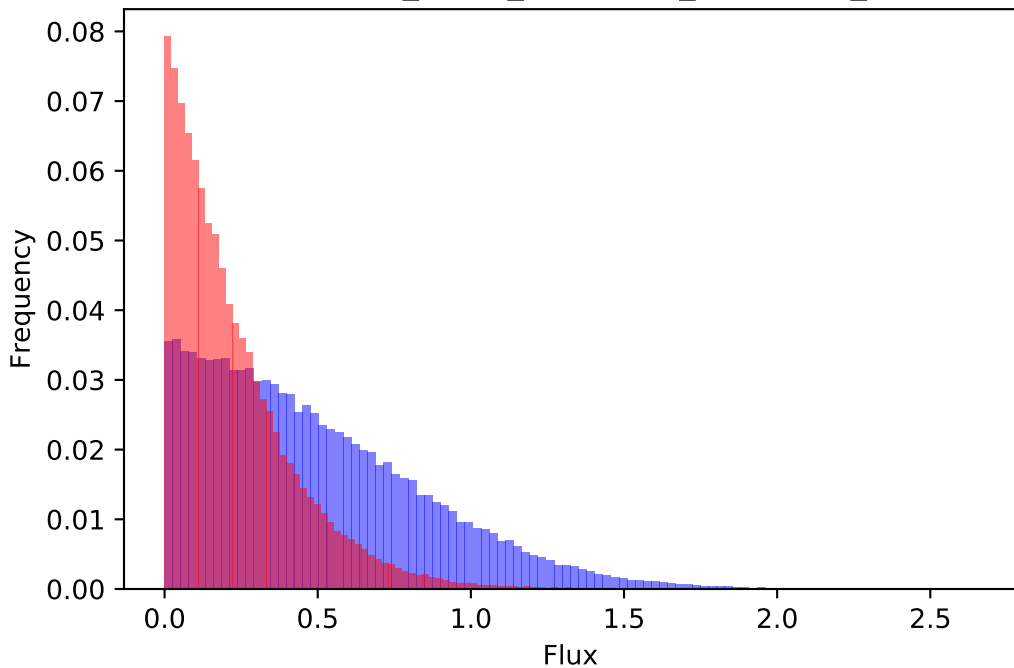


83 : $H_m + KG_m + NADPH_m + NH4_m \rightleftharpoons Glu_m + H2O_m + NADP$

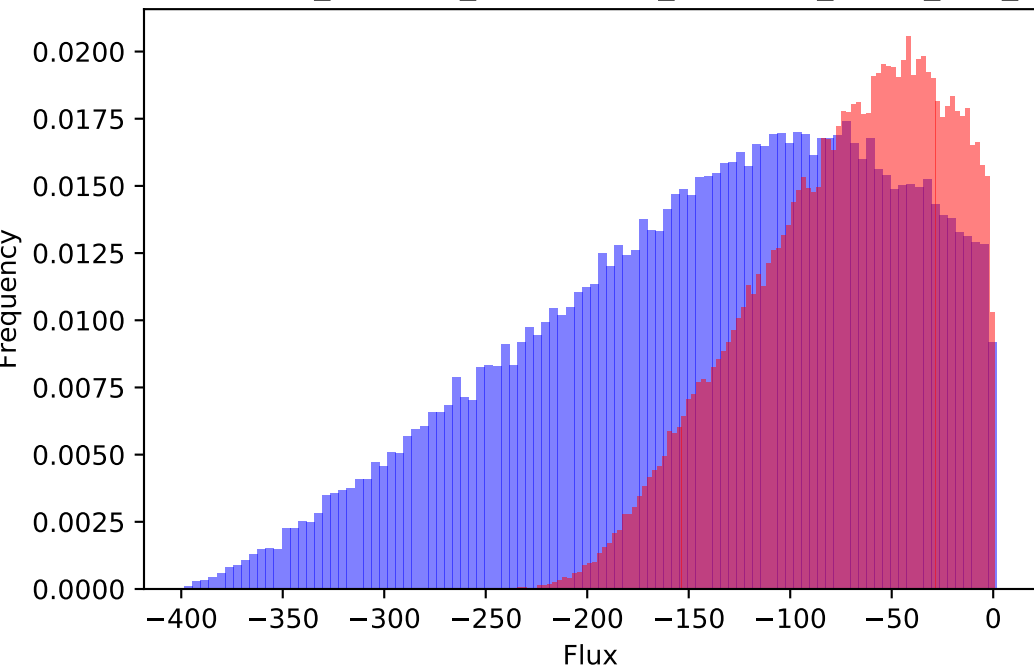




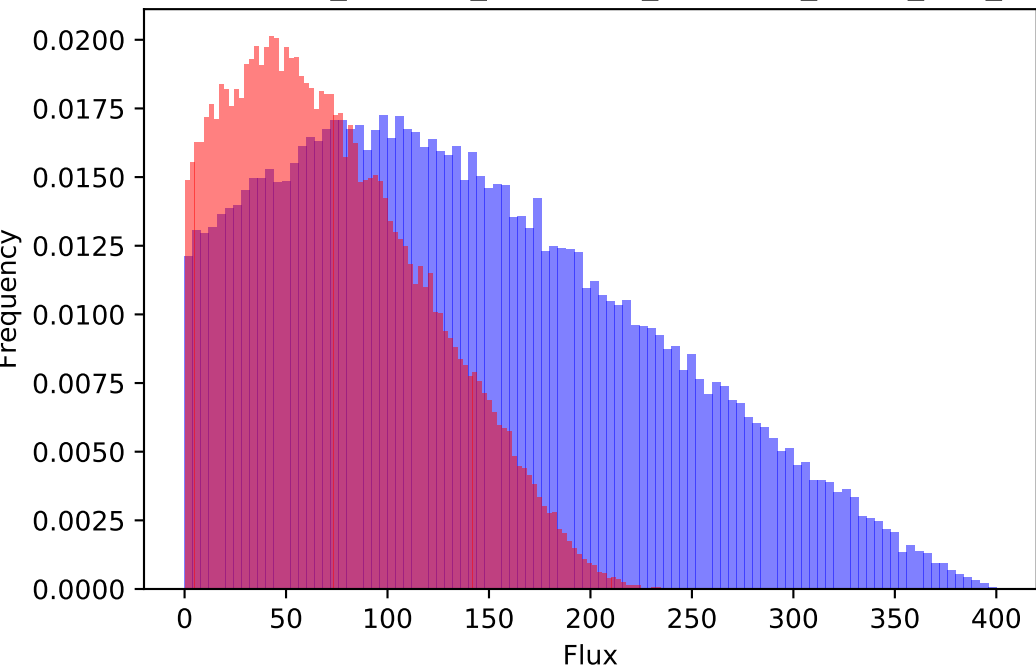
185 : Glu_c + H_c --> CO2_c + GABA_c



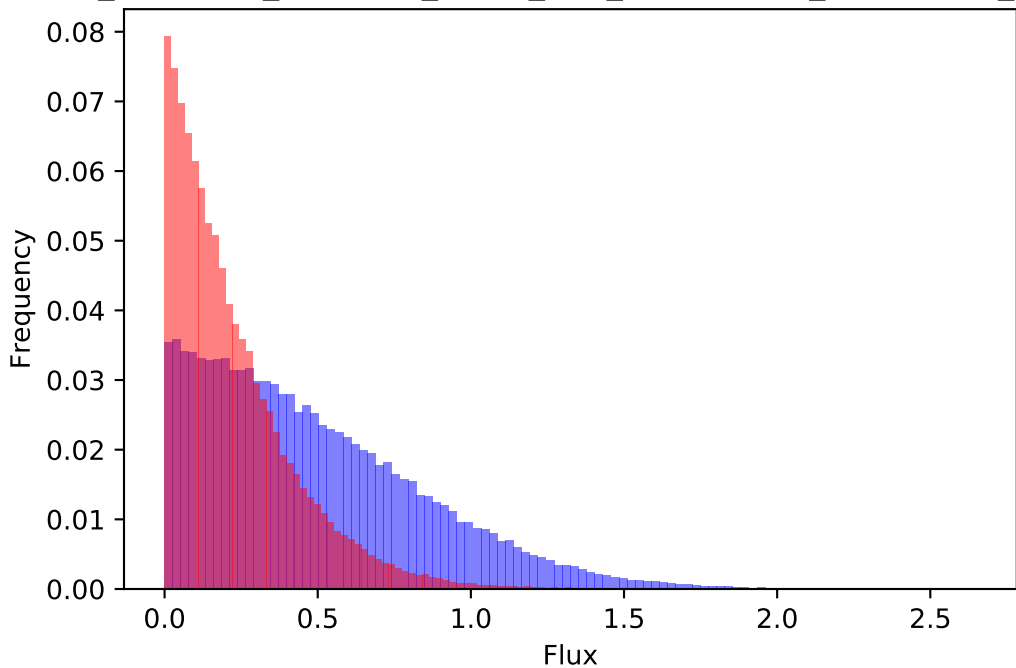
186 : GABA_m + Pyr_m \rightleftharpoons Ala_m + SCA_DASH_SeA_m



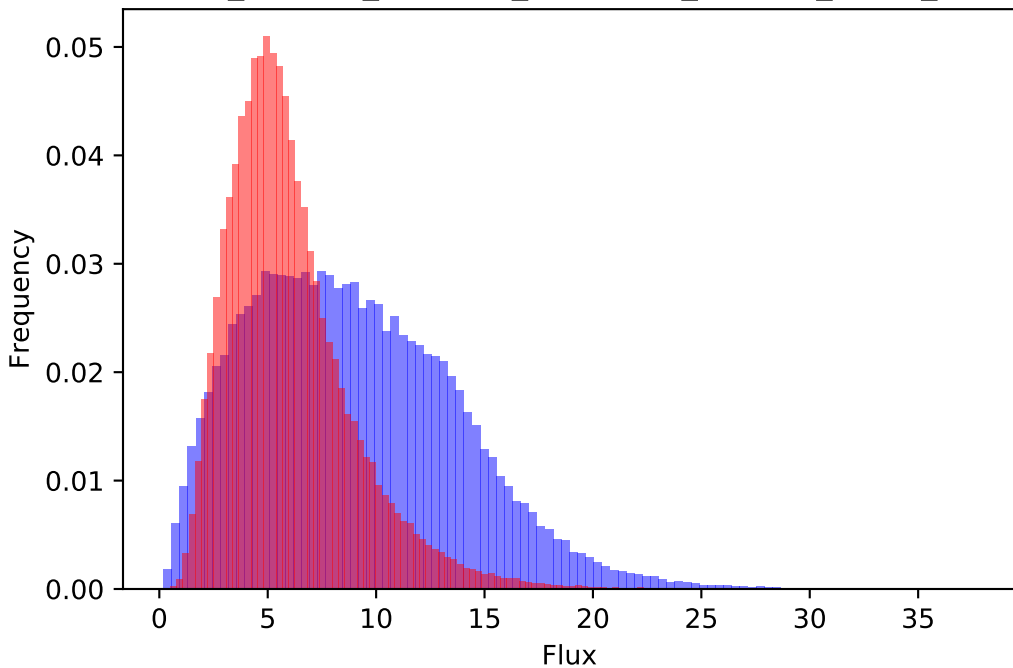
187 : GABA_m + KG_m --> Glu_m + SCA_DASH_SeA_m



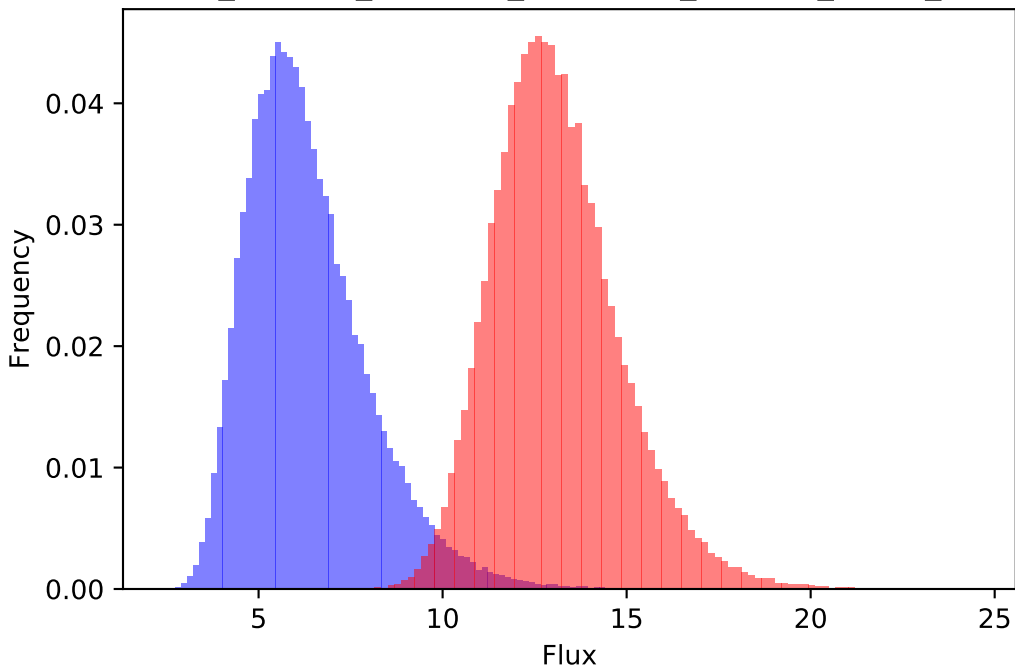
8 : H2O_m + NAD_m + SCA_DASH_SeA_m --> 2.0 H_m + NADH_m + SC



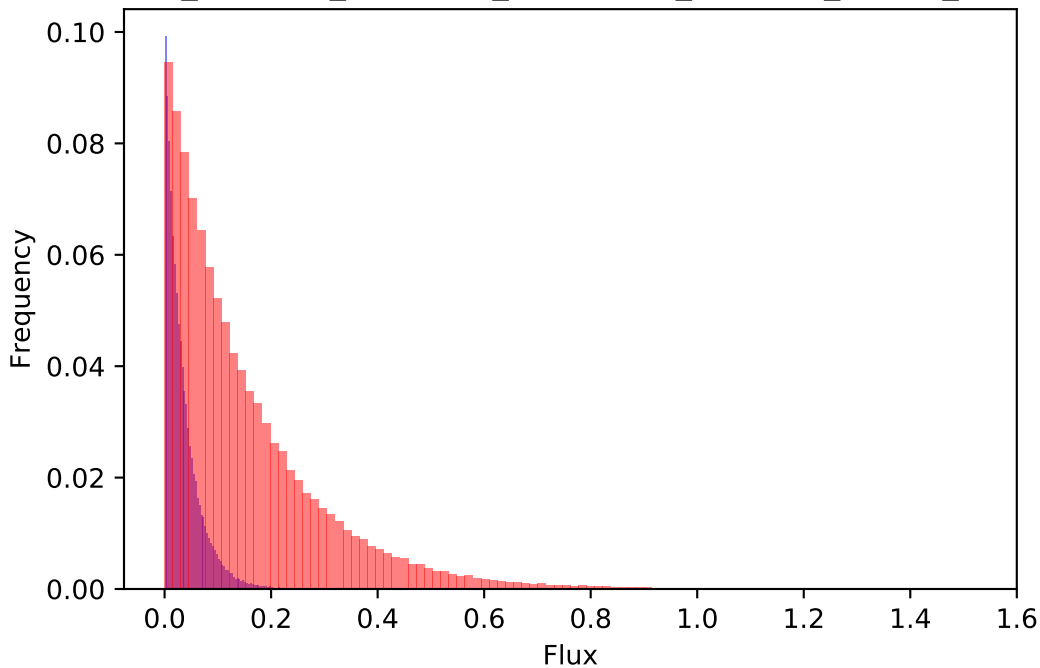
189 : ATP_c + Glu_c + NH4_c --> ADP_c + Gln_c + H_c + Pi_c



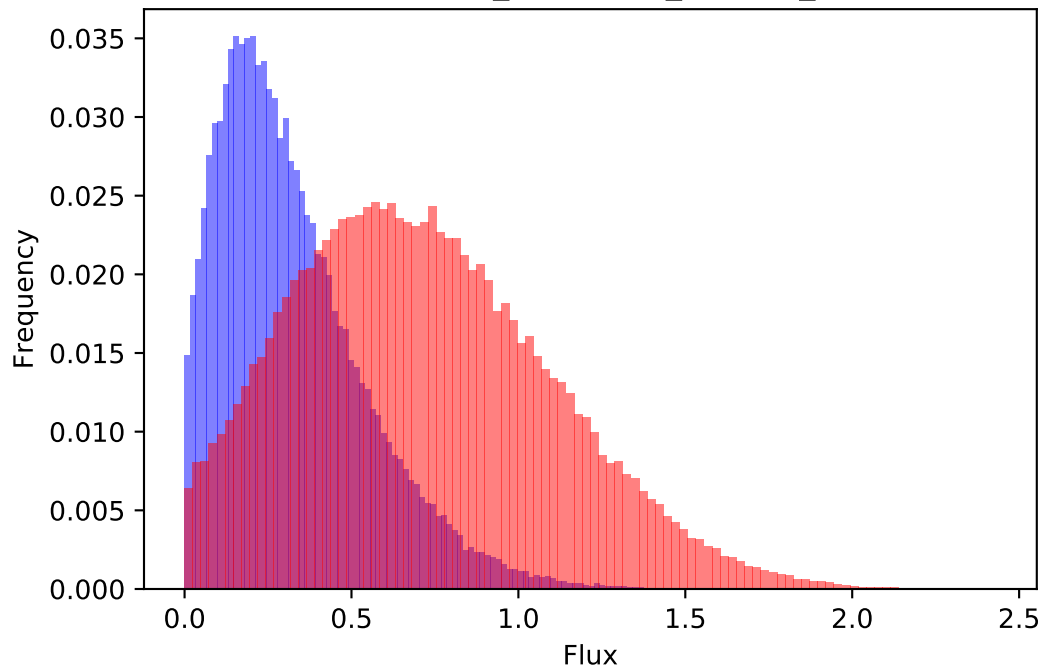
190 : ATP_h + Glu_h + NH4_h --> ADP_h + Gln_h + H_h + Pi_h



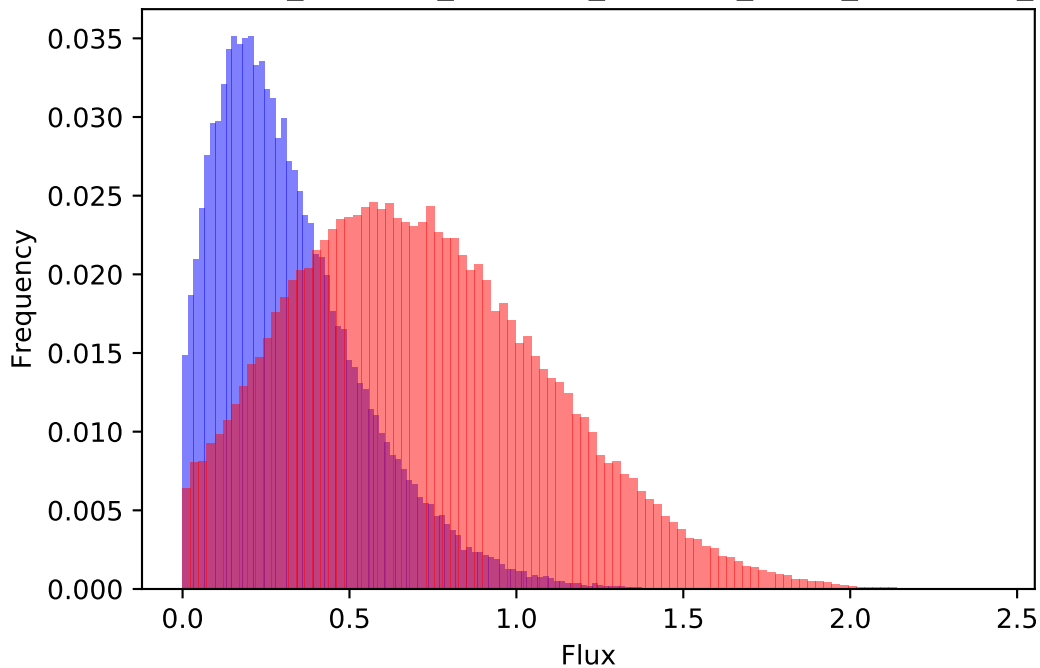
191 : ATP_m + Glu_m + NH4_m --> ADP_m + Gln_m + H_m + Pi_m



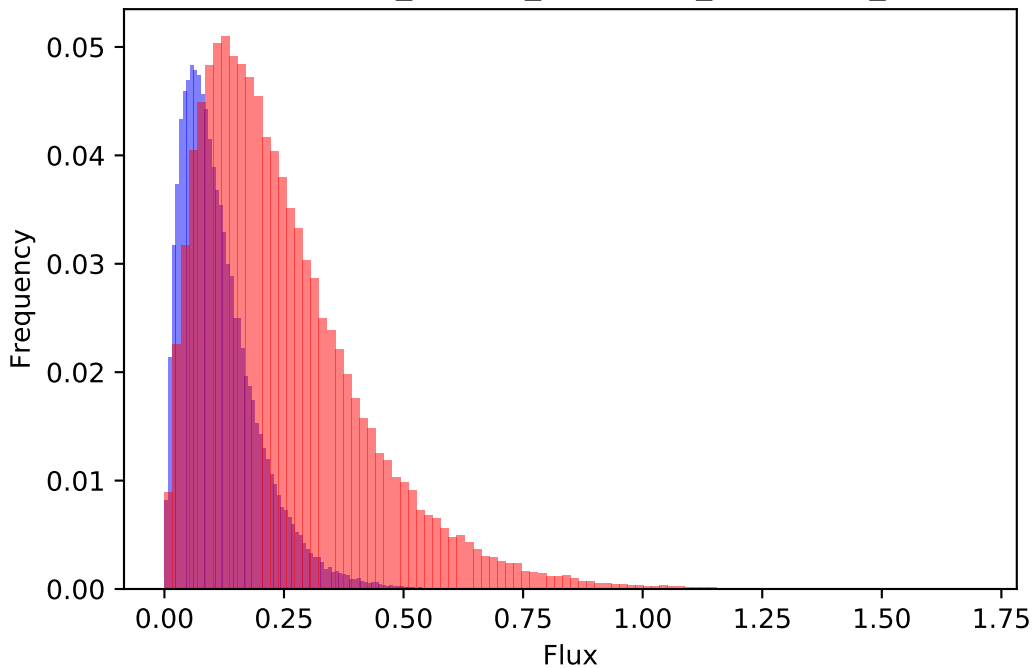
192 : Thr_c --> ACD_c + Gly_c



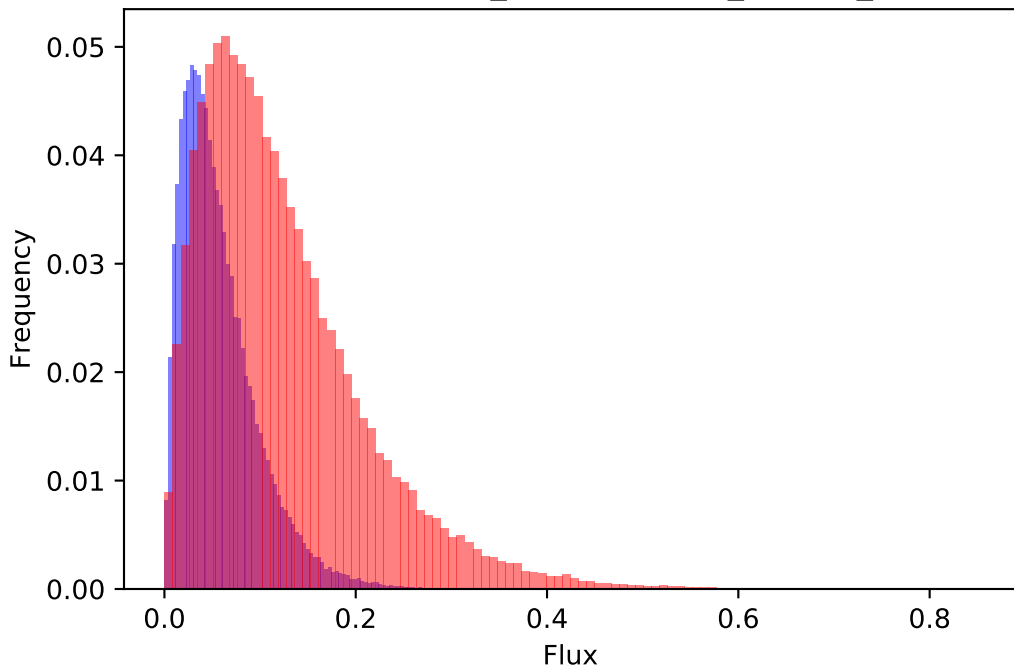
193 : ACD_c + H2O_c + NAD_c --> AC_c + H_c + NADH_c



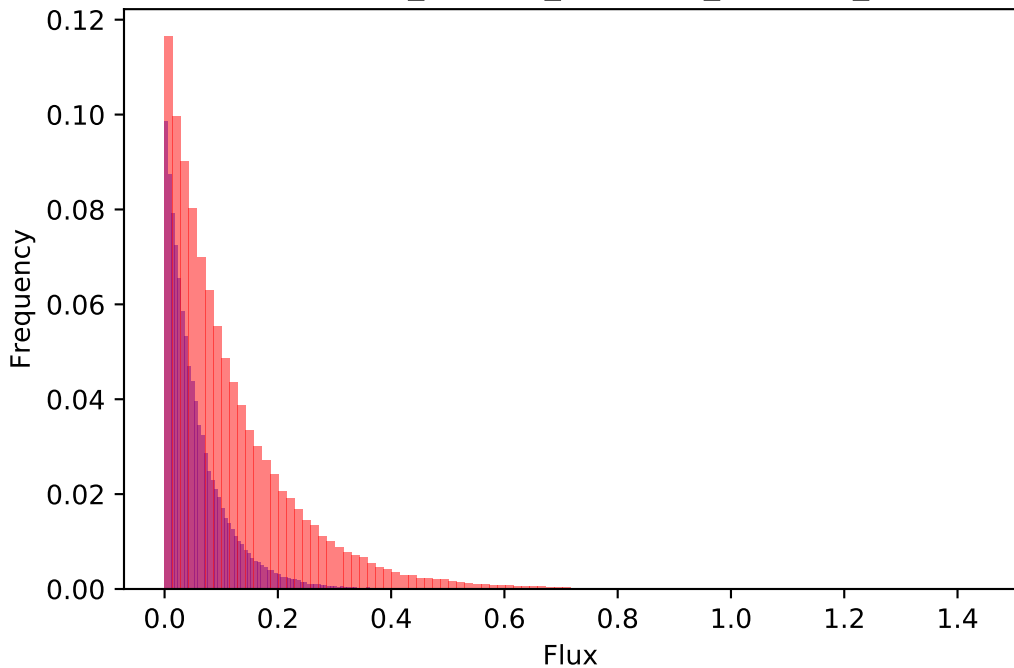
194 : GCA_h + O2_h --> GLX_h + H2O2_h



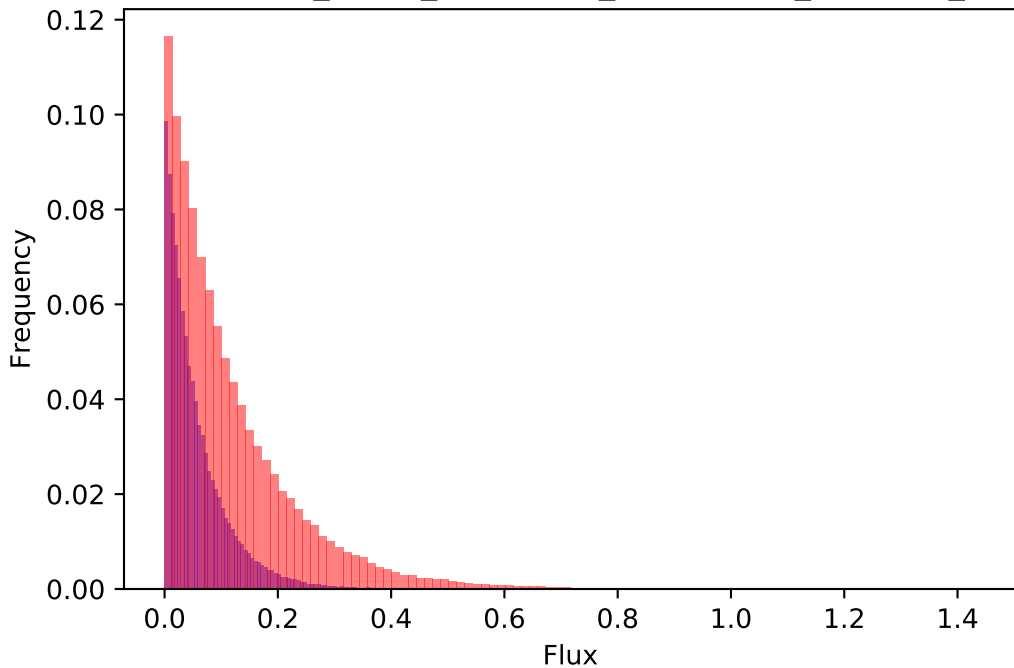
195 : 2.0 H2O2_h --> 2.0 H2O_h + O2_h



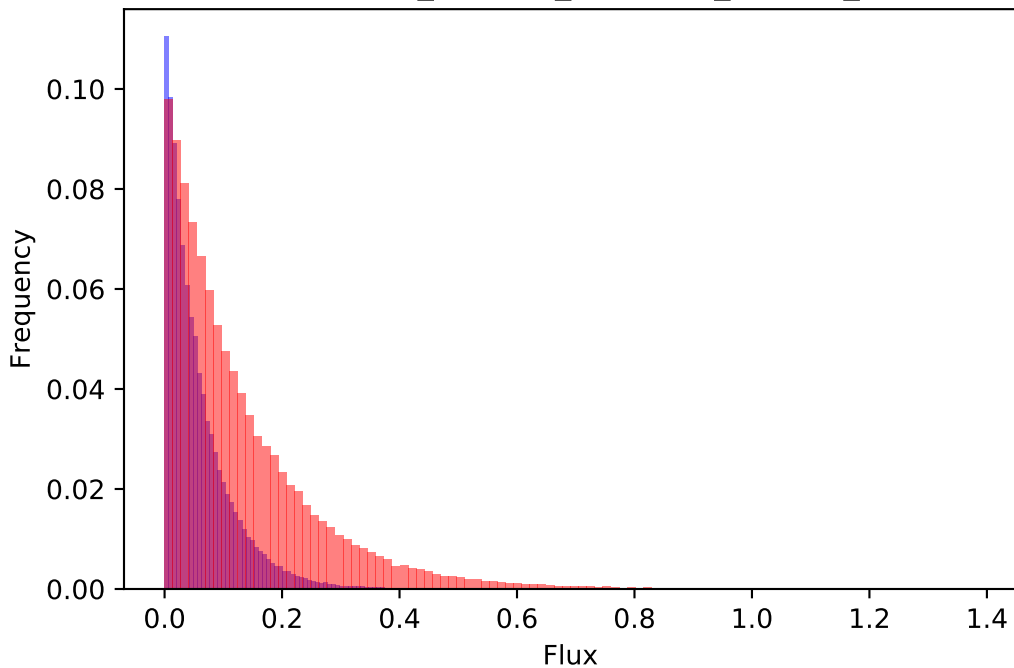
196 : GLX_h + Ser_h --> Gly_h + HPR_h



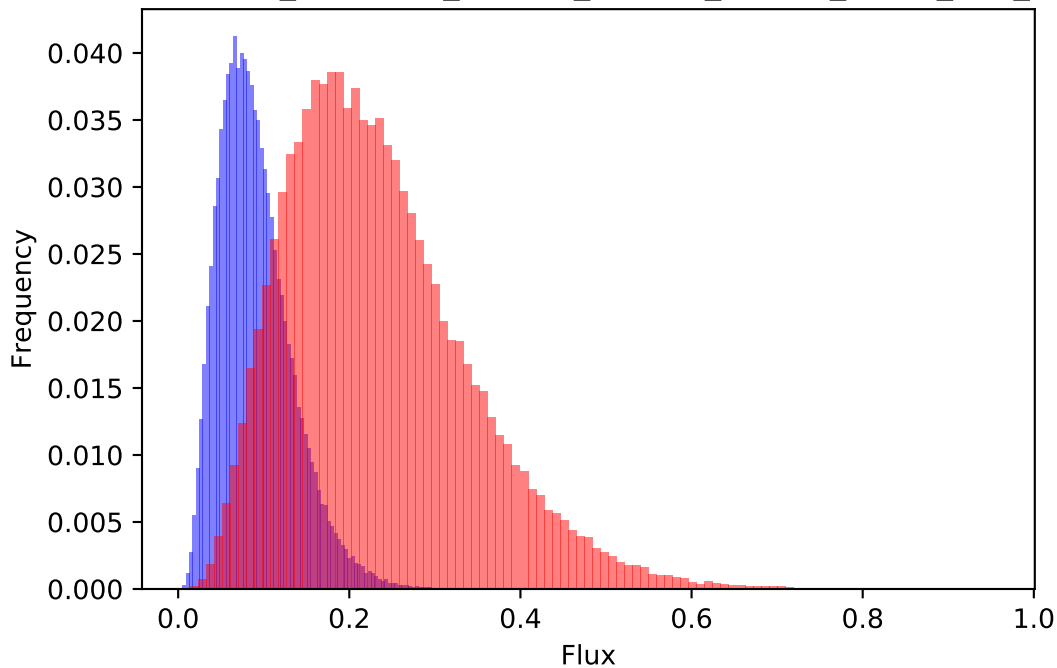
197 : HPR_h + H_h + NADH_h --> GCEA_h + NAD_h



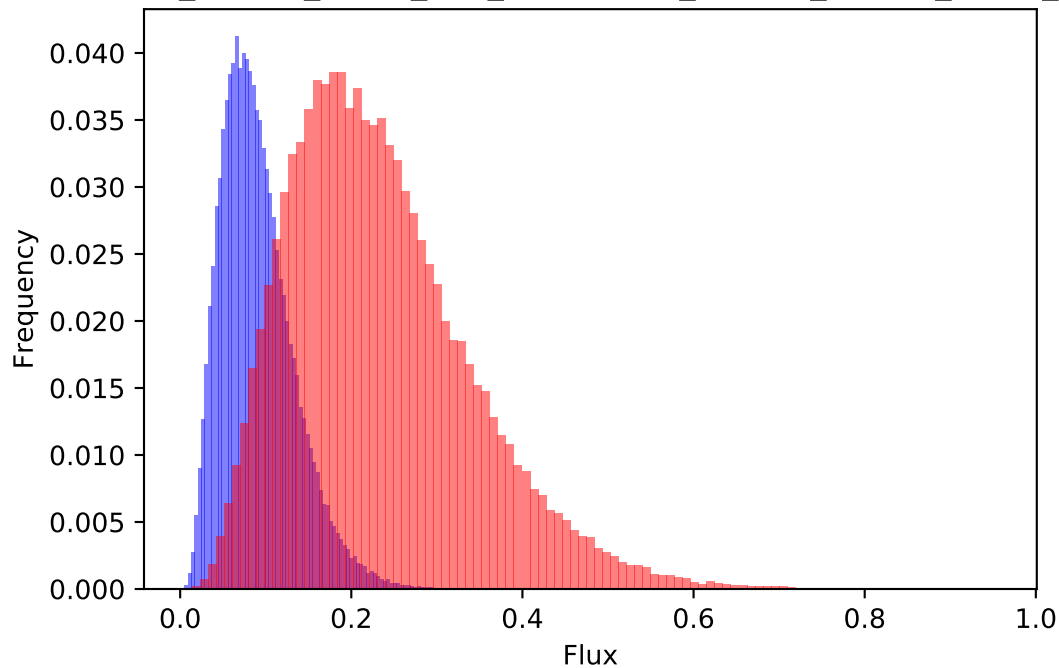
198 : GLX_h + Glu_h --> Gly_h + KG_h



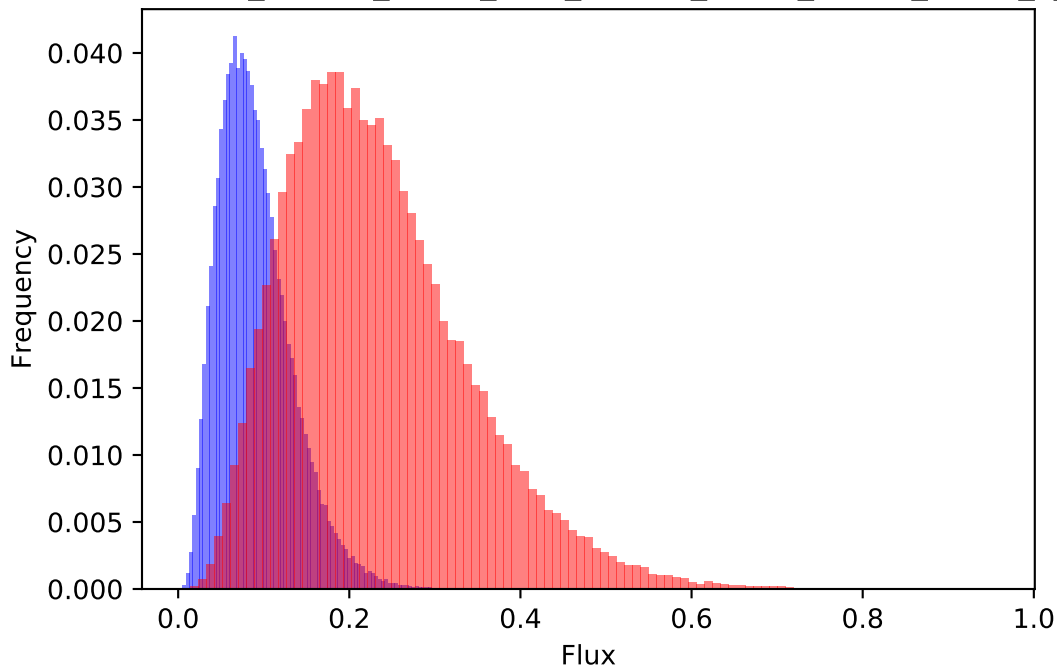
199 : ATP_h + PRPP_h --> H_h + PPI_h + PR_DASH_ATP_h



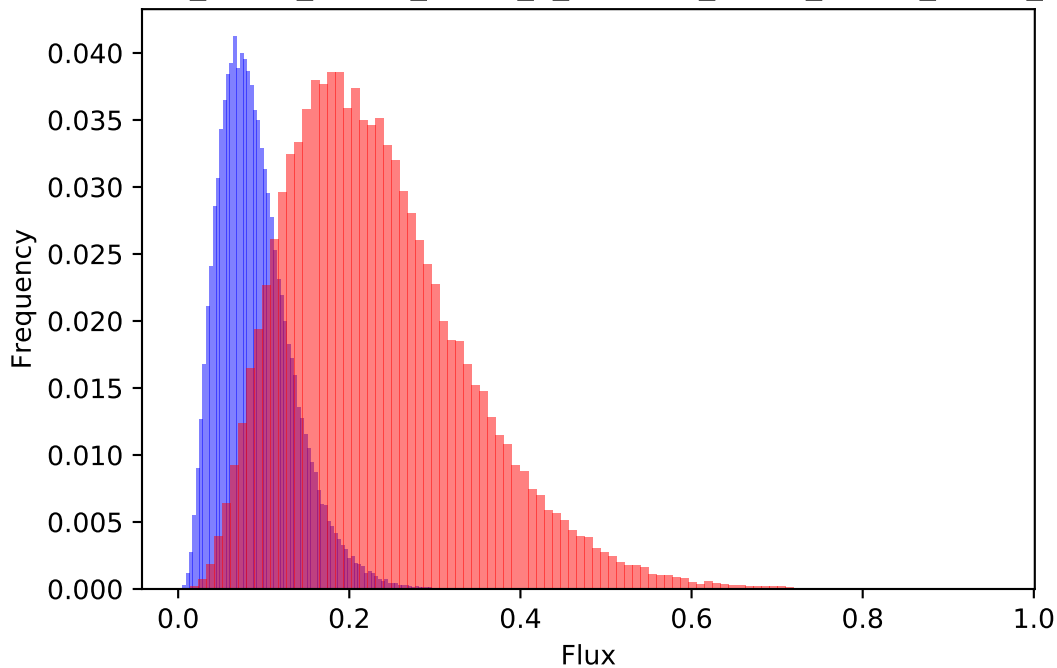
200 : H2O_h + PR_DASH_ATP_h --> 2.0 H_h + PPI_h + PR_DASH_AMP_h



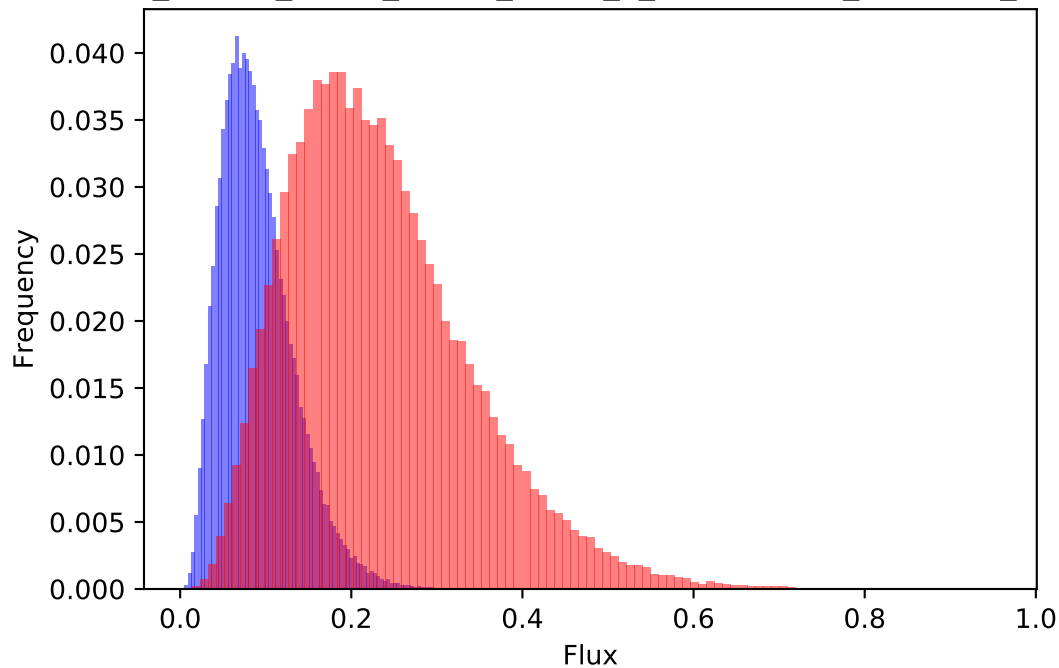
201 : H2O_h + PR_DASH_AMP_h --> P_DASH_AICAR_DASH_P_h



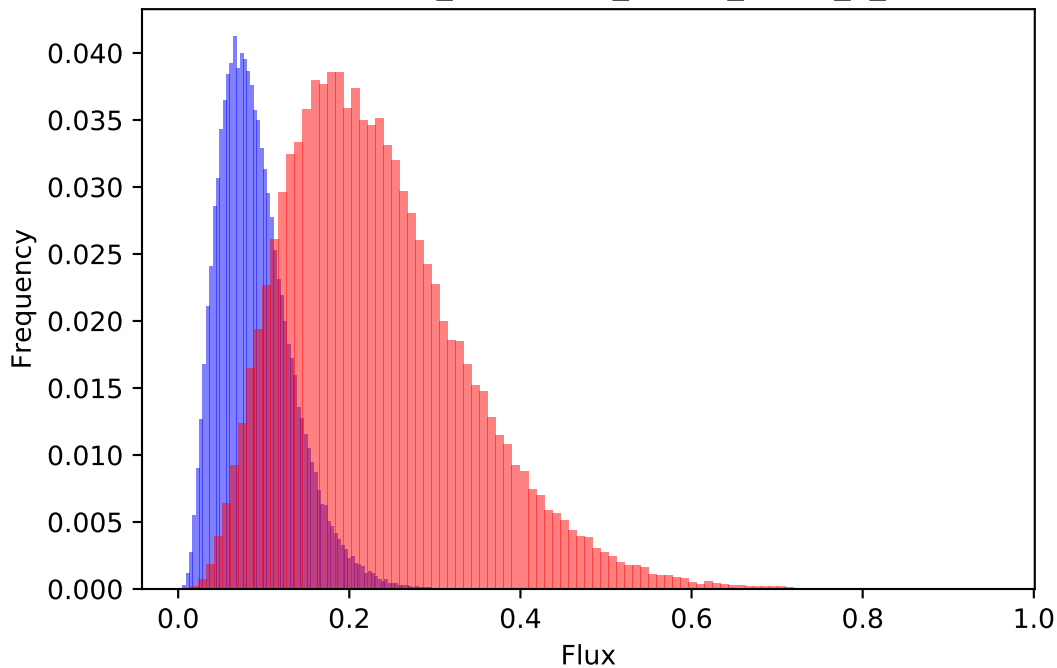
202 : P_DASH_AICAR_DASH_P_h --> Pu_DASH_AICAR_DASH_P_h



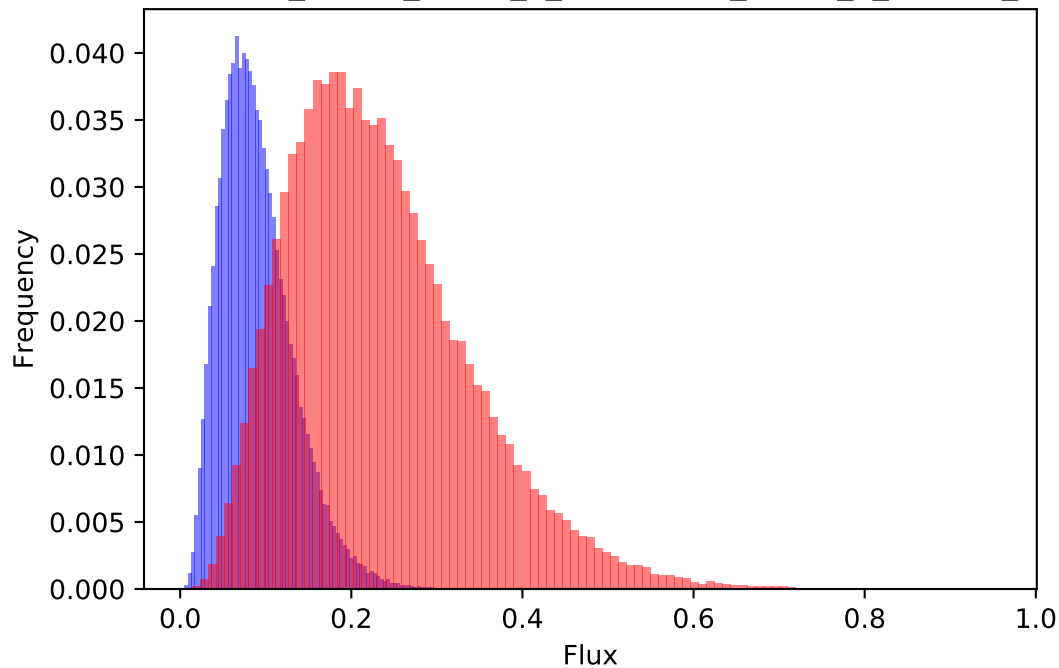
203 : Gln_h + Pu_DASH_AICAR_DASH_P_h --> AICAR_h + EIGP_h + Glu_h



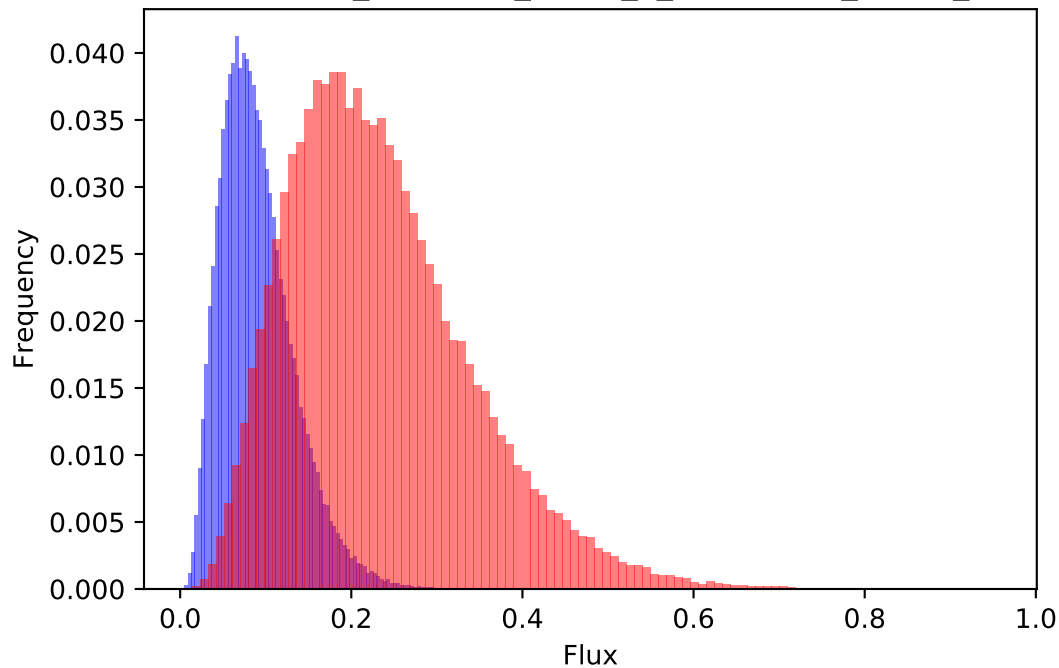
204 : EIGP_h --> H2O_h + IA_DASH_P_h



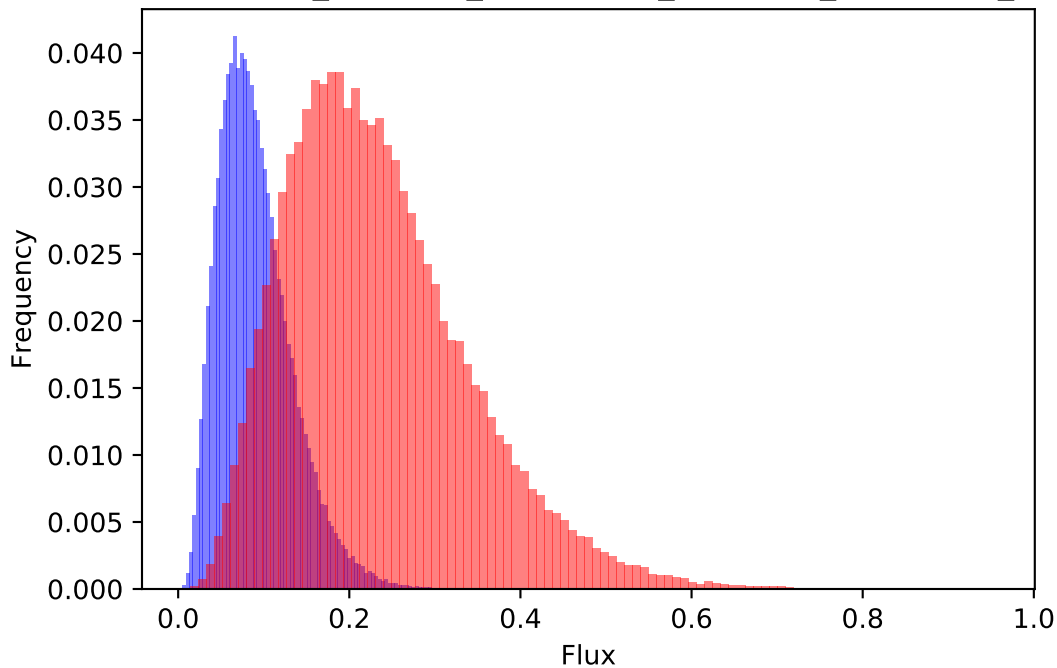
205 : Glu_h + IA_DASH_P_h --> Hisol_DASH_P_h + KG_h



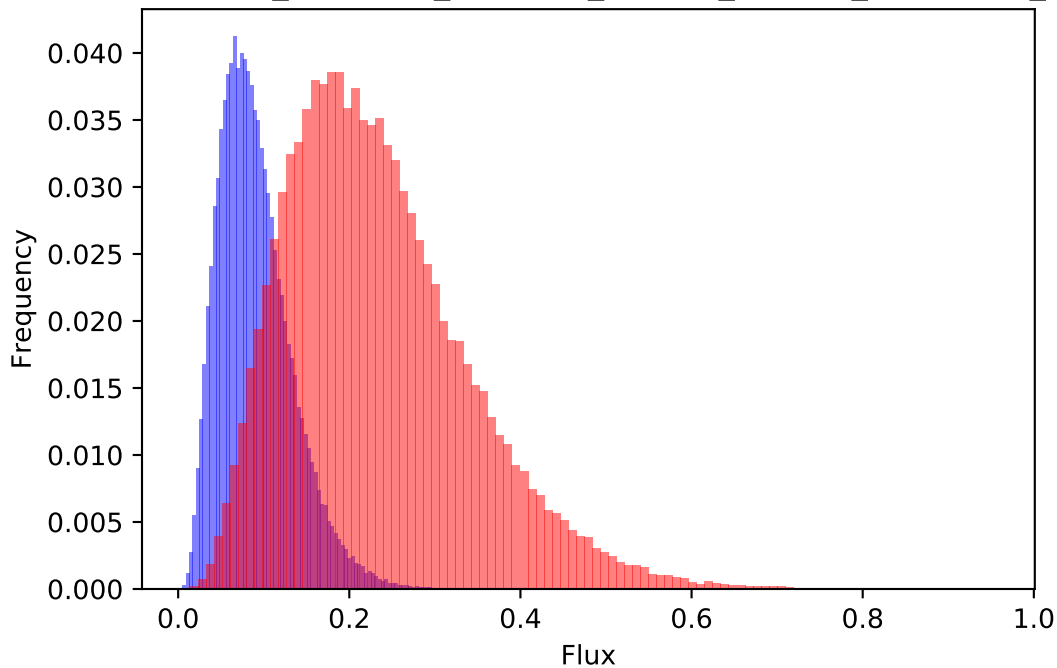
206 : H2O_h + Hisol_DASH_P_h --> Hisol_h + Pi_h



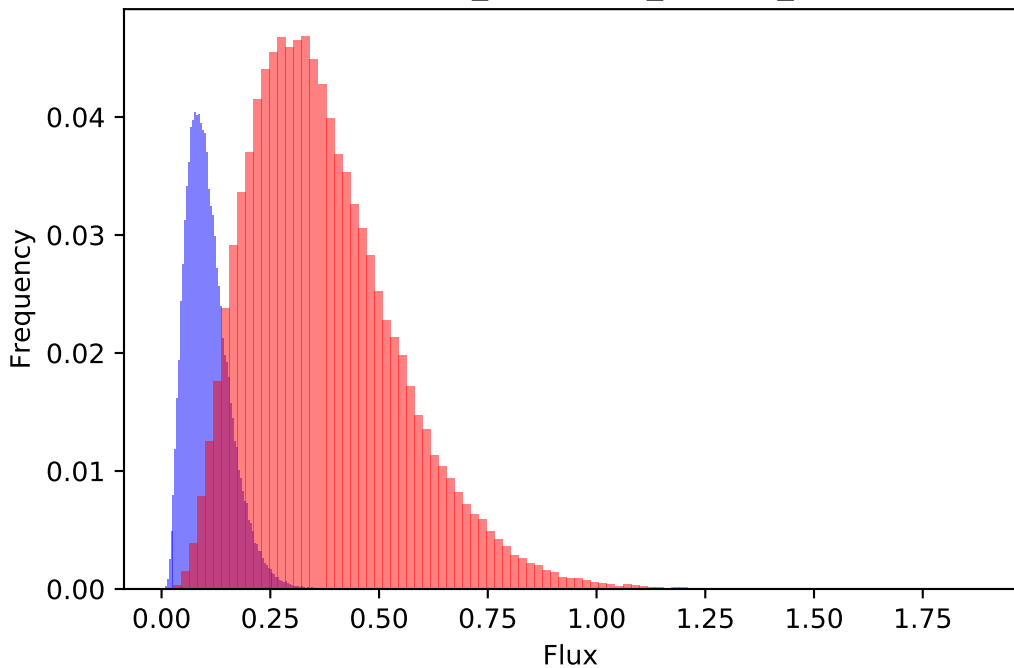
207 : Hisol_h + NAD_h --> 2.0 H_h + Hisal_h + NADH_h



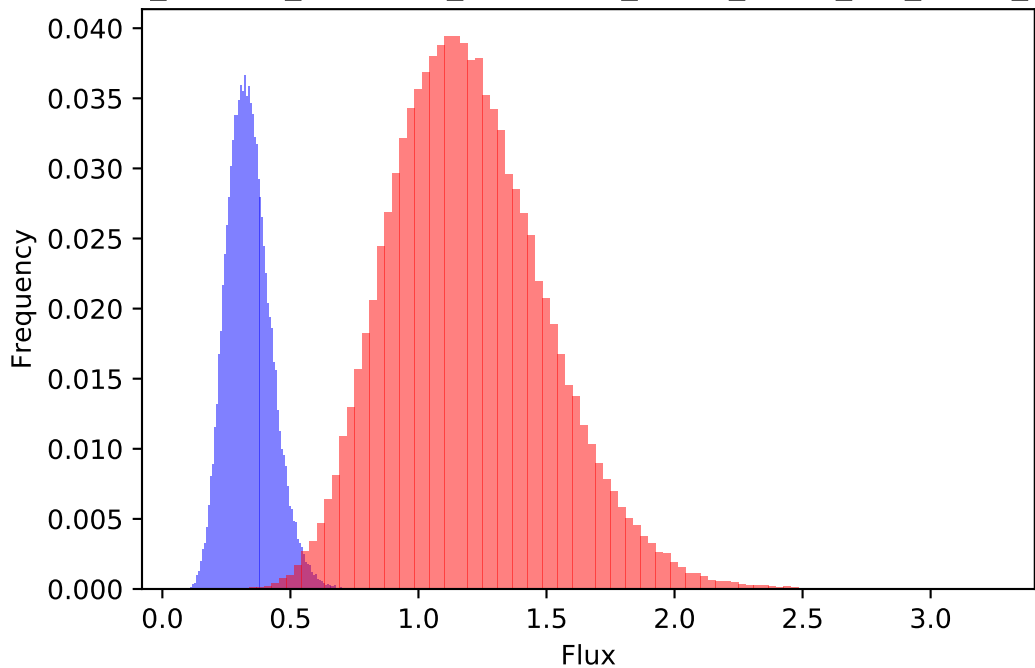
208 : H₂O_h + His_l_h + NAD_h --> H_h + His_h + NADH_h



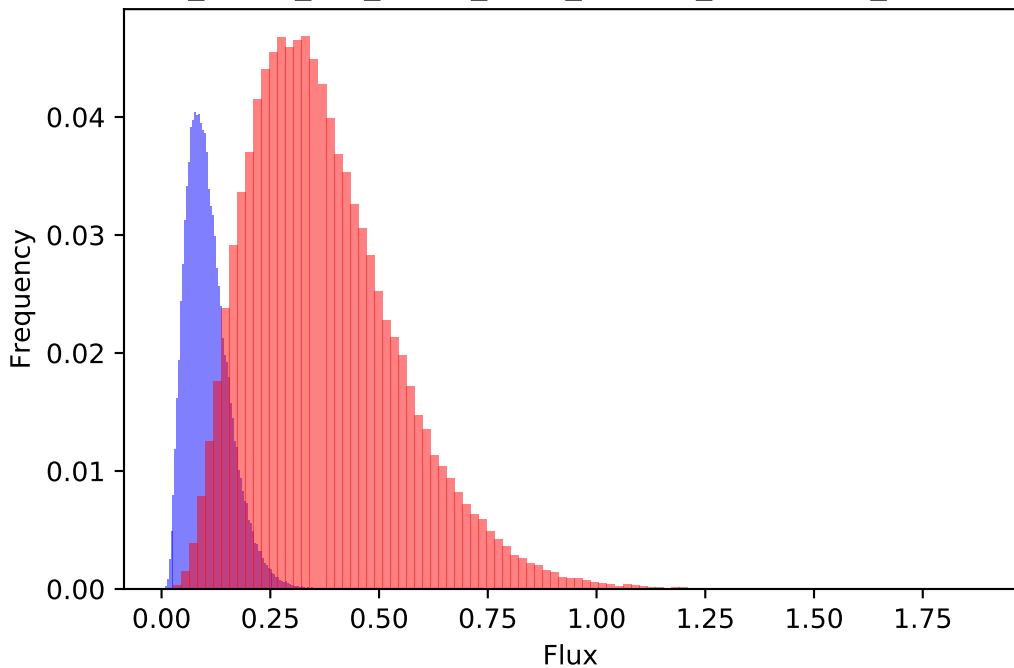
209 : Thr_h --> NH4_h + OB_h



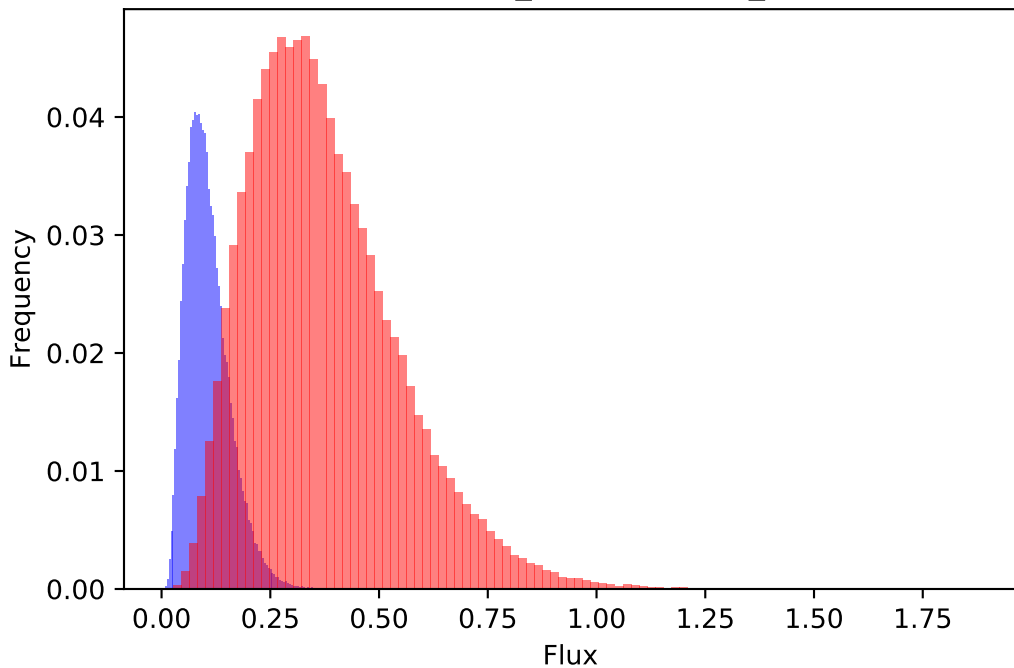
210 : H_h + Pyr_h + ThPP_h --> CO2_h + H_DASH_Eth_DASH_ThPP_h



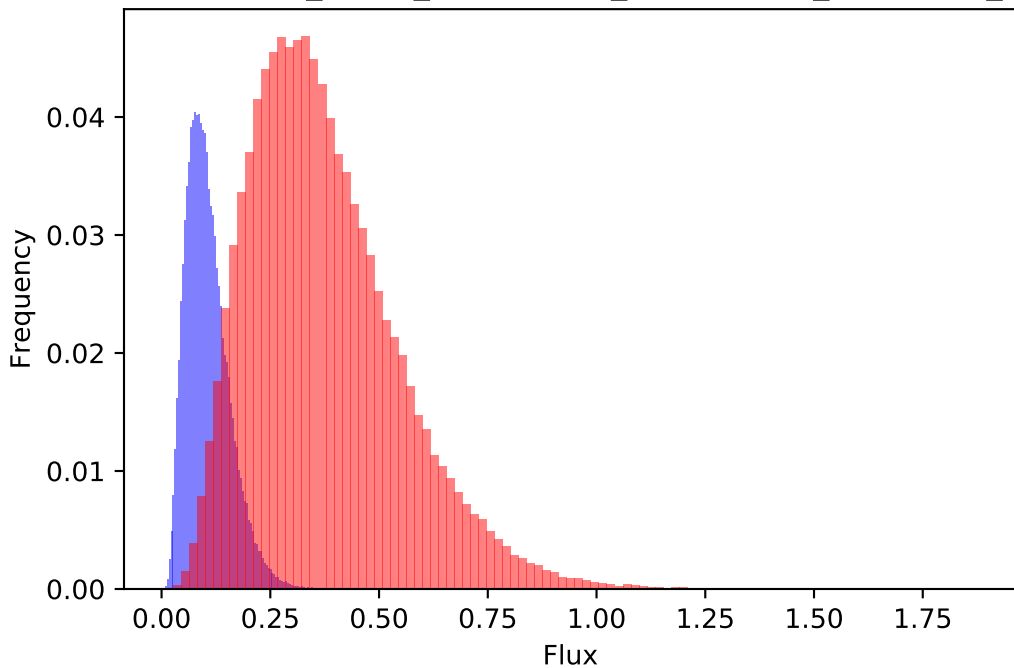
211 : H_DASH_Eth_DASH_ThPP_h + OB_h --> AHB_h + ThPP_h



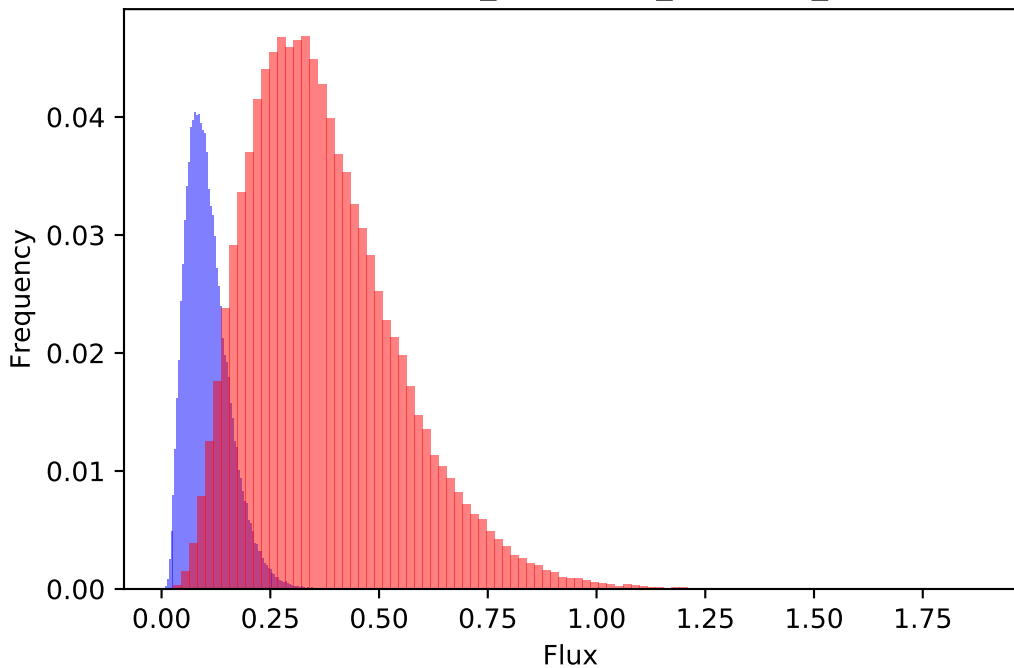
212 : AHB_h \Leftrightarrow HMOP_h



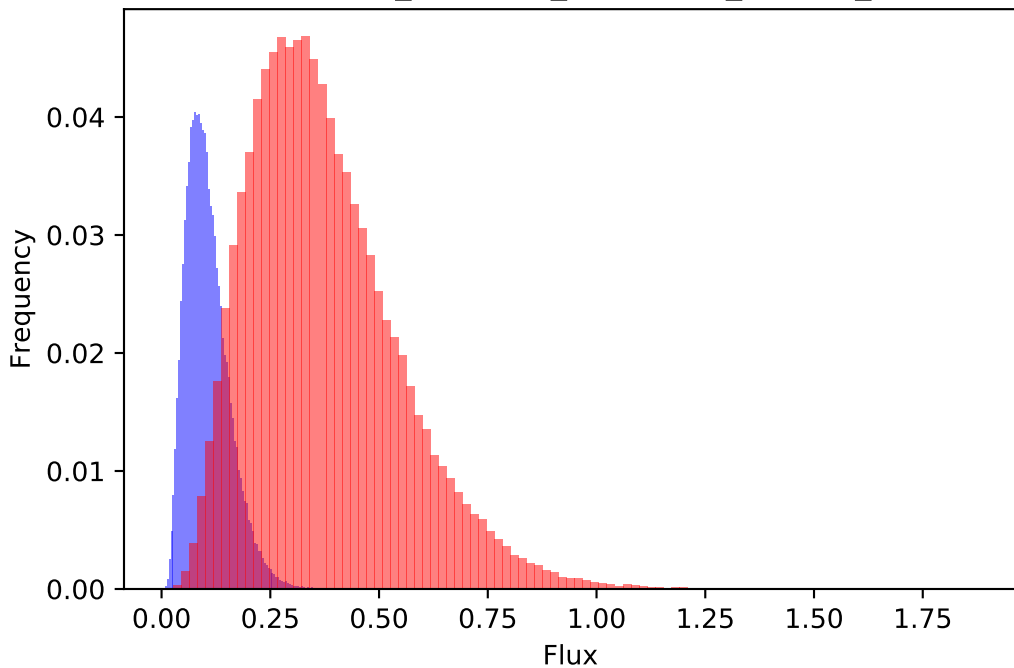
213 : HMOP_h + H_h + NADPH_h --> DHMP_h + NADP_h



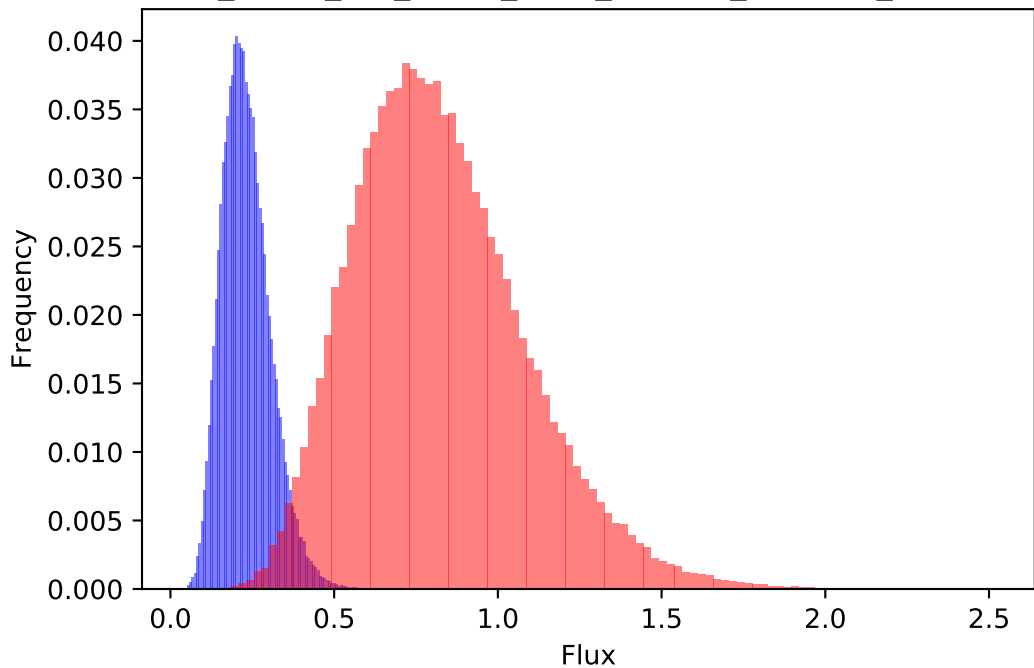
214 : DHMP_h --> H2O_h + MOP_h



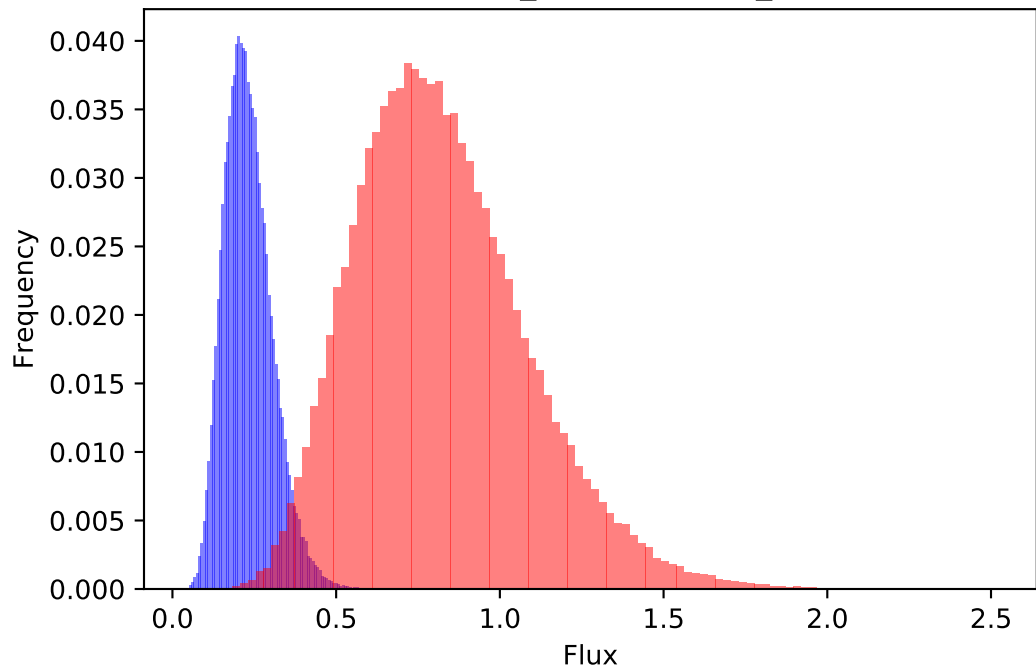
215 : Glu_h + MOP_h \Leftrightarrow Ile_h + KG_h



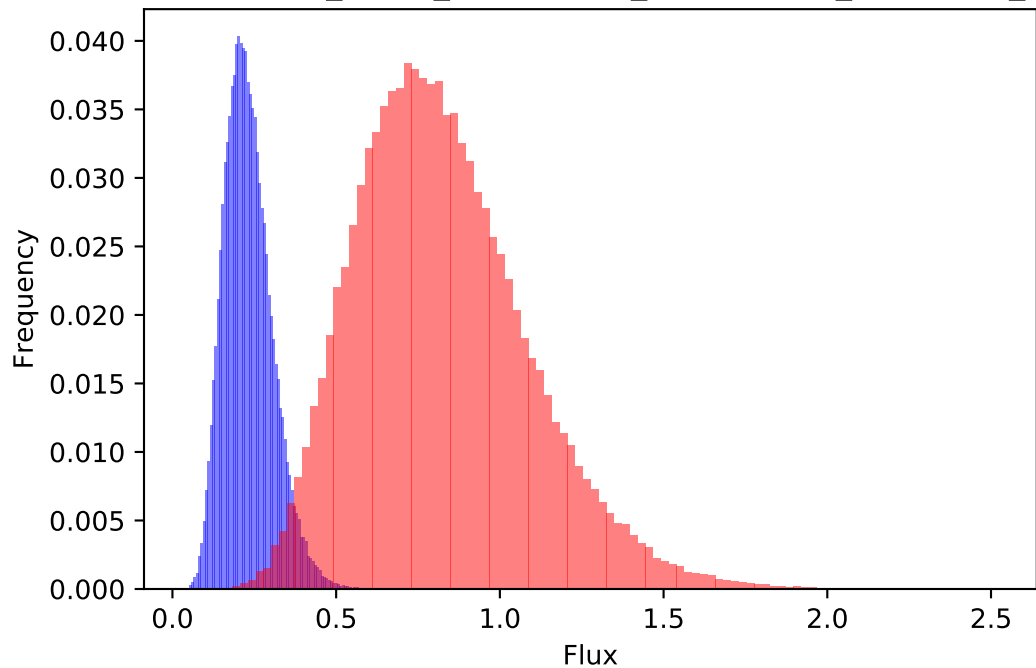
216 : H_DASH_Eth_DASH_ThPP_h + Pyr_h --> AL_h + ThPP_h



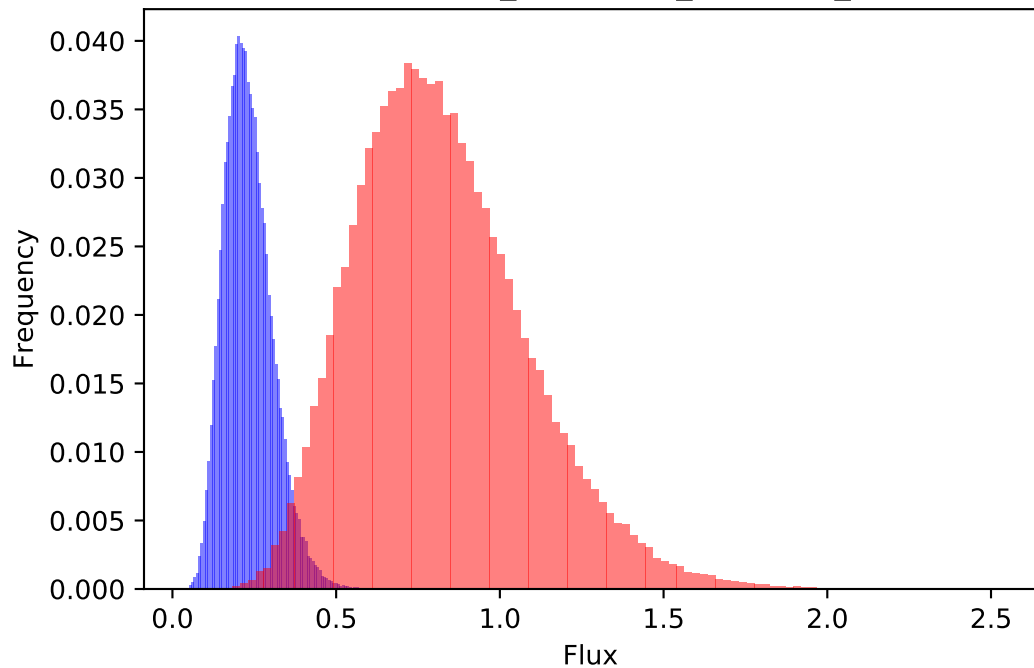
217 : AL_h <=> HMOB_h



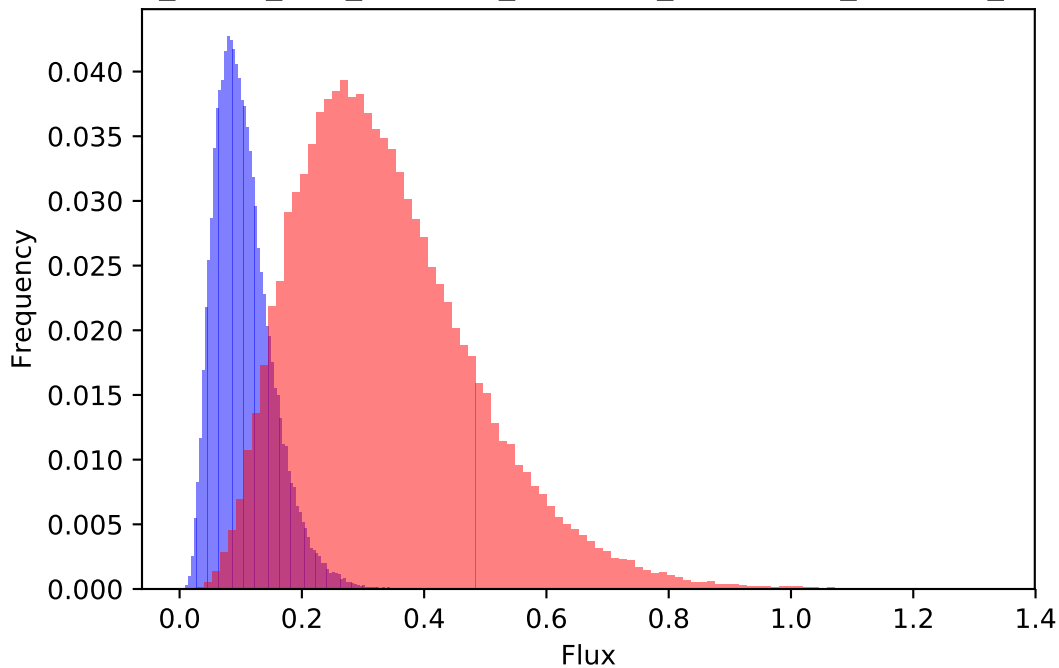
218 : HMOB_h + H_h + NADPH_h --> DHMB_h + NADP_h



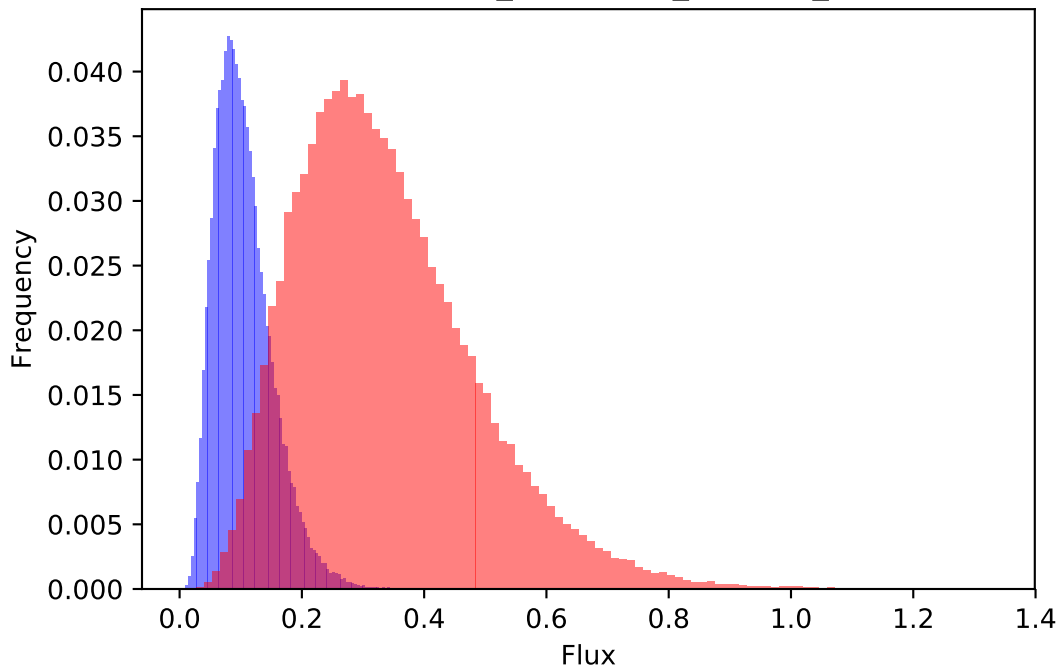
219 : DHMB_h --> H2O_h + MOB_h



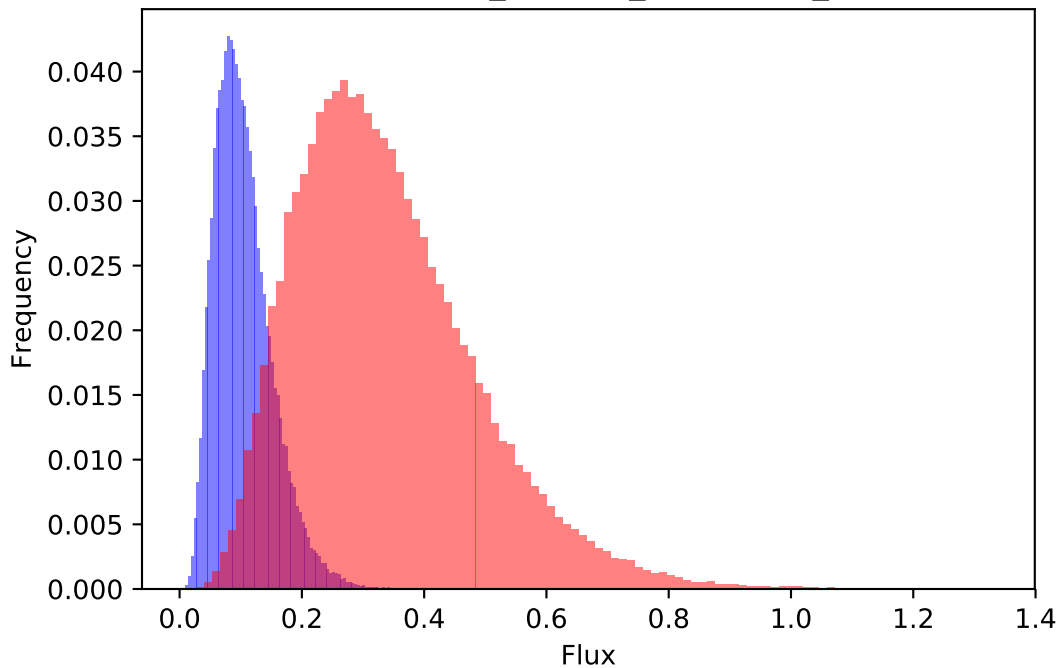
220 : A_DASH_CoA_h + H2O_h + MOB_h --> 2IPM_h + CoA_h + H_h



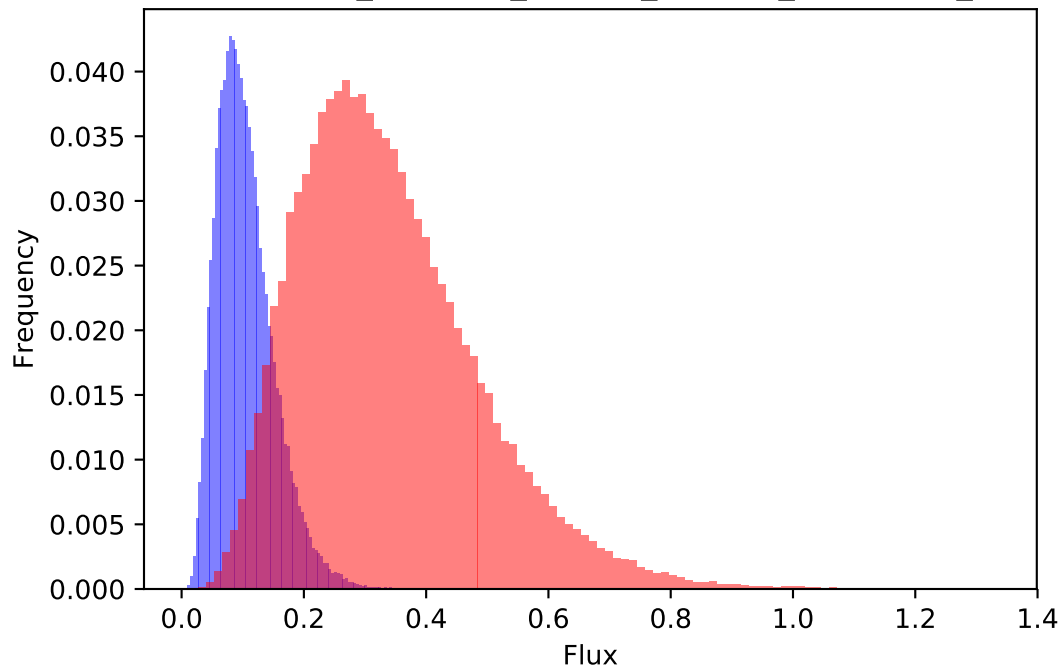
221 : 2IPM_h --> H2O_h + IPM_h



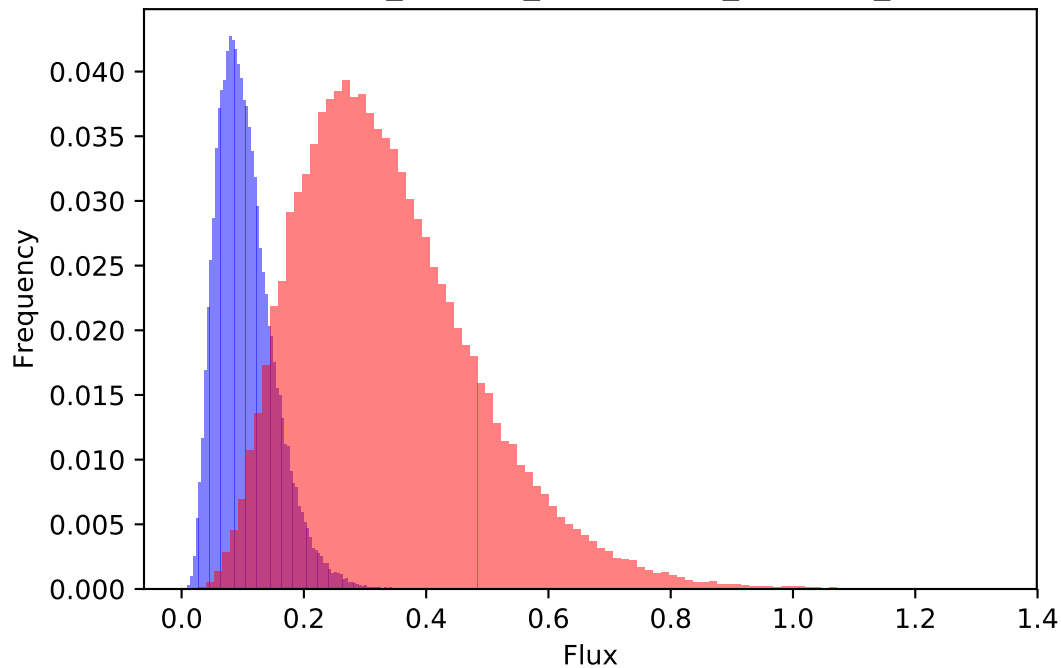
222 : H2O_h + IPM_h --> 3IPM_h



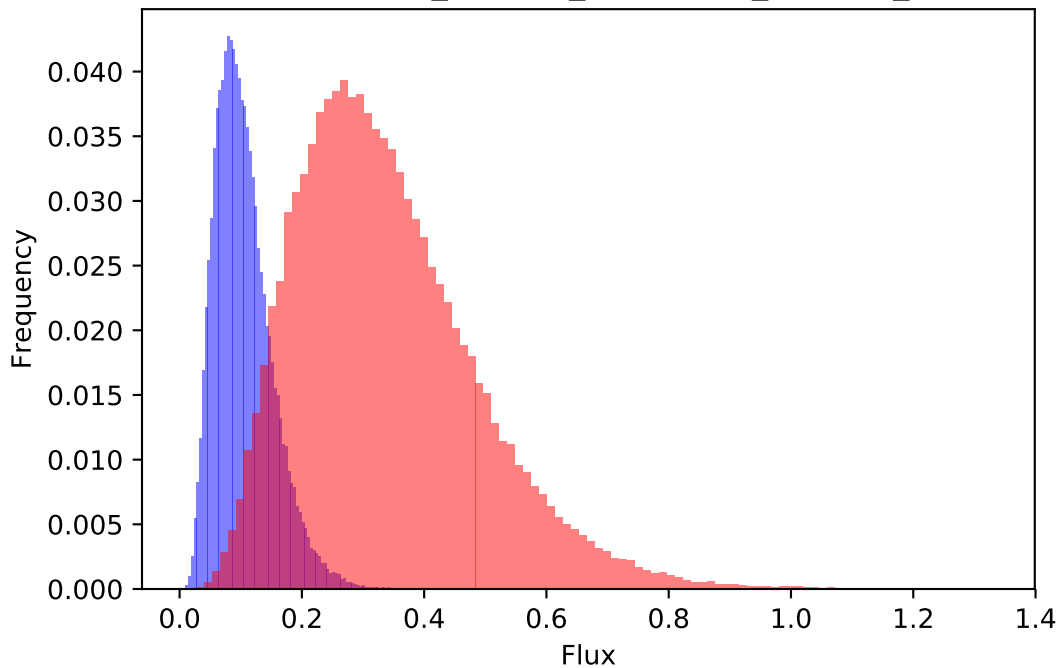
223 : 3IPM_h + NAD_h --> H_h + IPO_h + NADH_h



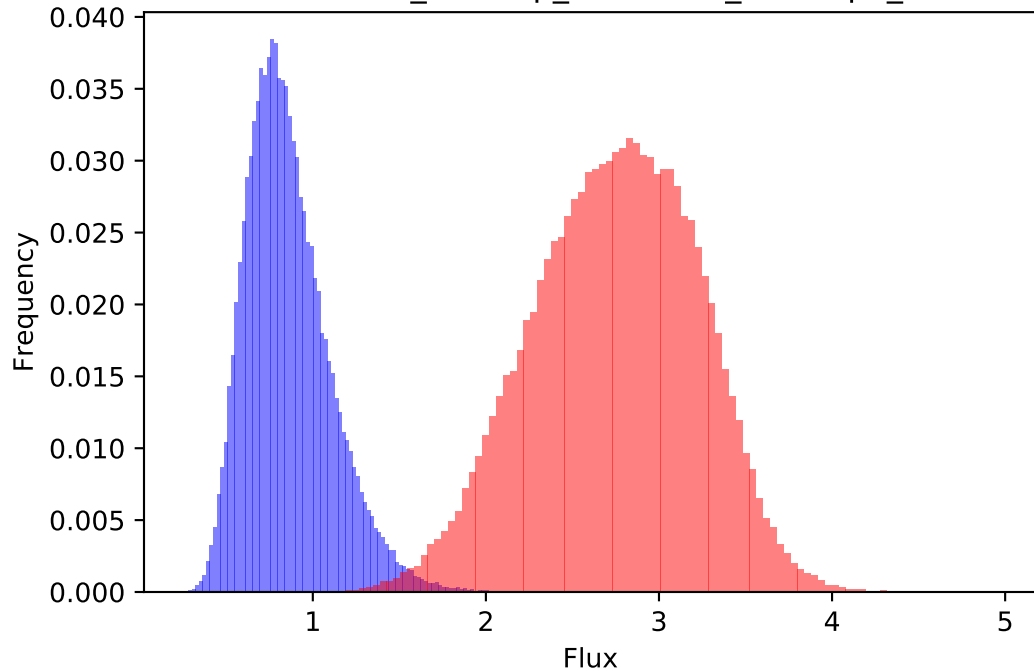
224 : H_h + IPO_h --> 4MOP_h + CO2_h



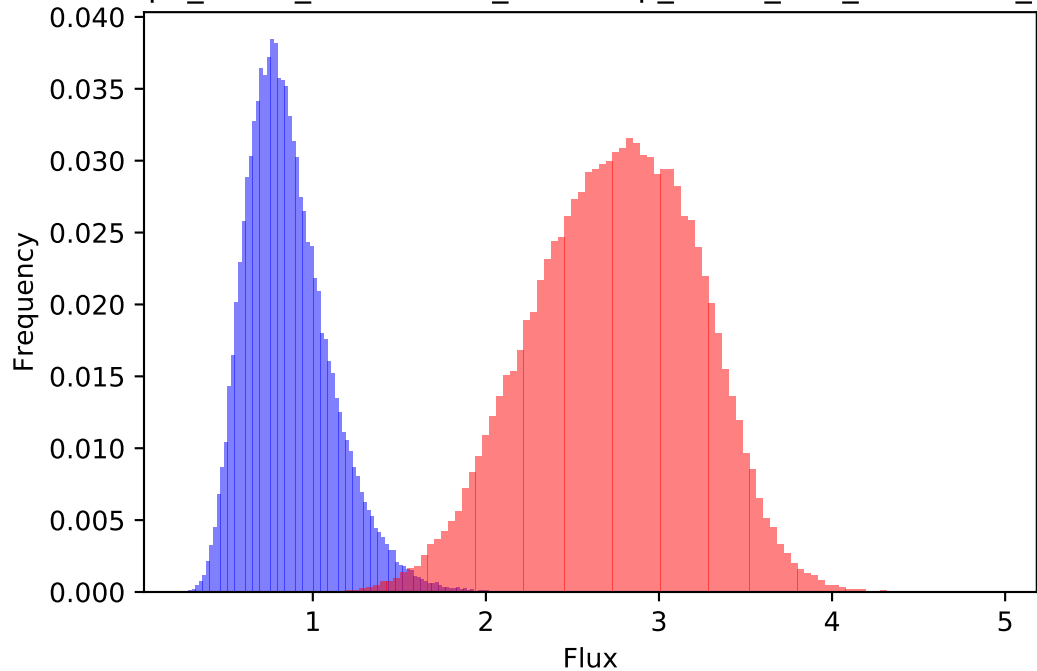
225 : 4MOP_h + Glu_h <=> KG_h + Leu_h



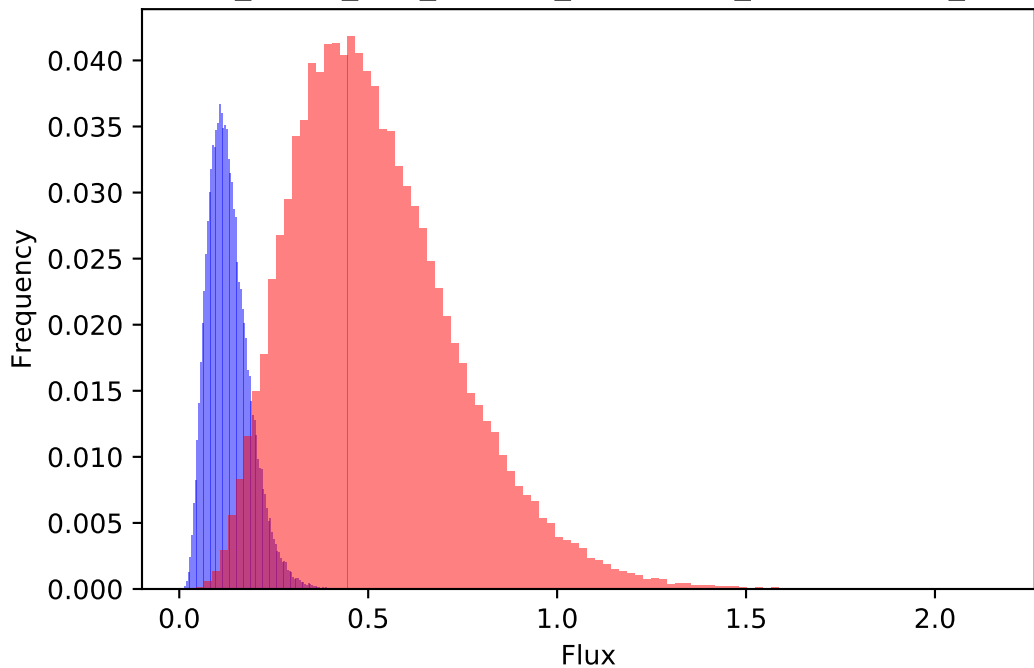
226 : ATP_h + Asp_h --> ADP_h + AspP_h



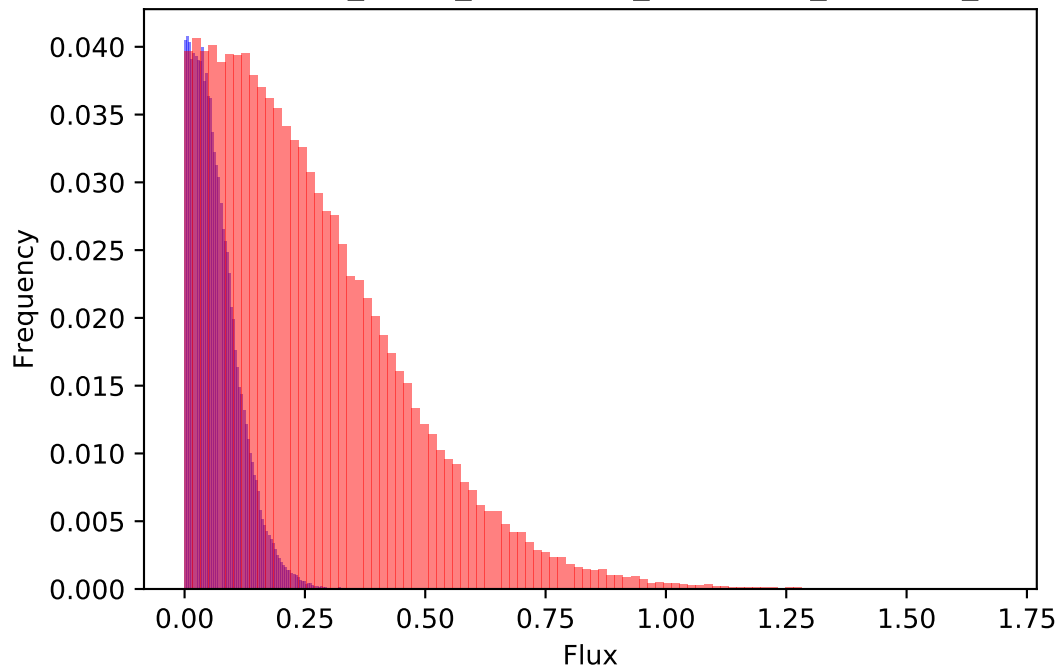
227 : AspP_h + H_h + NADPH_h --> Asp_DASH_SeA_h + NADP_h + Pi_h



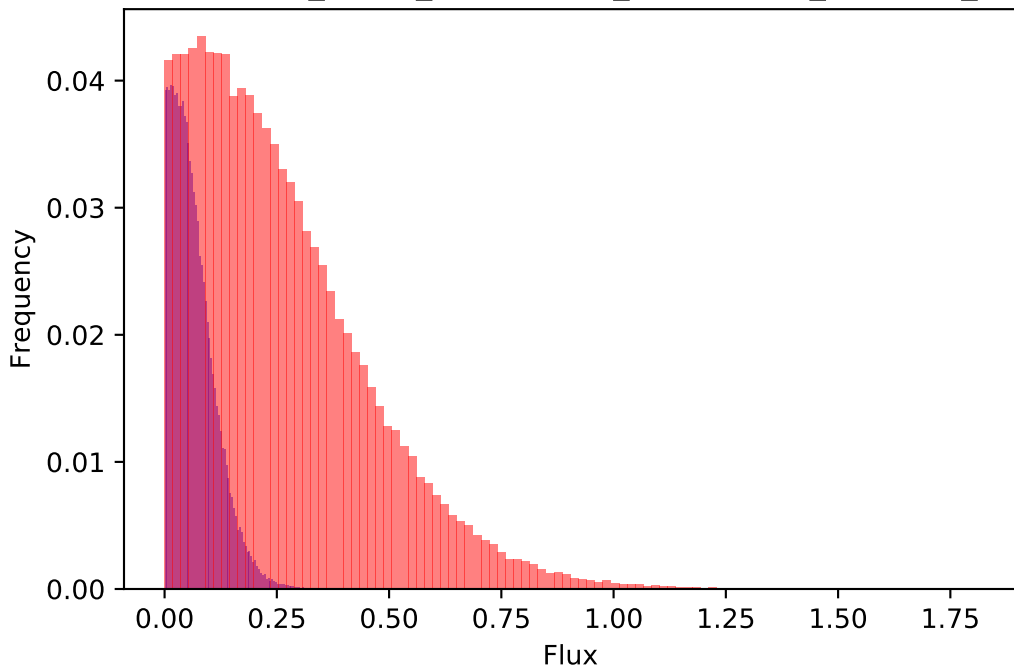
228 : Asp_DASH_SeA_h + Pyr_h --> DHD_h + 2.0 H2O_h + H_h



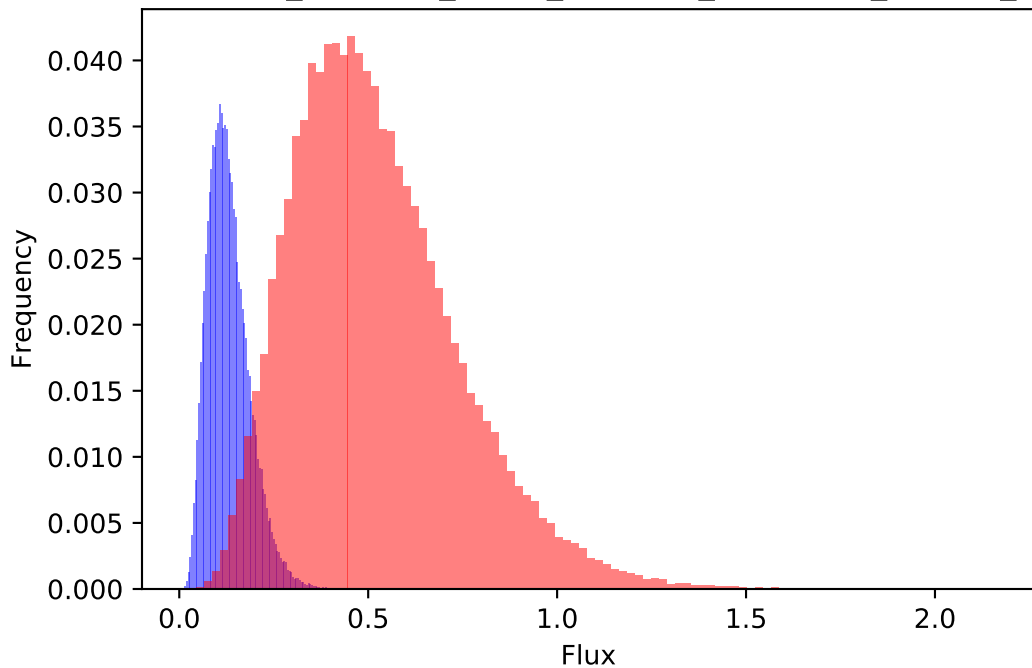
229 : DHD_h + H_h + NADH_h --> NAD_h + THD_h



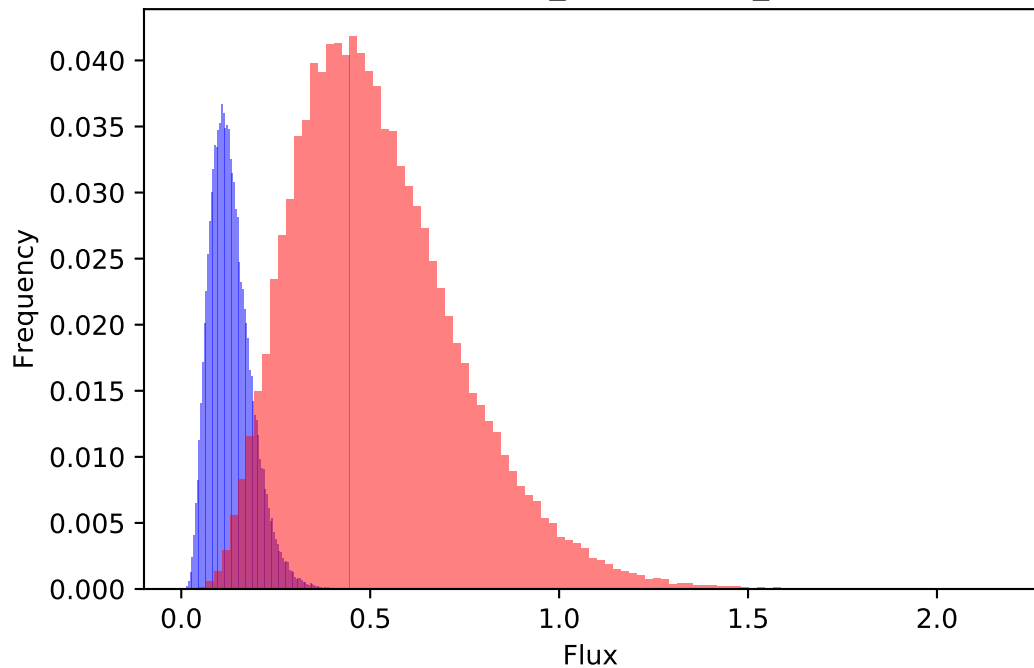
230 : DHD_h + H_h + NADPH_h --> NADP_h + THD_h



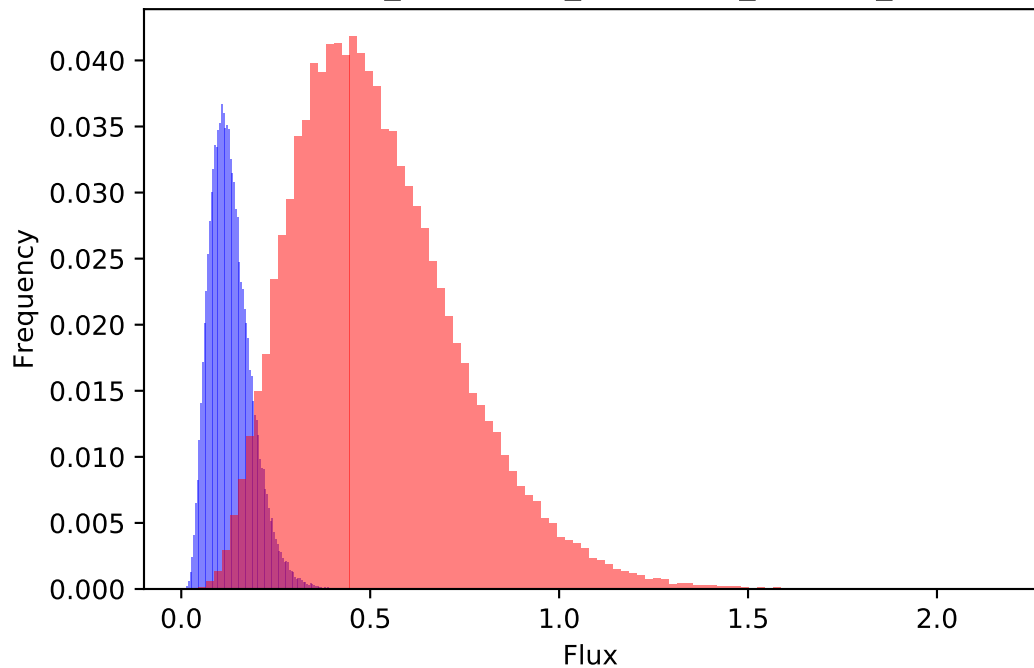
231 : Glu_h + H2O_h + H_h + THD_h --> DAP_h + KG_h



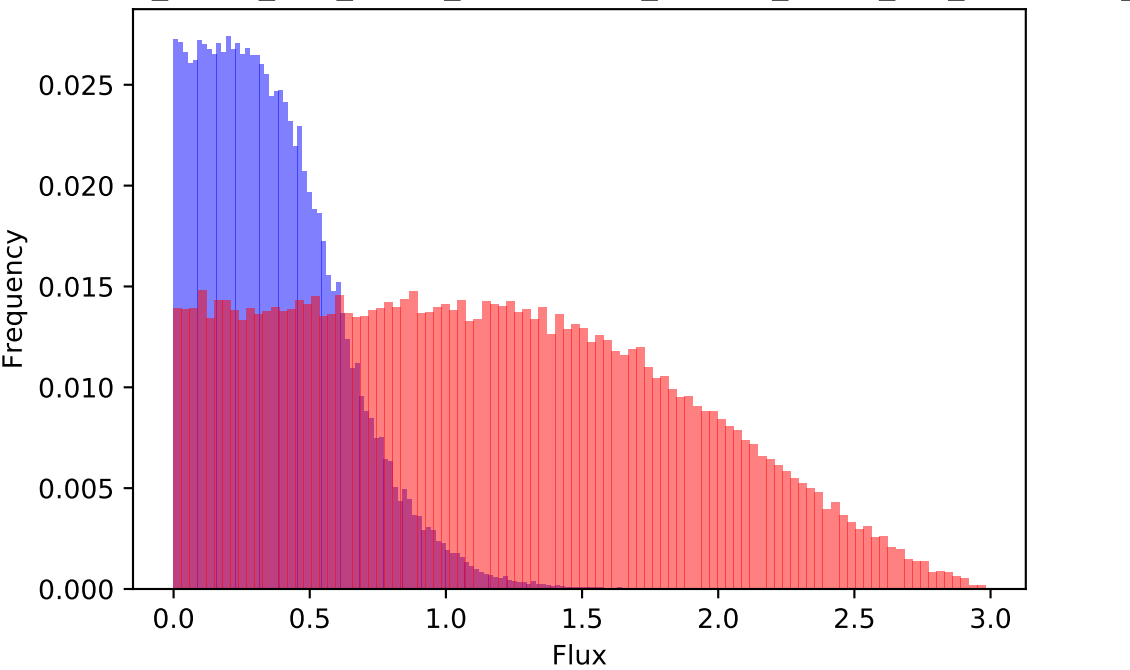
232 : DAP_h --> mDAP_h



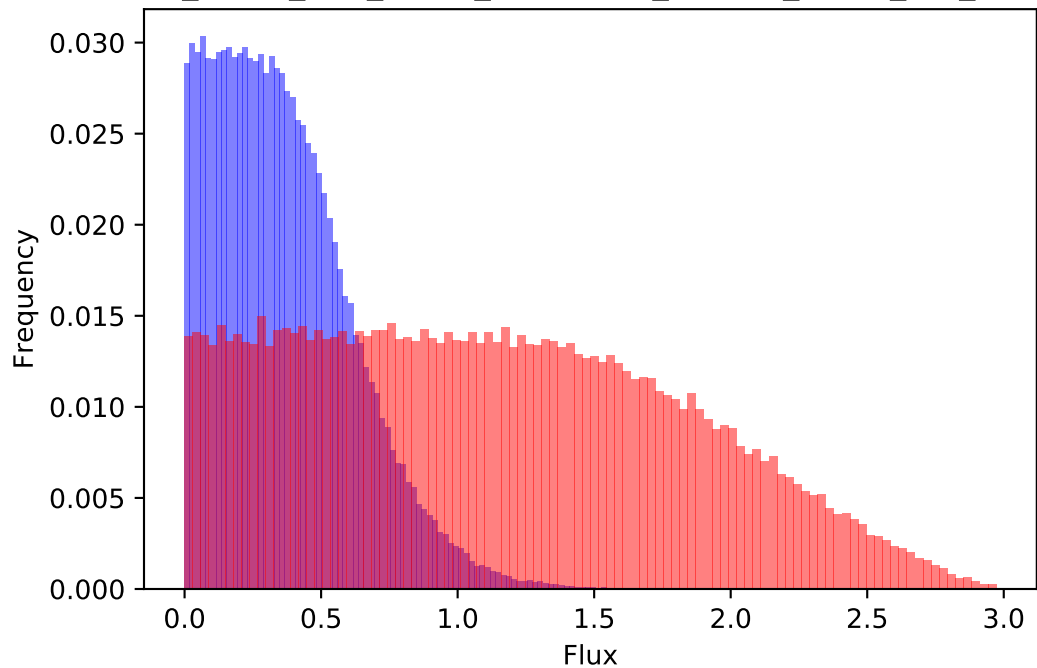
233 : H_h + mDAP_h --> CO2_h + Lys_h



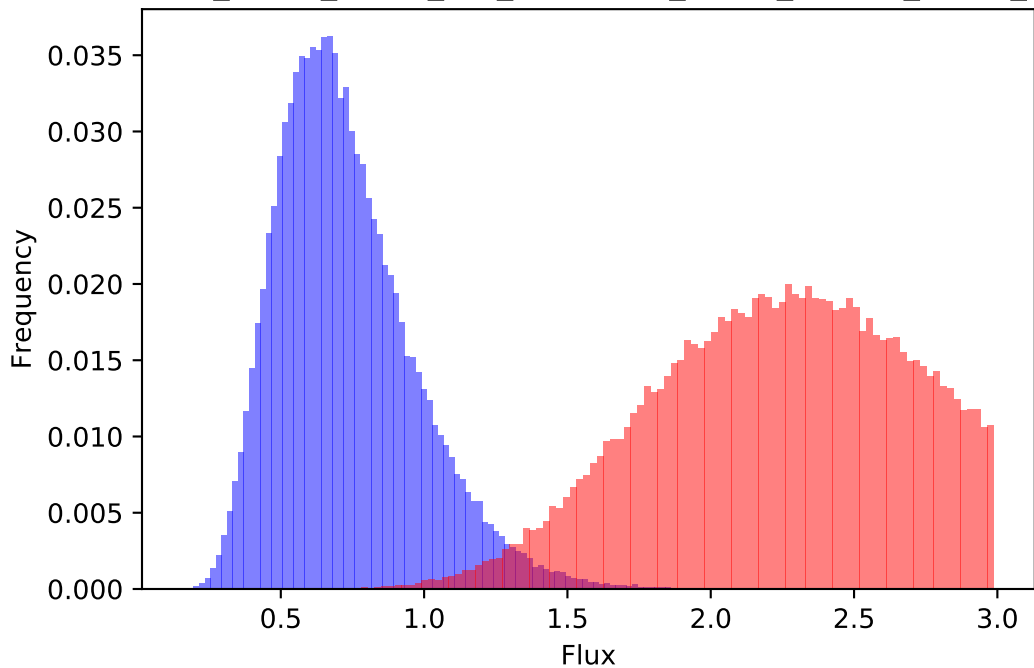
234 : Asp_DASH_SeA_h + H_h + NADPH_h --> H_DASH_Ser_h + NADP_h



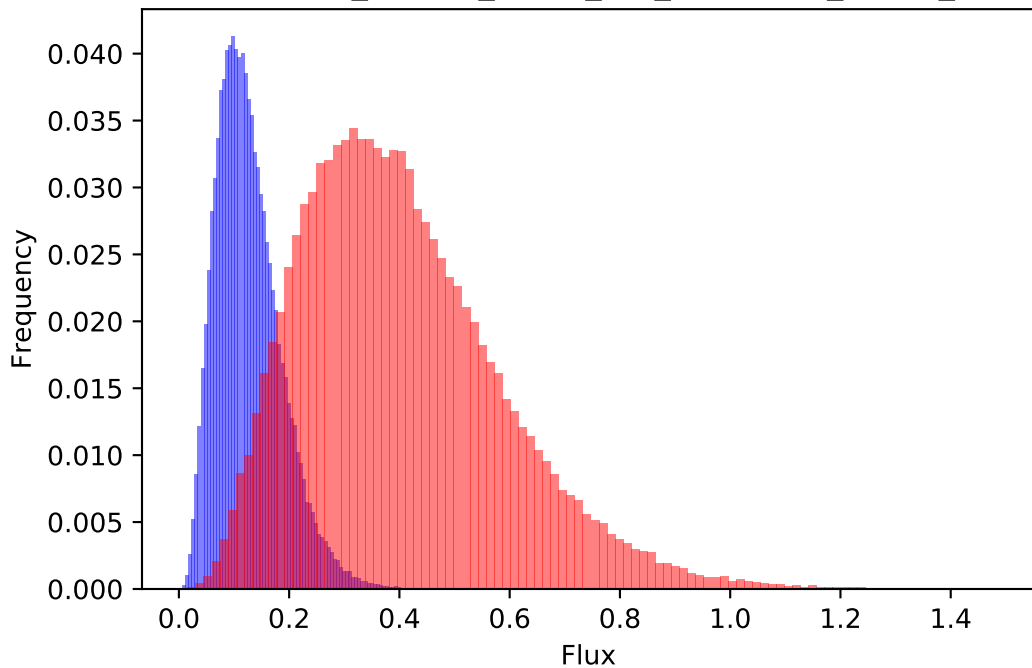
235 : Asp_DASH_SeA_h + H_h + NADH_h --> H_DASH_Ser_h + NAD_h



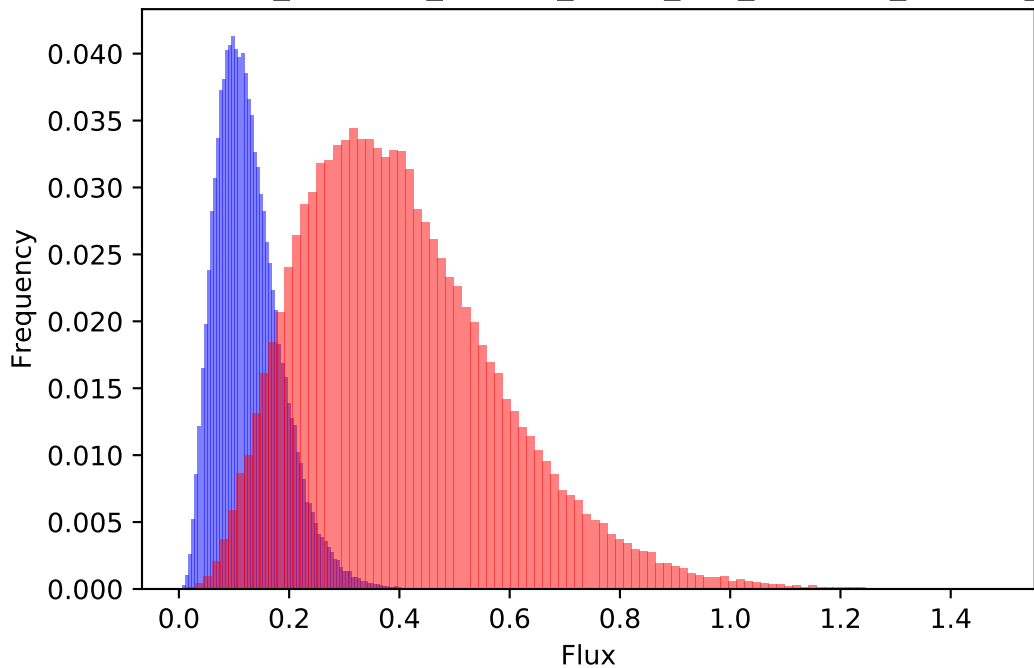
236 : ATP_h + H_DASH_Ser_h --> ADP_h + H_h + PH_DASH_Ser_h



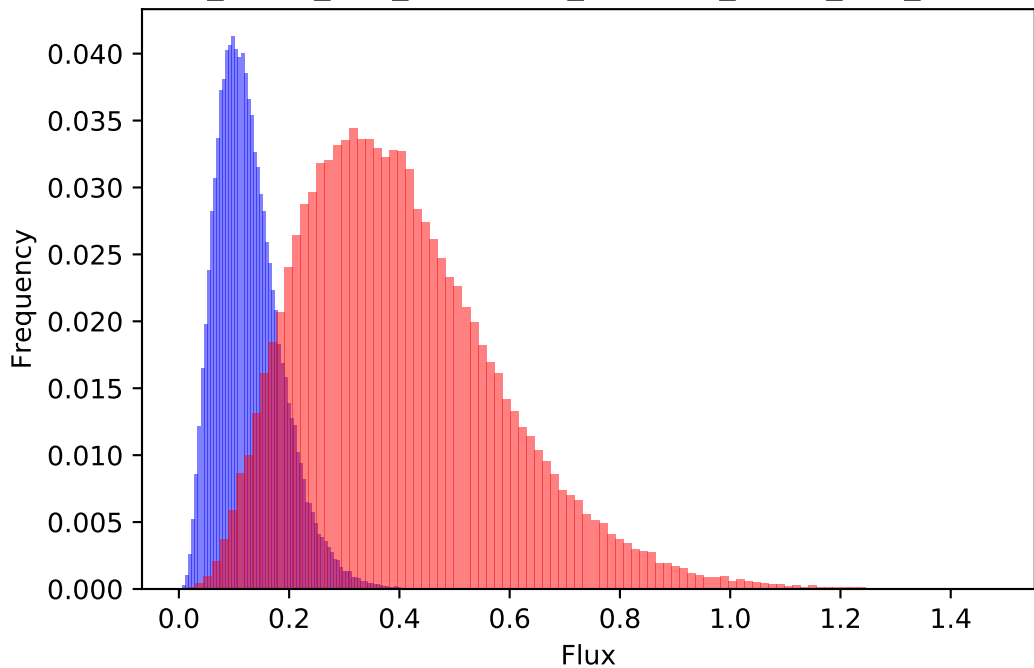
237 : Cys_h + PH_DASH_Ser_h --> CTH_h + Pi_h



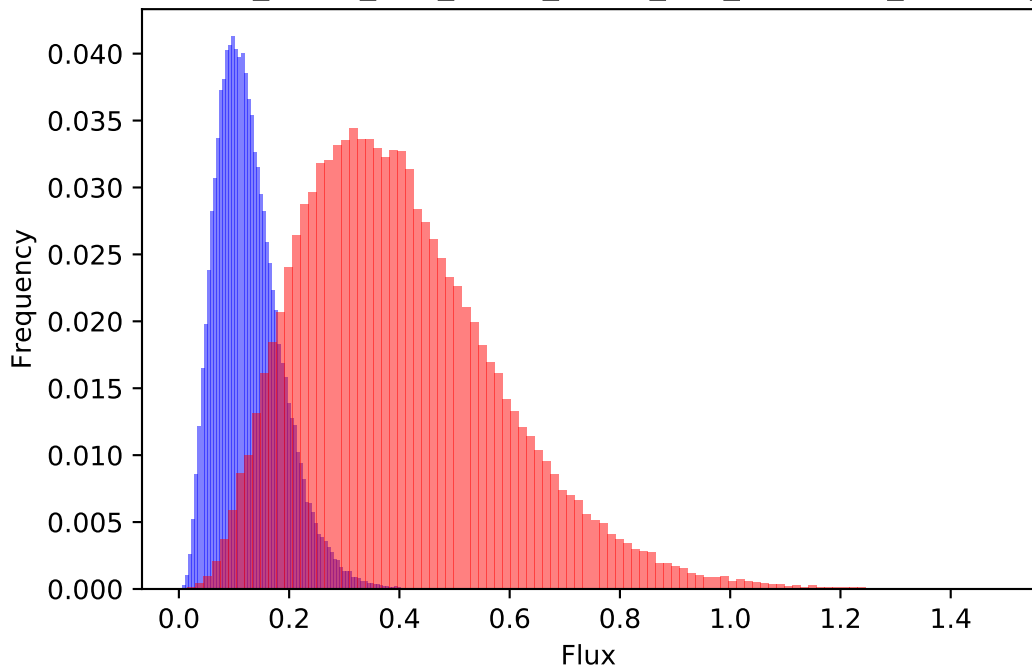
238 : CTH_h + H2O_h --> H_DASH_Cys_h + NH4_h + Pyr_h



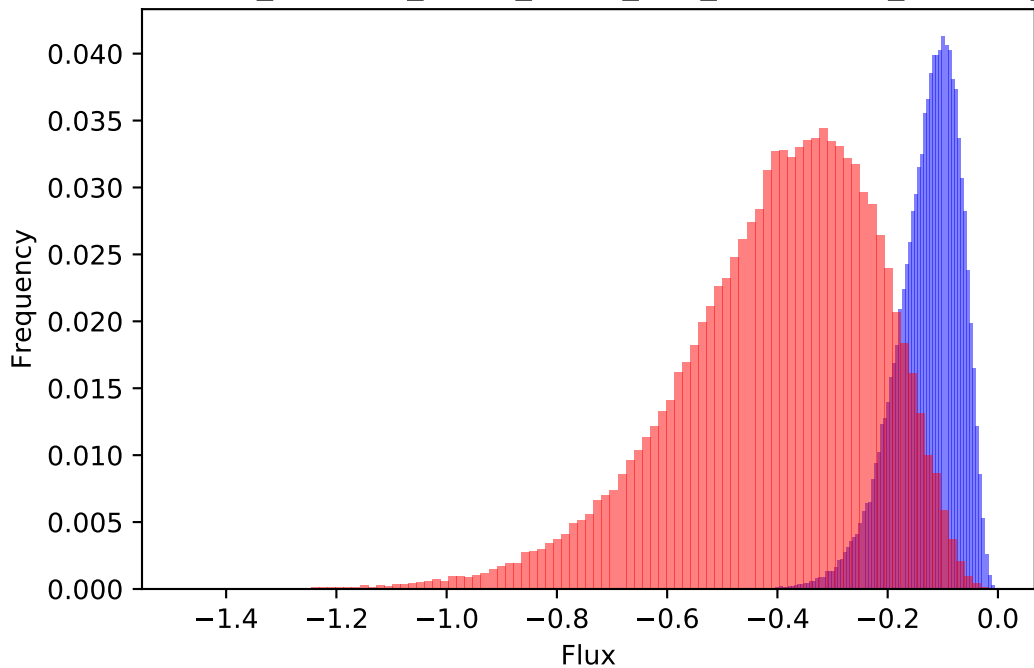
239 : M_DASH_THF_c + NADH_c --> 5M_DASH_THF_c + NAD_c



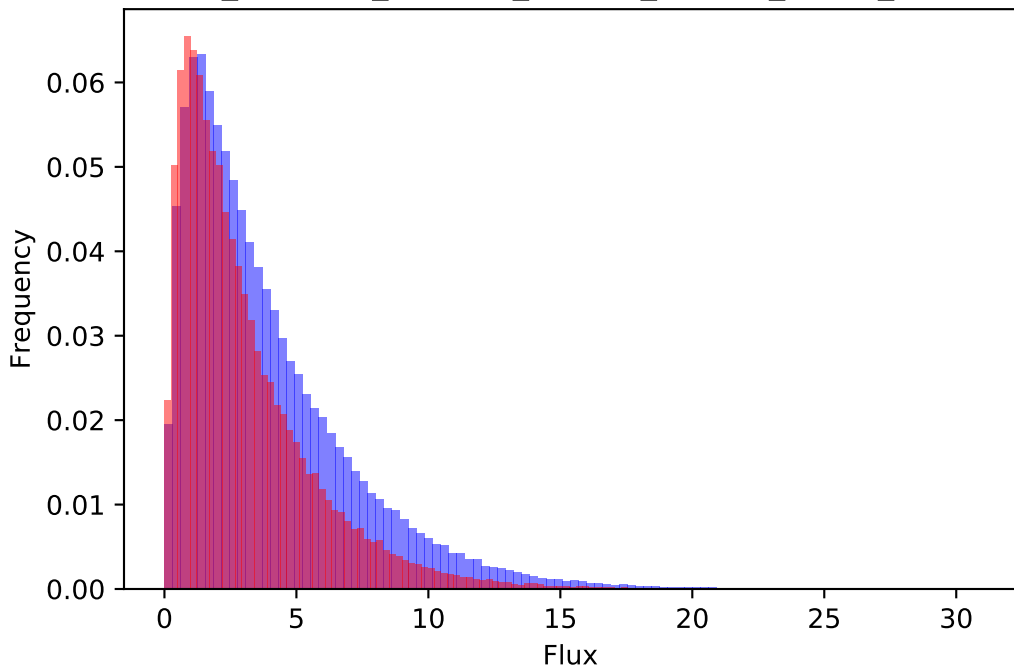
240 : 5M_DASH_THF_c + H_DASH_Cys_c --> Met_c + THF_c



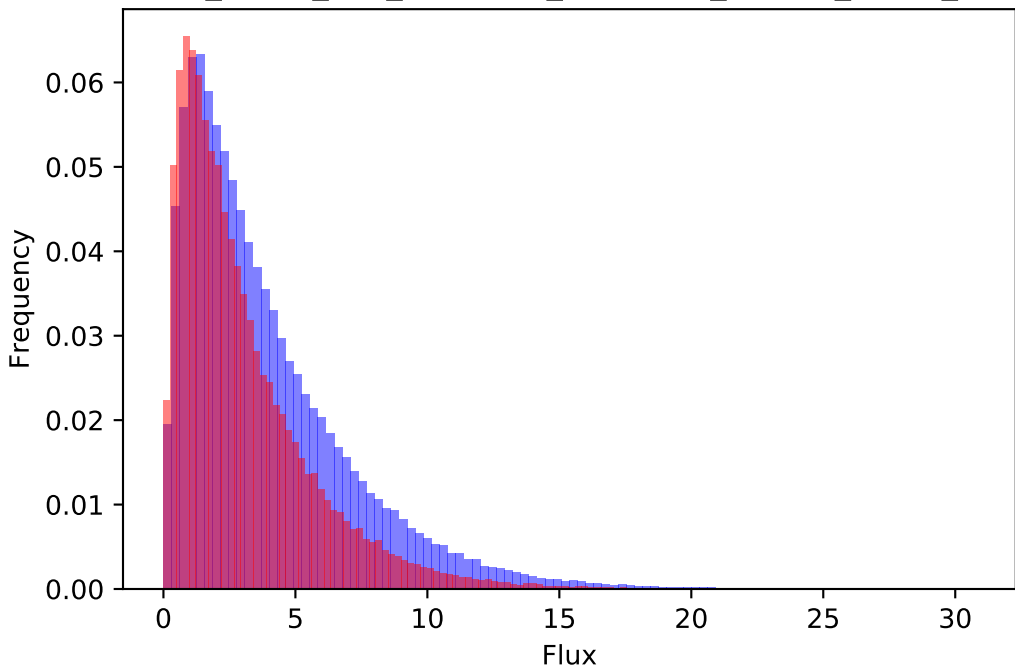
241 : Gly_c + H2O_c + M_DASH_THF_c <=> Ser_c + THF_c



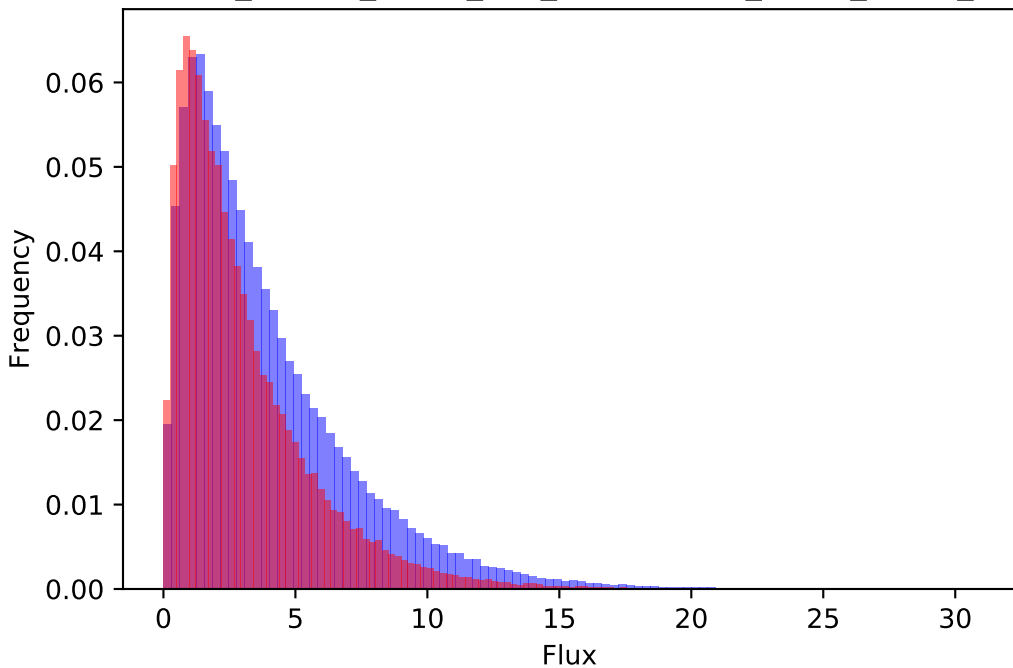
242 : $\text{ATP_c} + \text{H}_2\text{O_c} + \text{Met_c} \rightarrow \text{H_c} + \text{PPi_c} + \text{Pi_c} + \text{aMet_c}$



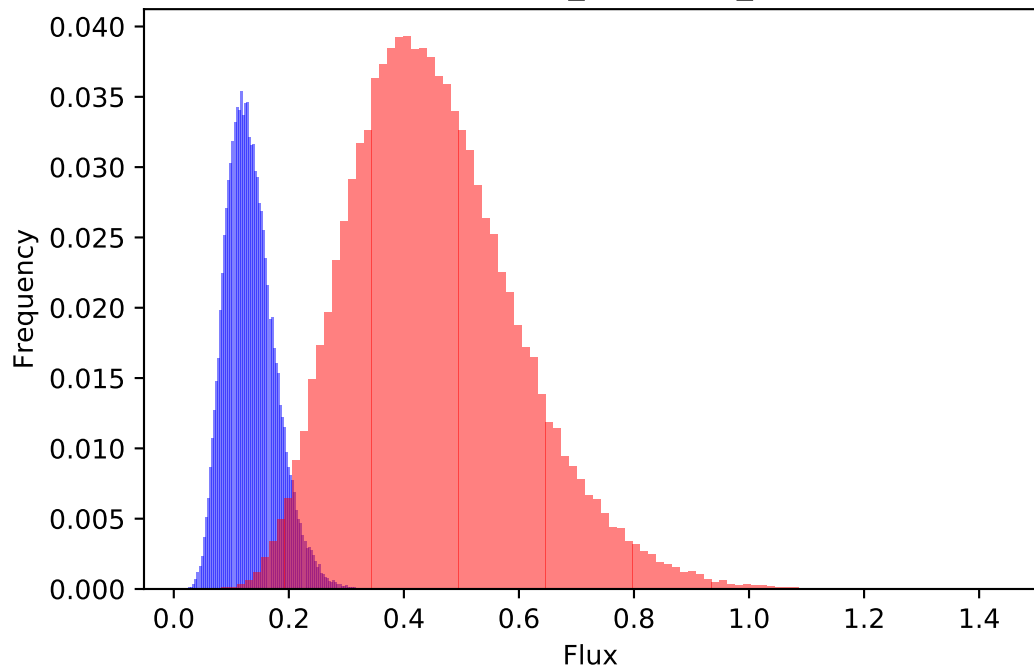
243 : H_DASH_Cys_c + aMet_c --> Met_c + aH_DASH_Cys_c



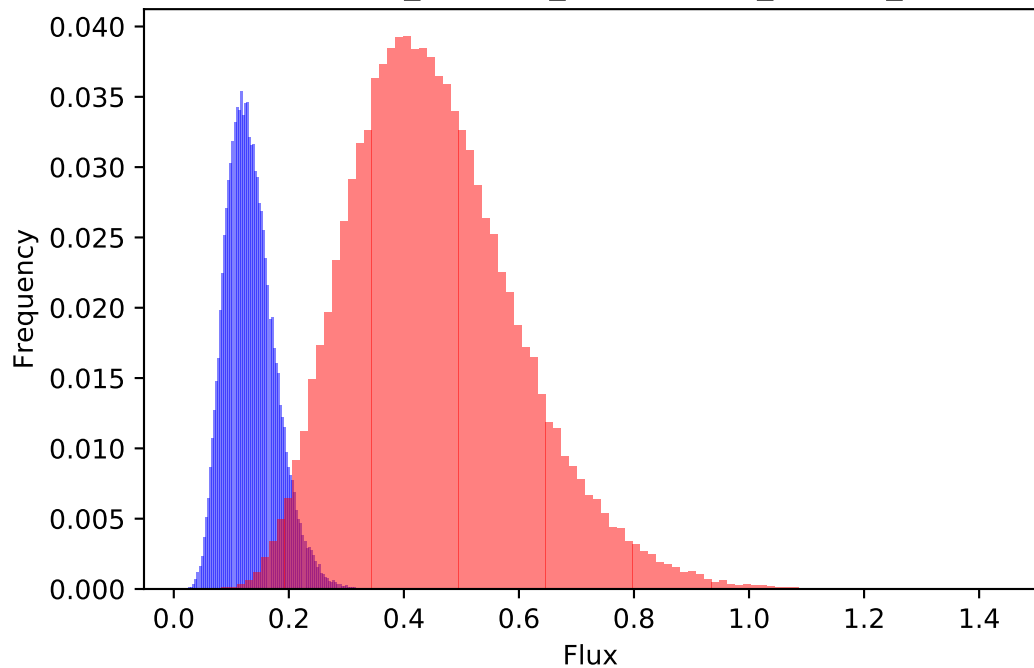
244 : H2O_c + aH_DASH_Cys_c <=> ADN_c + H_DASH_Cys_c



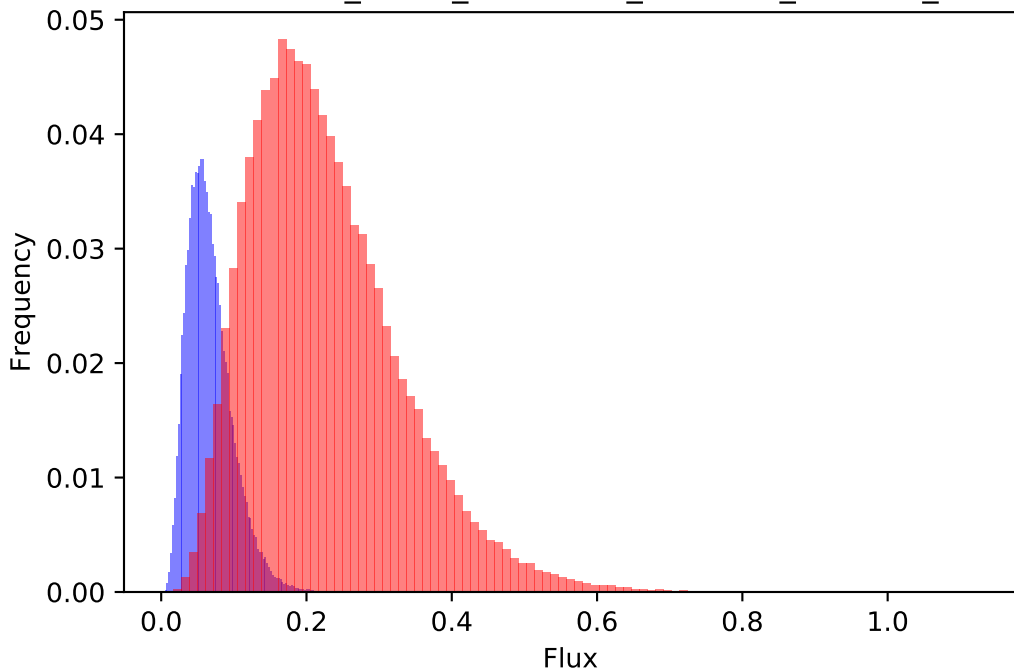
245 : CHR_h --> PRE_h



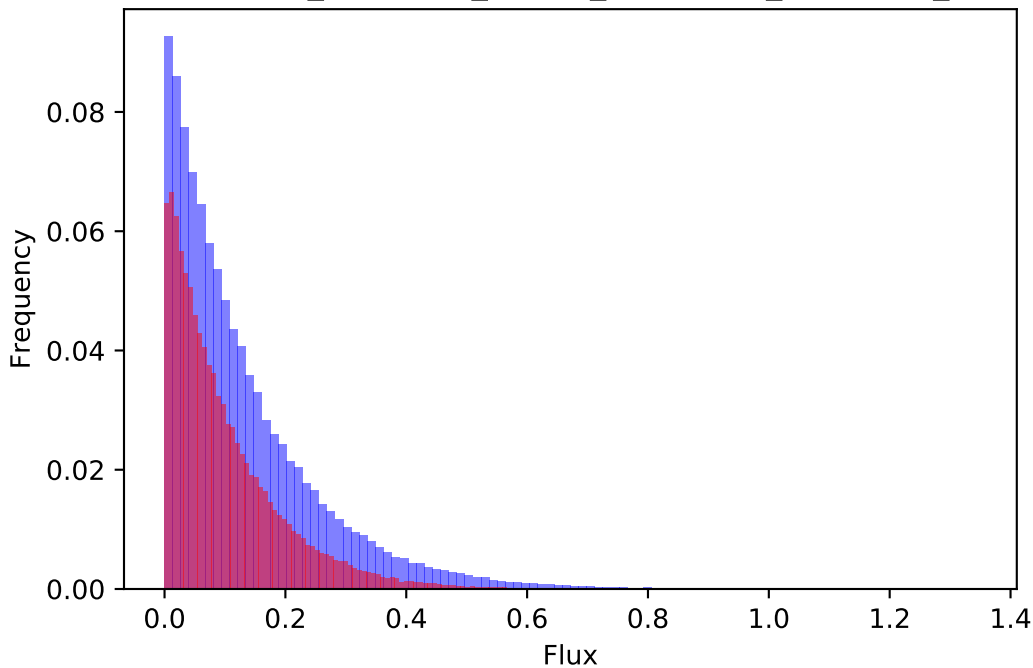
246 : Glu_h + PRE_h <=> AGN_h + KG_h



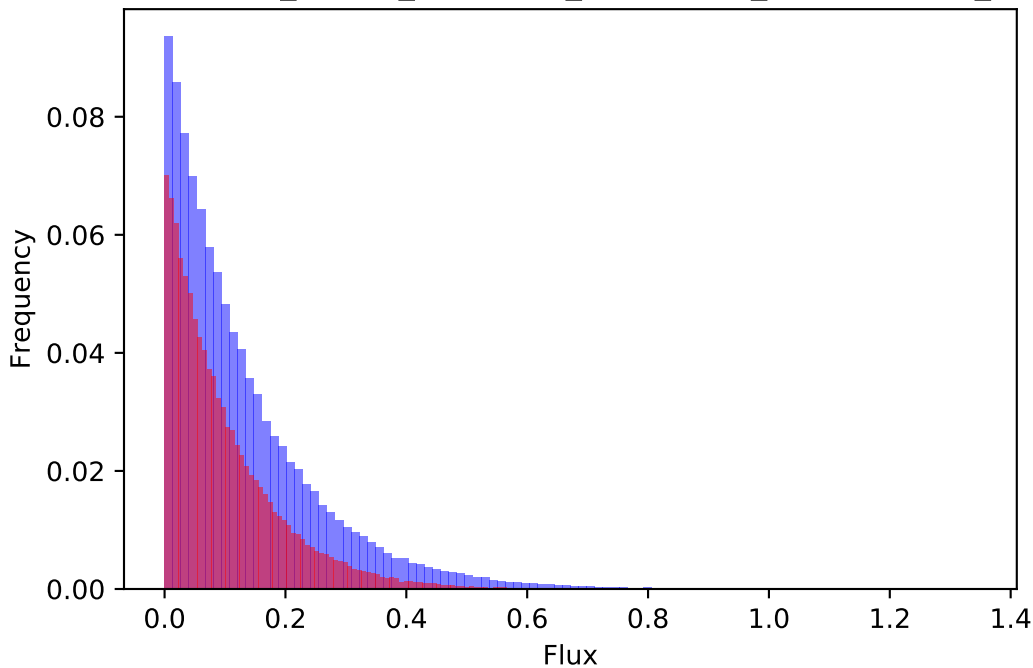
247 : AGN_h + H_h --> CO2_h + H2O_h + Phe_h



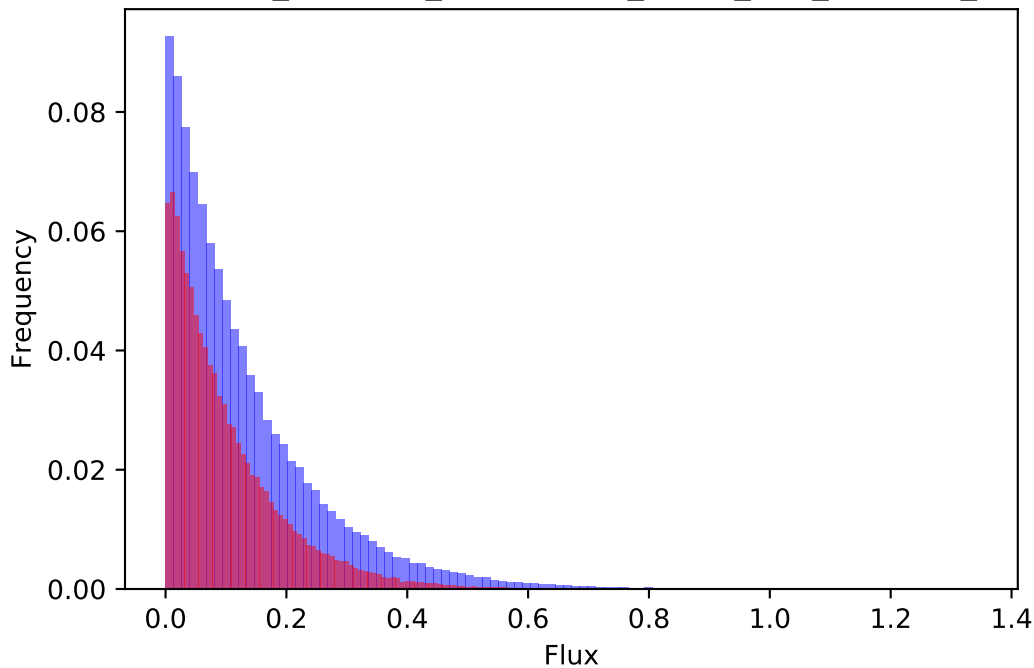
248 : Arg_m + H2O_m + H_m --> Orn_m + urea_m



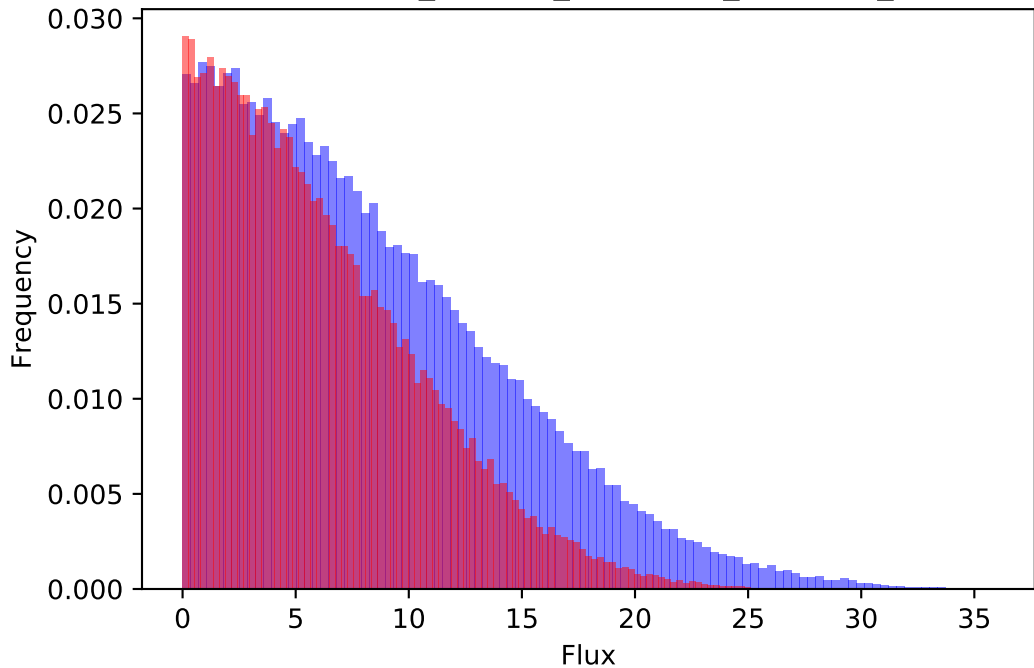
249 : H2O_m + H_m + urea_m --> CO2_m + 2.0 NH4_m



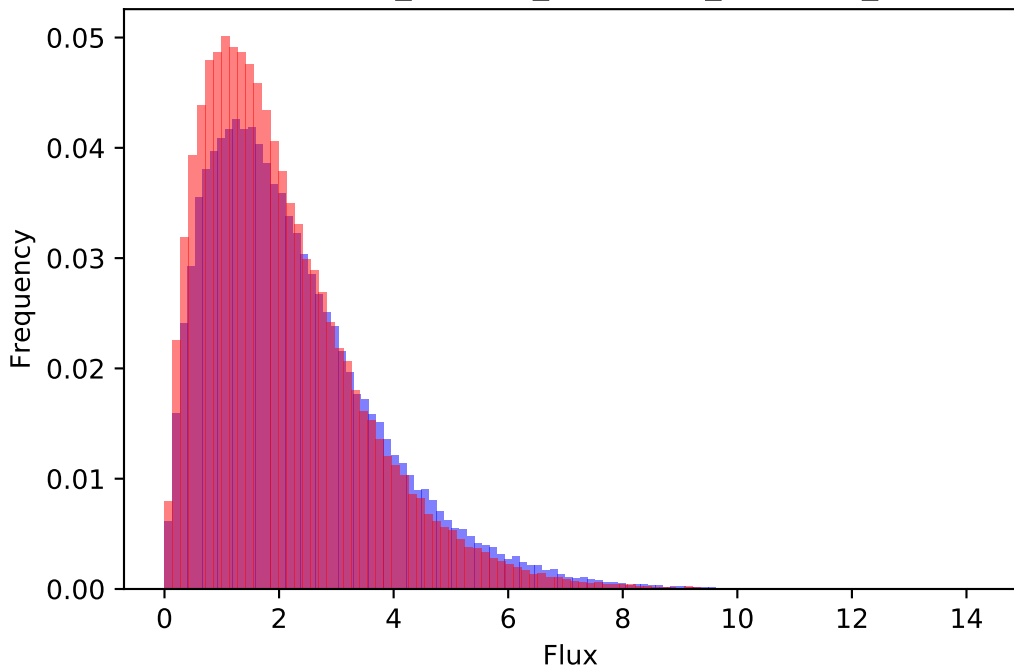
250 : $\text{KG_m} + \text{Orn_m} \leq \text{Glu_DASH_SeA_m} + \text{Glu_m}$



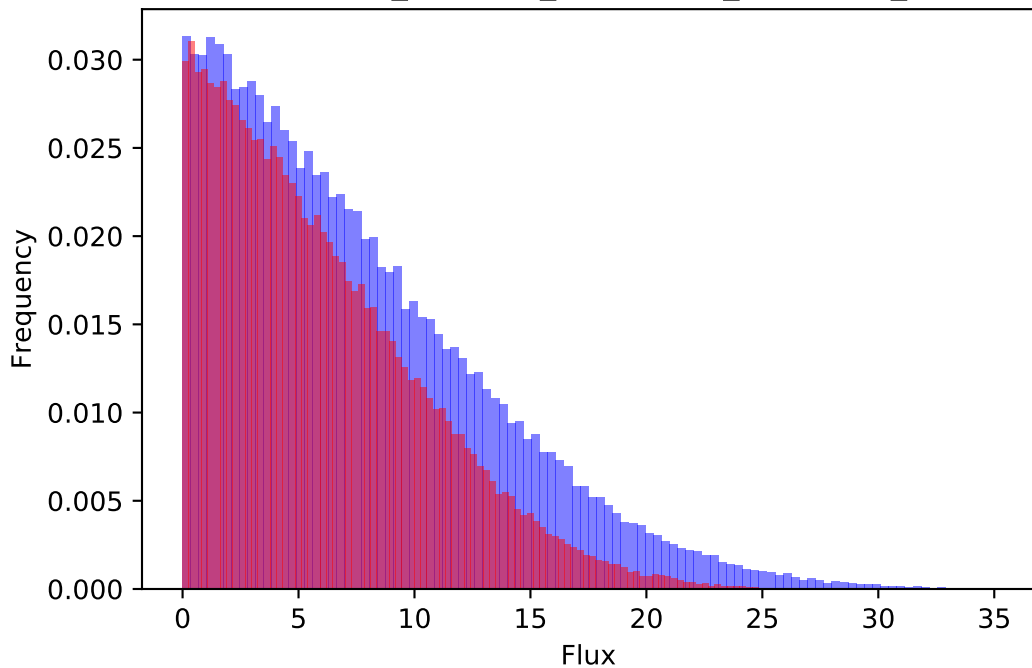
251 : ATP_c + Glu_c --> ADP_c + GluP_c



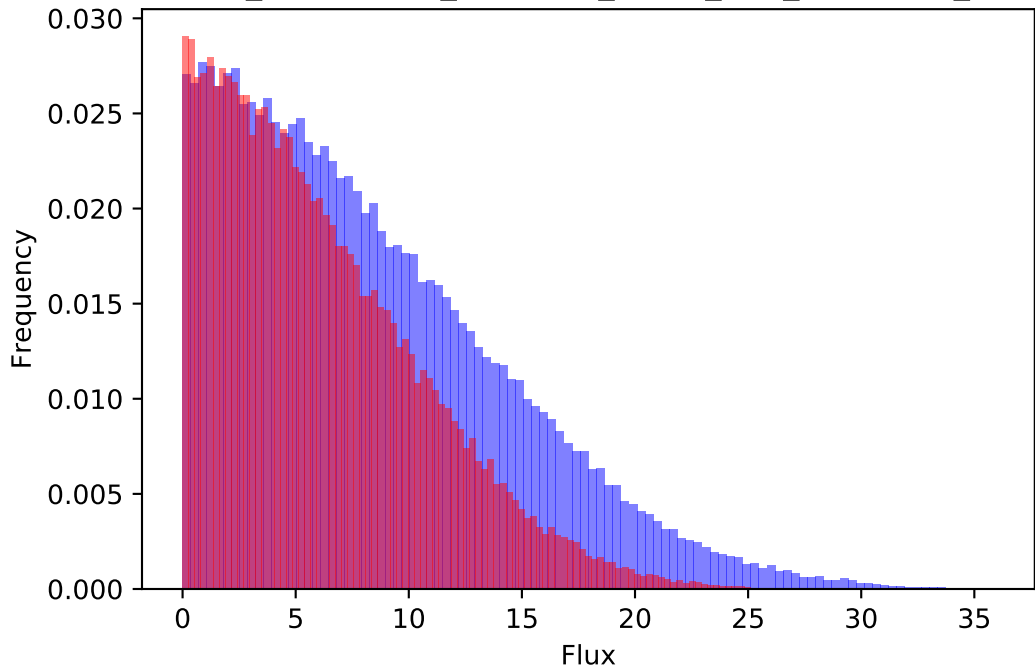
252 : ATP_h + Glu_h --> ADP_h + GluP_h



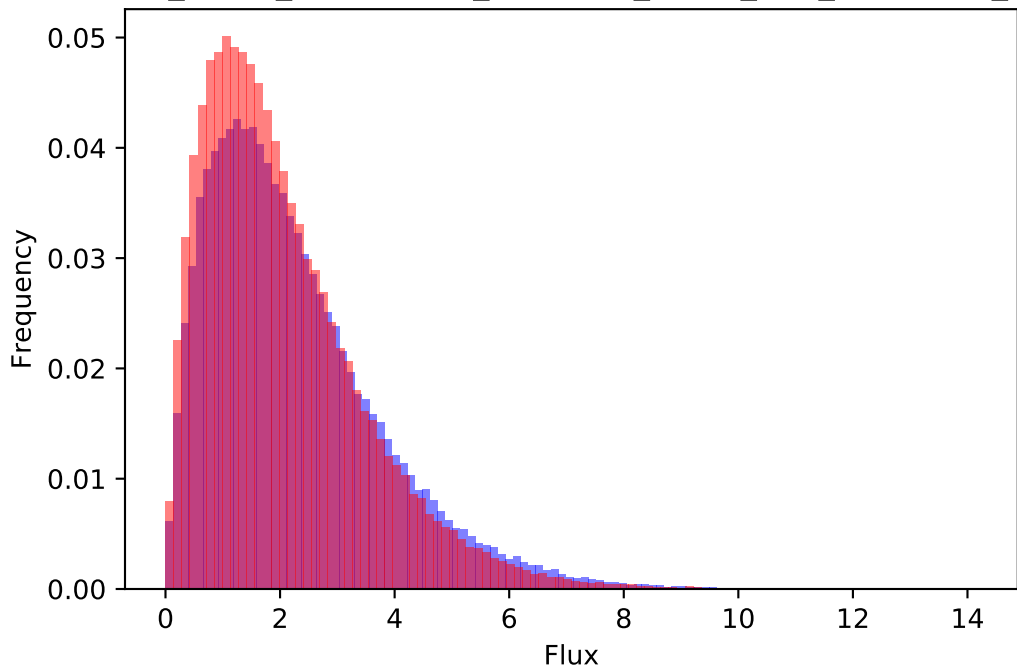
253 : ATP_m + Glu_m --> ADP_m + GluP_m



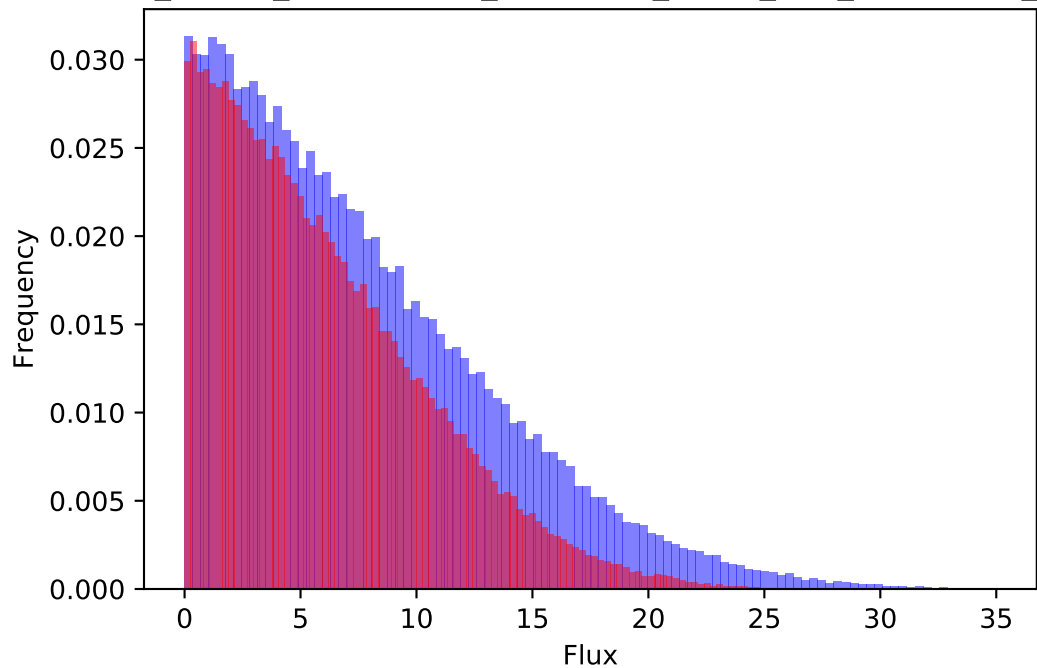
254 : GluP_c + NADPH_c --> Glu_DASH_SeA_c + NADP_c + Pi_c



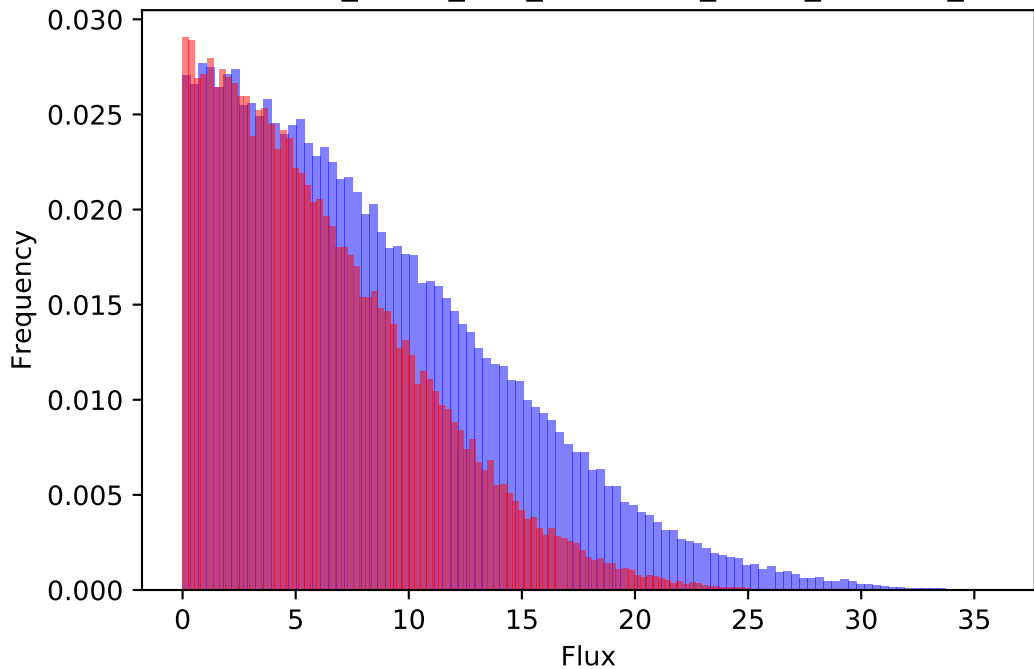
255 : GluP_h + H_h + NADPH_h --> Glu_DASH_SeA_h + NADP_h + Pi_h



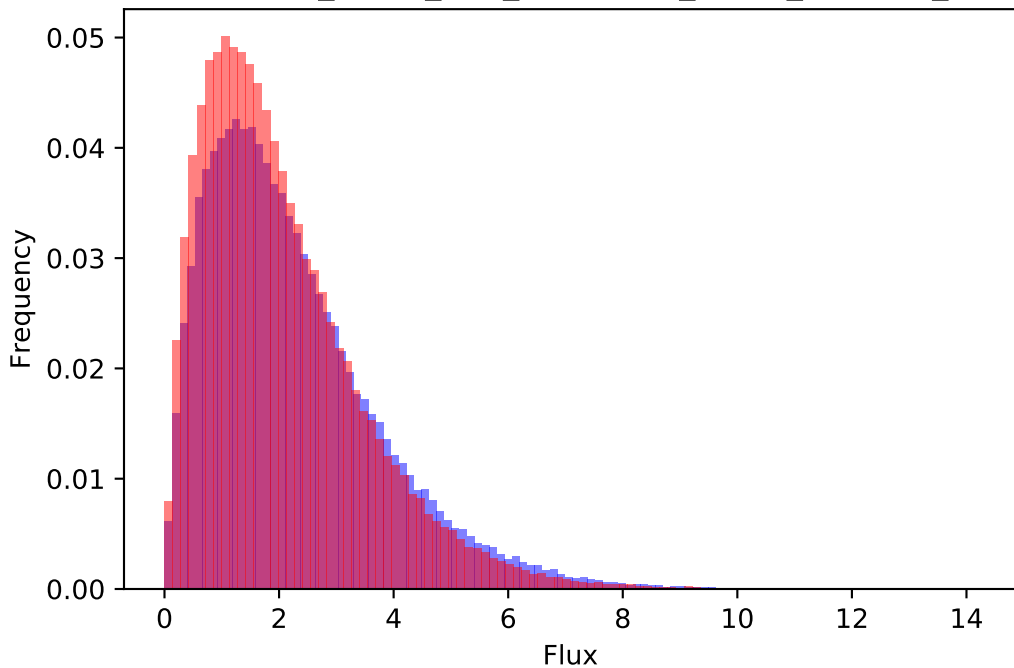
256 : GluP_m + H_m + NADPH_m --> Glu_DASH_SeA_m + NADP_m + Pi_m



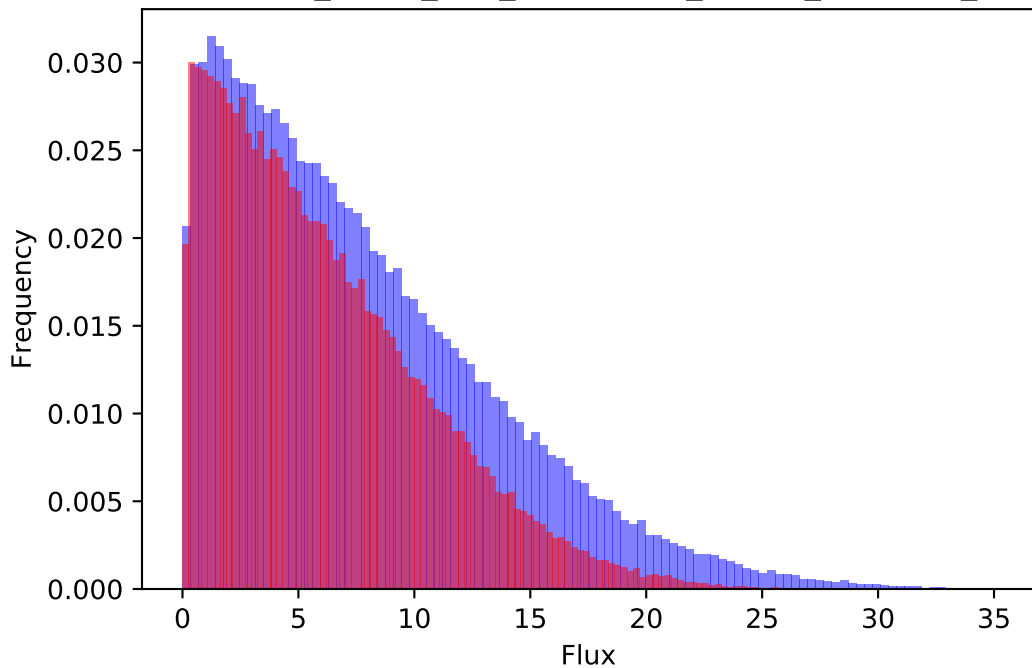
257 : Glu_DASH_SeA_c --> H2O_c + H_c + P5C_c



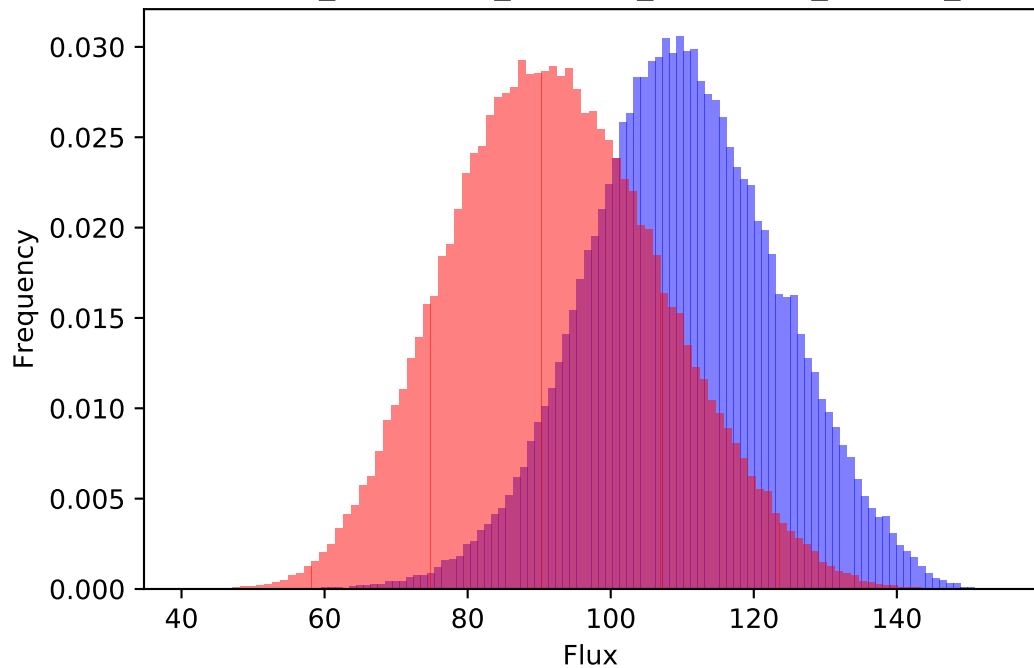
258 : Glu_DASH_SeA_h --> H2O_h + H_h + P5C_h



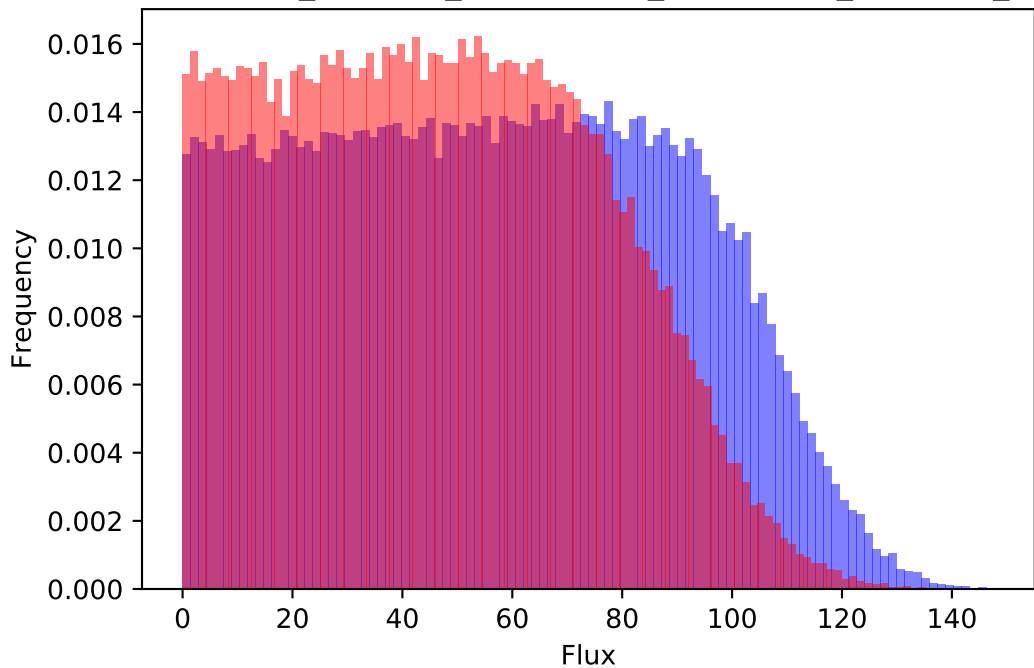
259 : Glu_DASH_SeA_m --> H2O_m + H_m + P5C_m



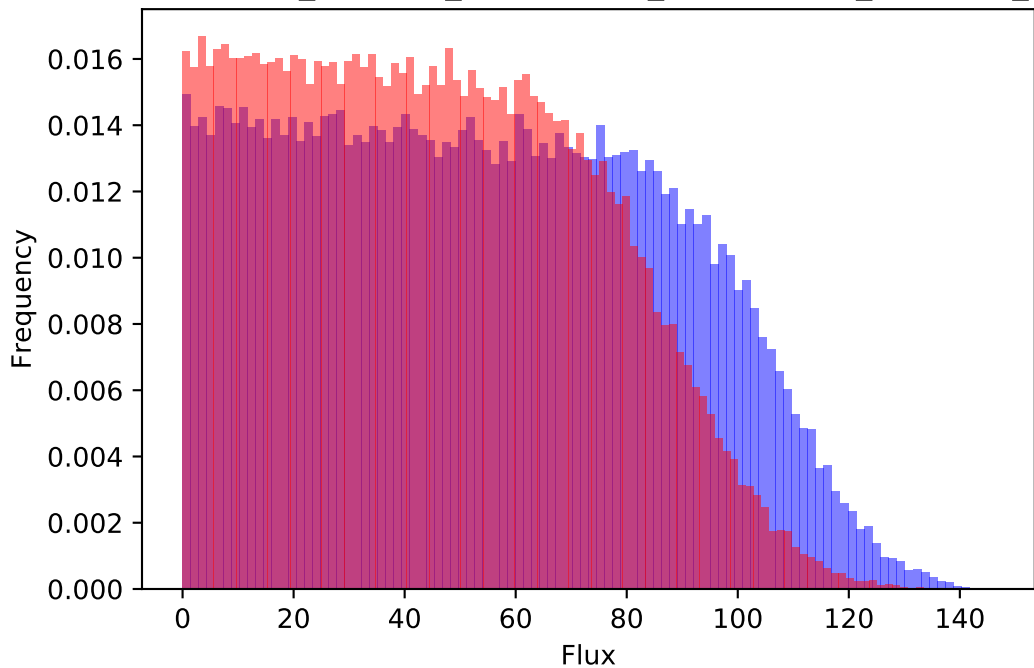
260 : H_c + NADH_c + P5C_c --> NAD_c + Pro_c



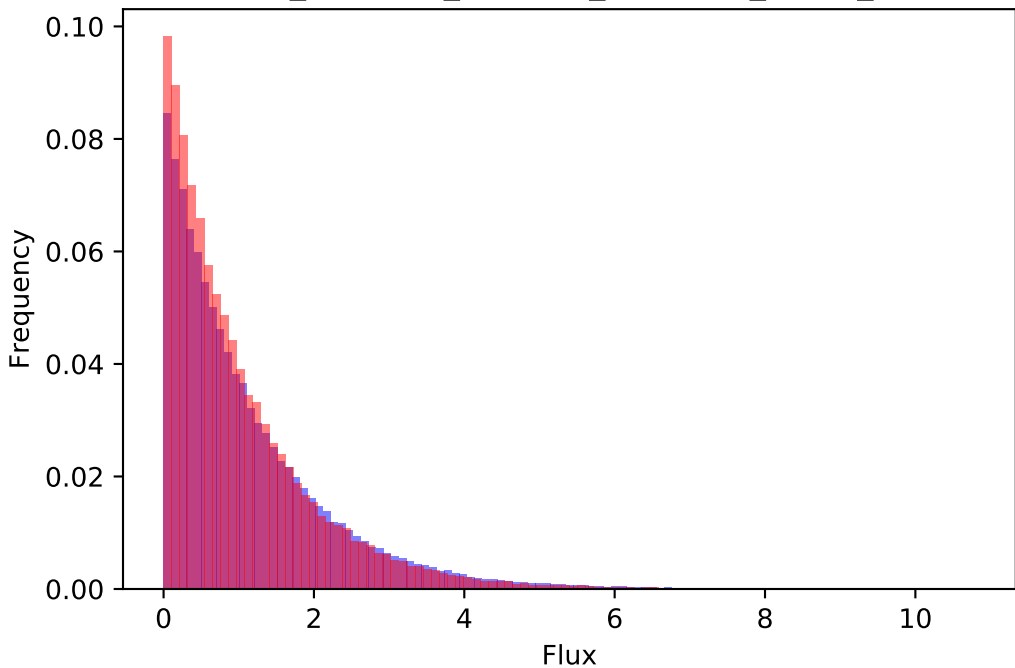
261 : NAD_m + Pro_m --> 2.0 H_m + NADH_m + P5C_m



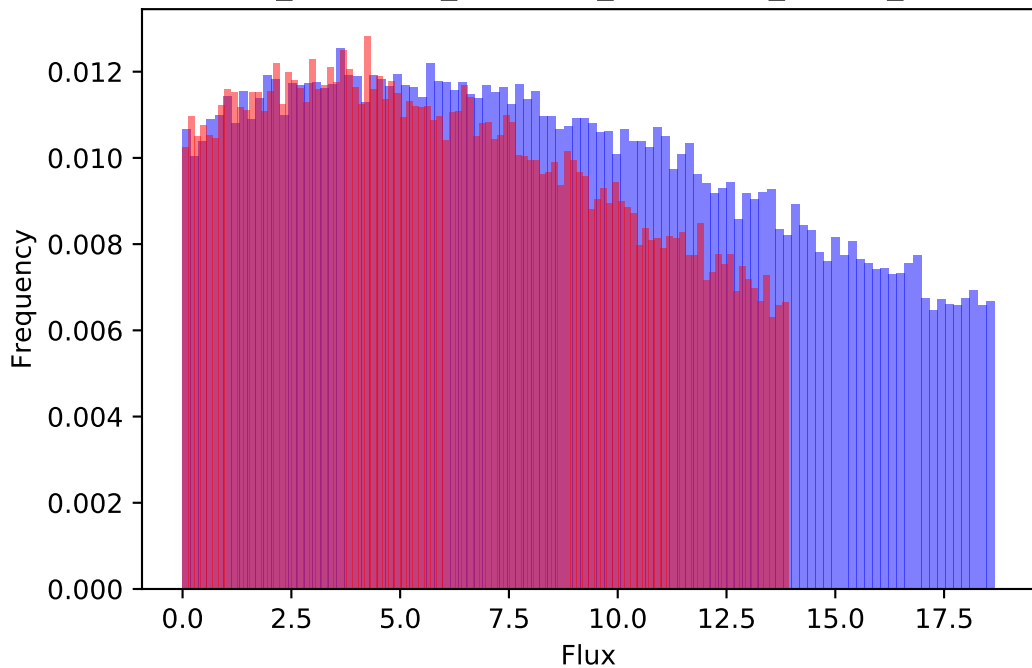
262 : NADP_m + Pro_m --> 2.0 H_m + NADPH_m + P5C_m



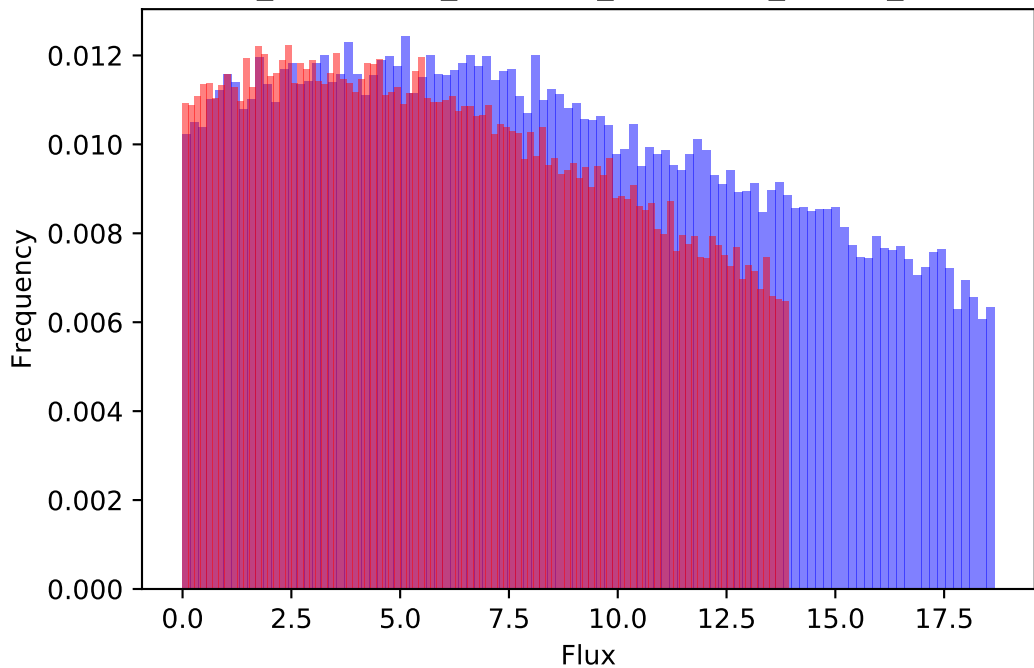
263 : 2.0 H2O_h + NAD_h + P5C_h --> Glu_h + H_h + NADH_h



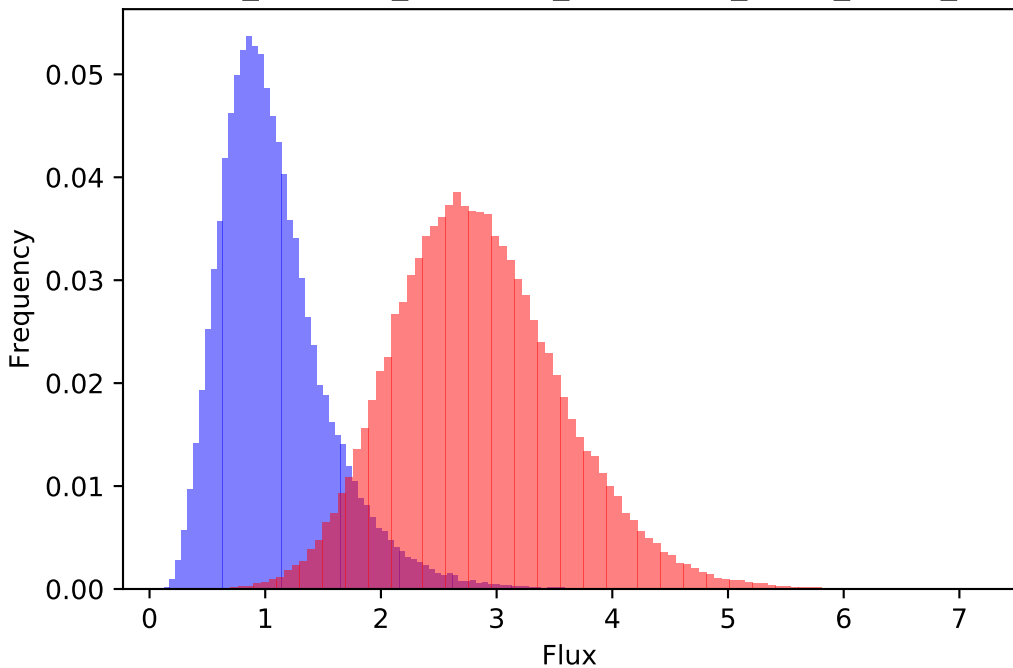
264 : 2.0 H2O_m + NAD_m + P5C_m --> Glu_m + H_m + NADH_m



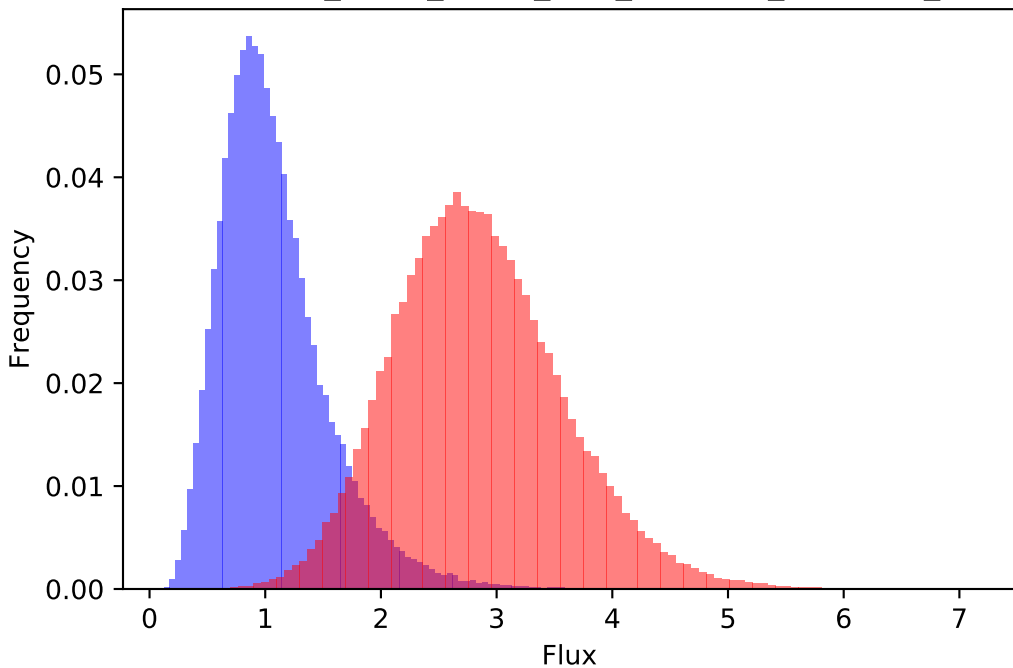
265 : 2.0 H₂O_m + NADP_m + P5C_m --> Glu_m + H_m + NADPH_m



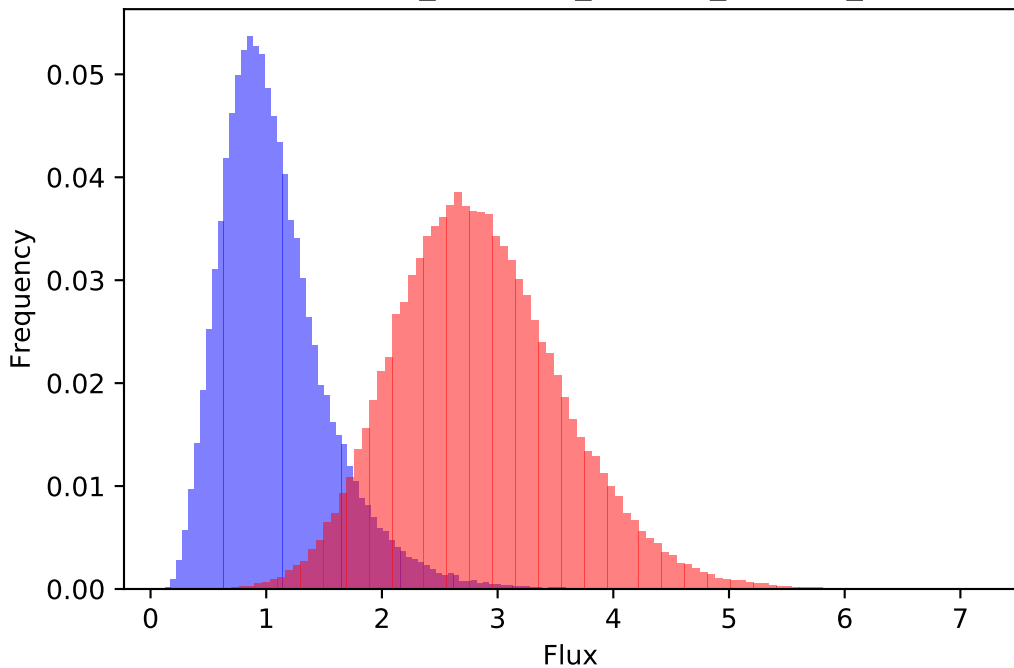
266 : $\text{NAD_h} + \text{PGA_h} \rightleftharpoons \text{H_h} + \text{NADH_h} + \text{P_DASH_HPR_h}$



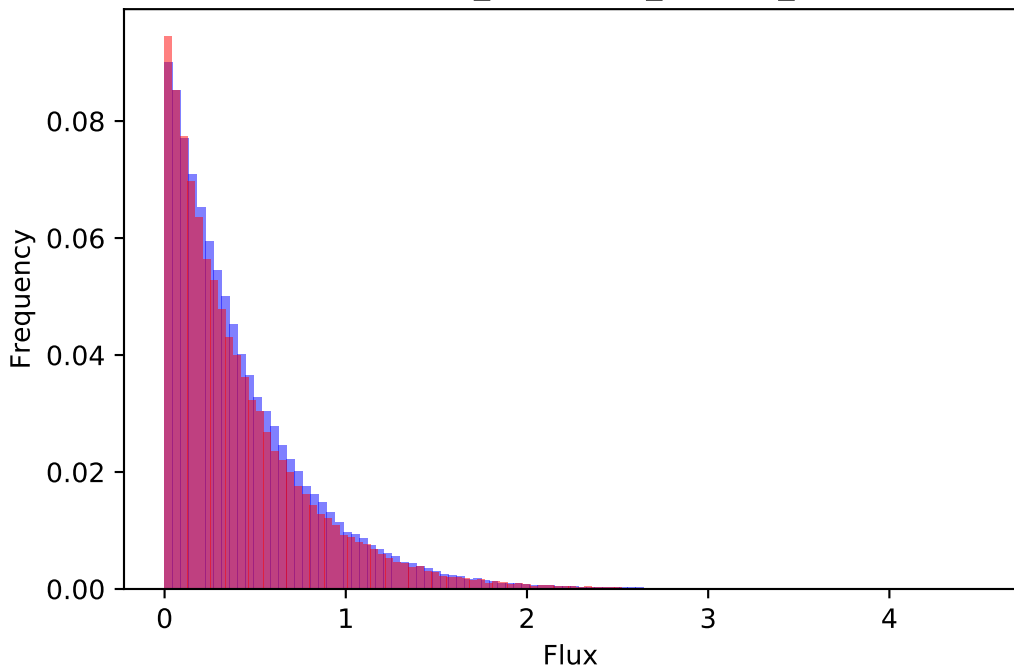
267 : Glu_h + P_DASH_HPR_h --> KG_h + PSer_h



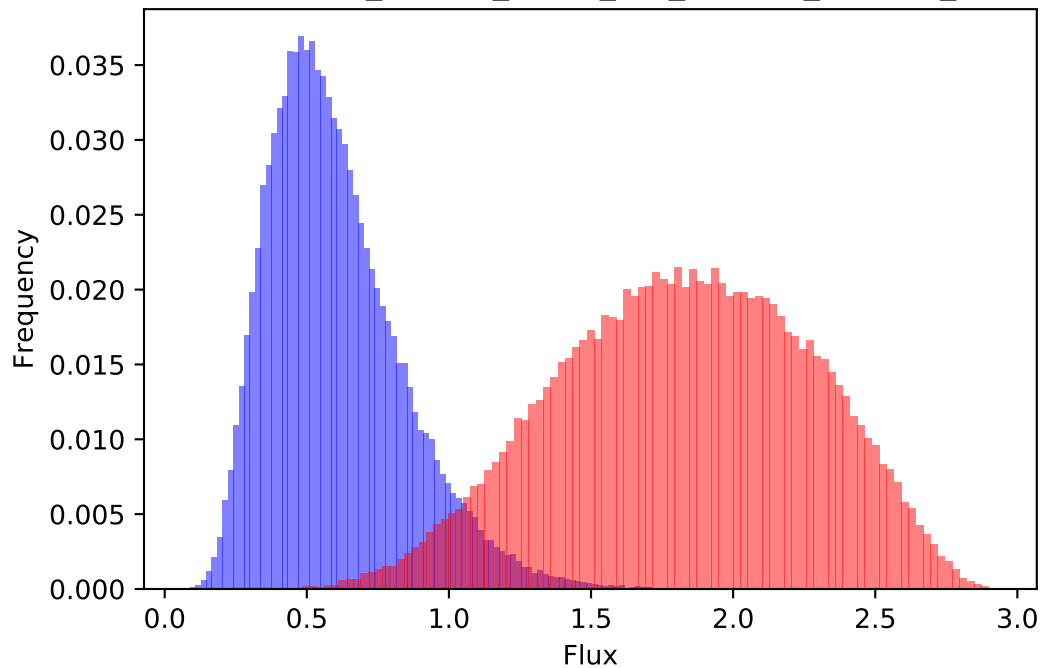
268 : H2O_h + PSer_h --> Pi_h + Ser_h



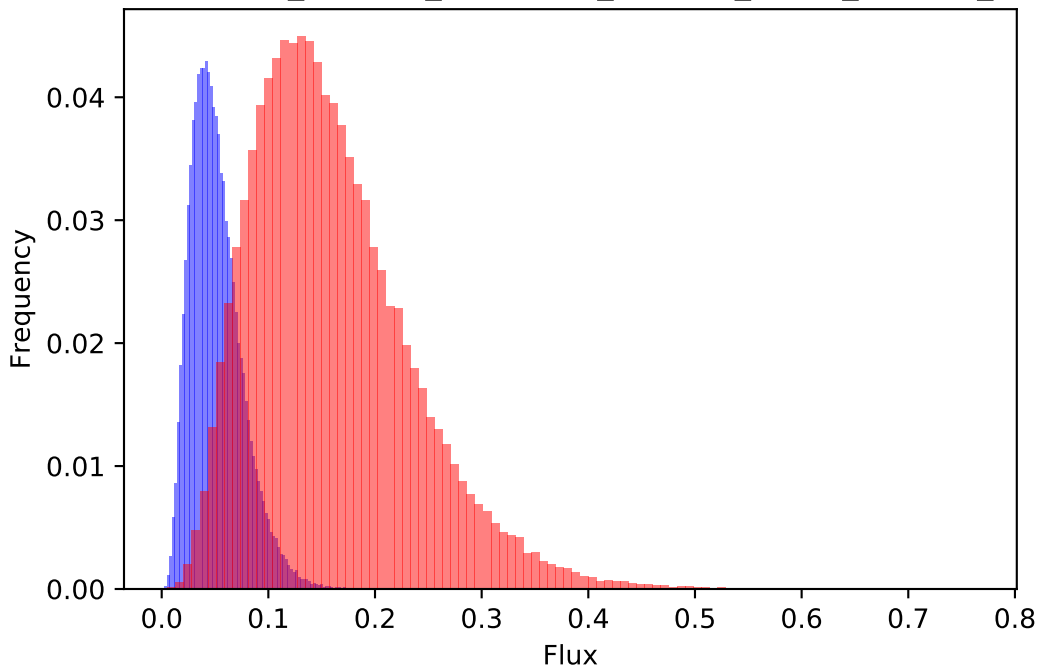
269 : Ser_c --> NH4_c + Pyr_c



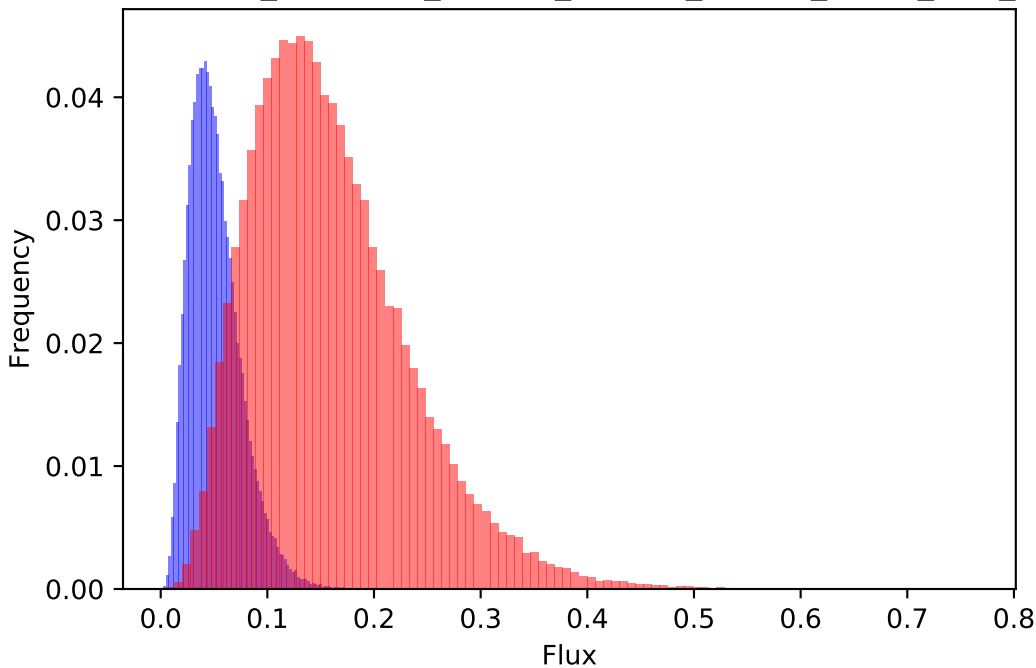
270 : H2O_h + PH_DASH_Ser_h --> Pi_h + Thr_h



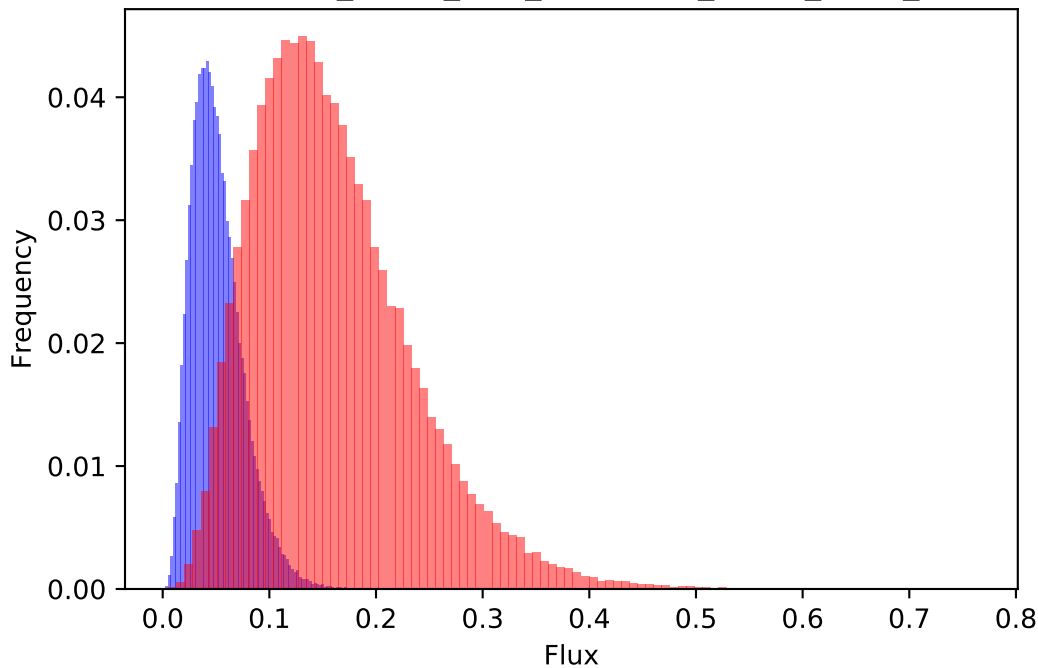
271 : CHR_h + Gln_h --> ANT_h + Glu_h + H_h + Pyr_h



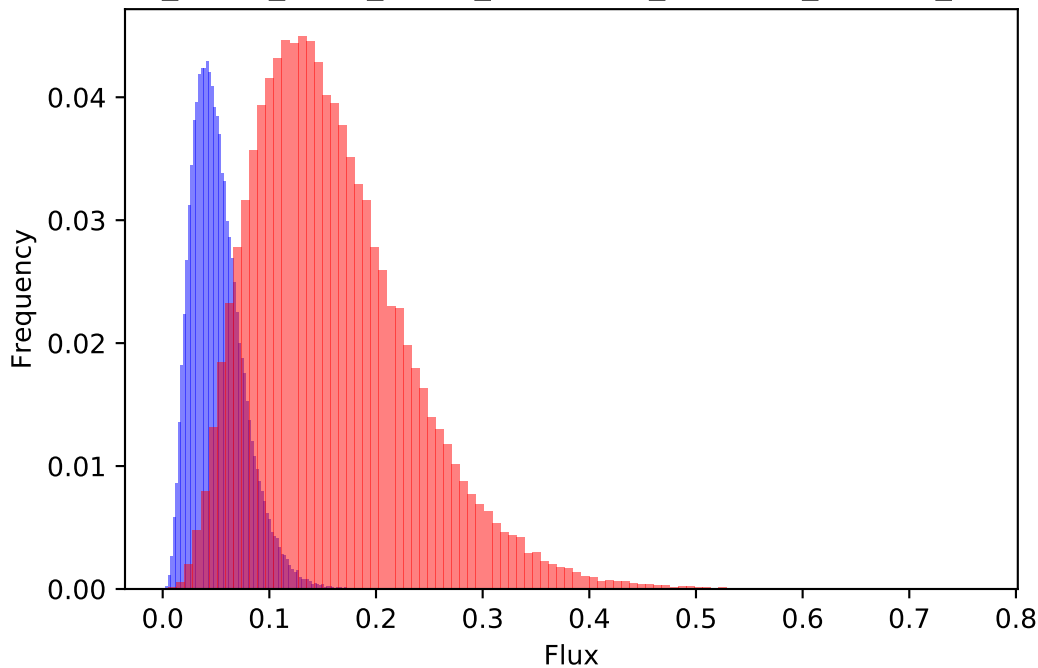
272 : ANT_h + PRPP_h --> H_h + PPI_h + PR_DASH_ANT_h



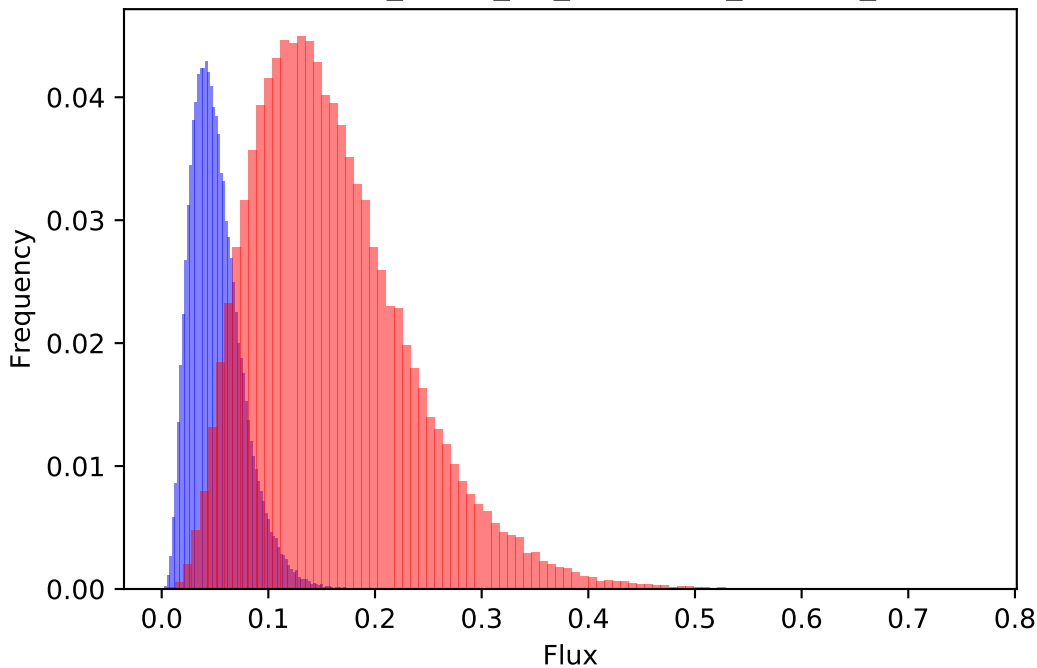
273 : PR_DASH_ANT_h --> CPD_DASH_Ru5P_h



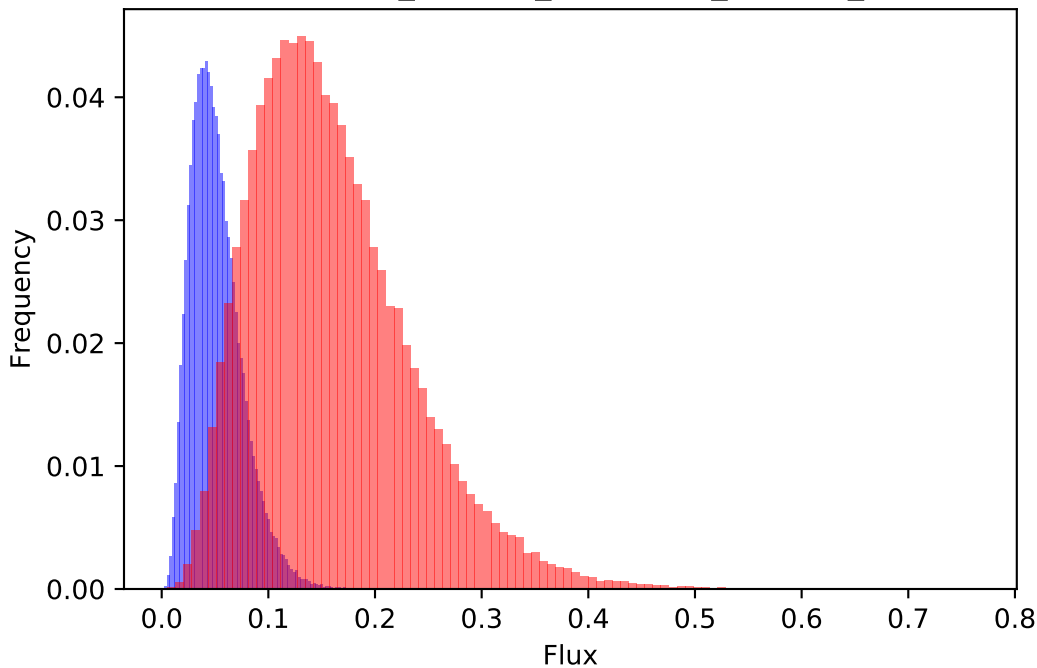
274 : CPD_DASH_Ru5P_h + H_h --> CO2_h + H2O_h + Ind_DASH_GP_h



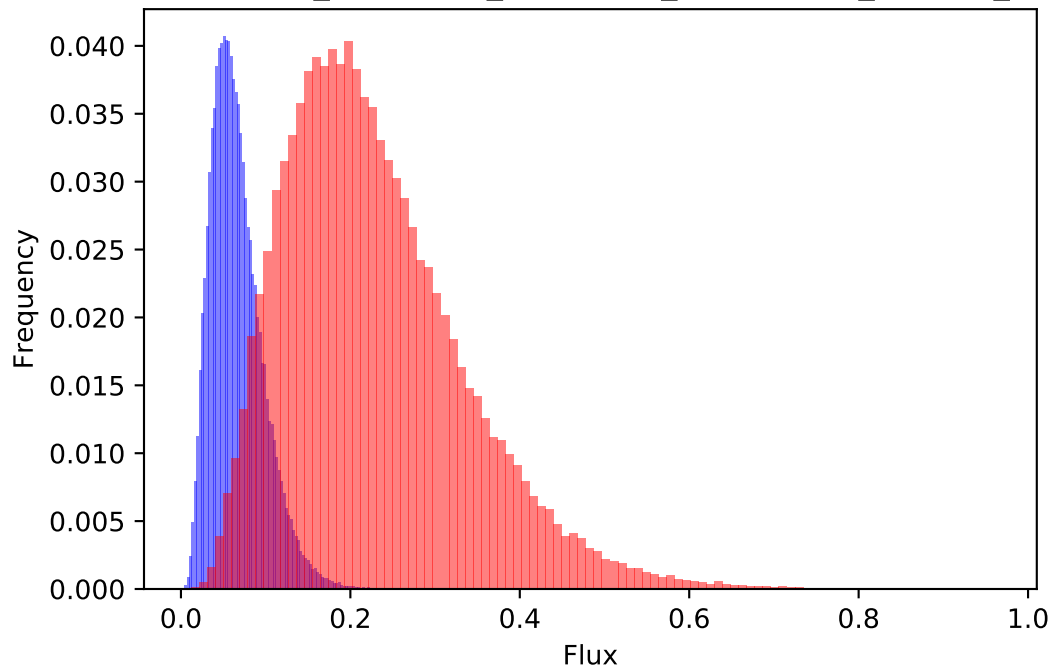
275 : Ind_DASH_GP_h --> GAP_h + Ind_h



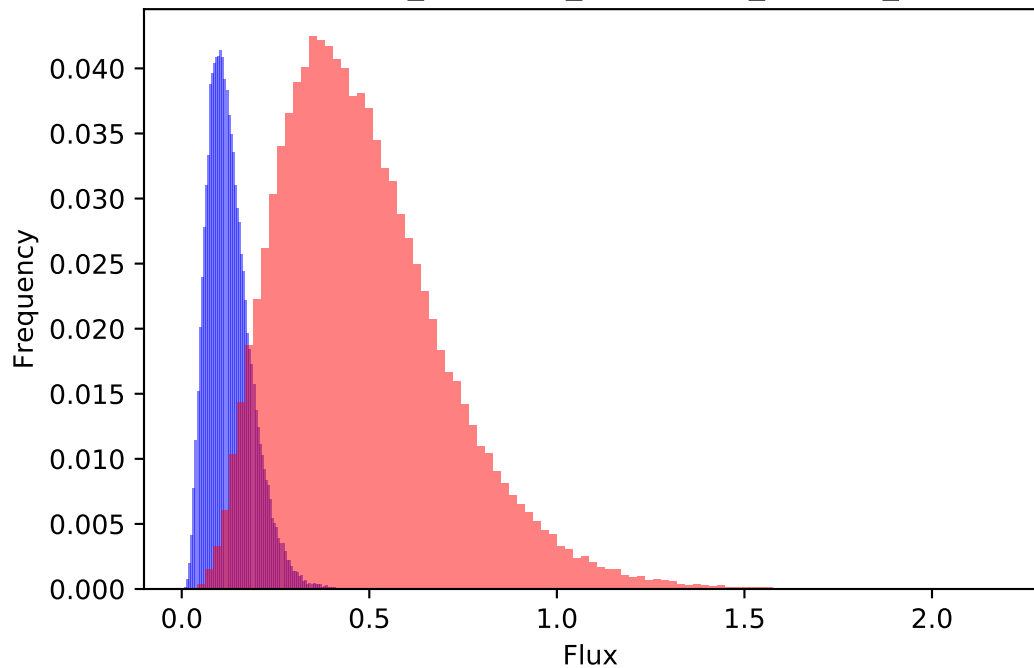
276 : Ind_h + Ser_h --> H2O_h + Trp_h



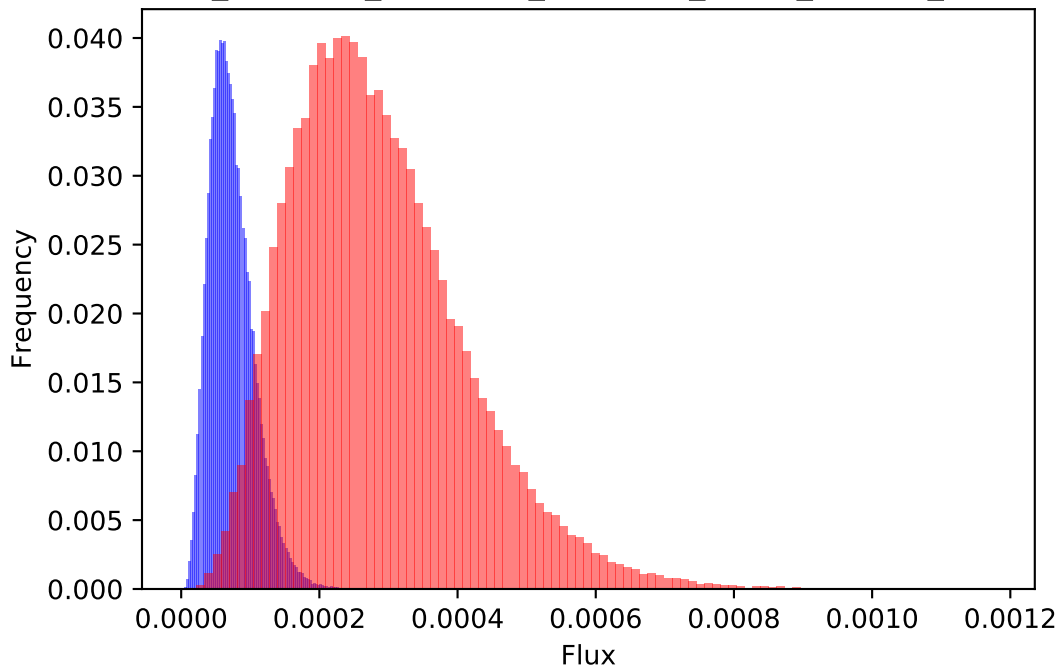
277 : AGN_h + NADP_h --> CO2_h + NADPH_h + Tyr_h



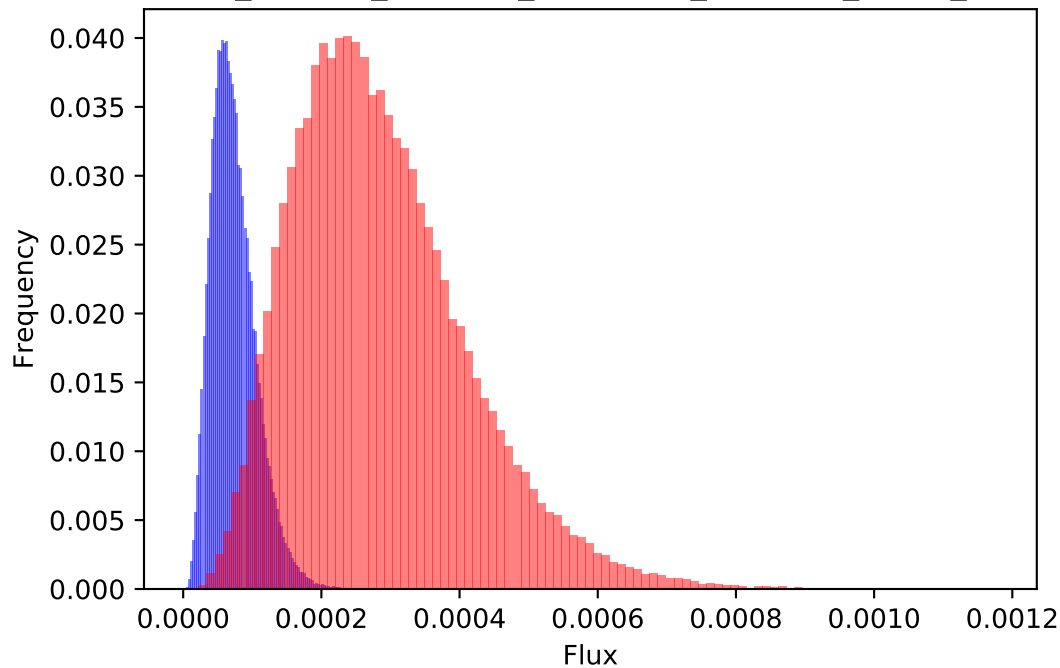
278 : Glu_h + MOB_h \rightleftharpoons KG_h + Val_h



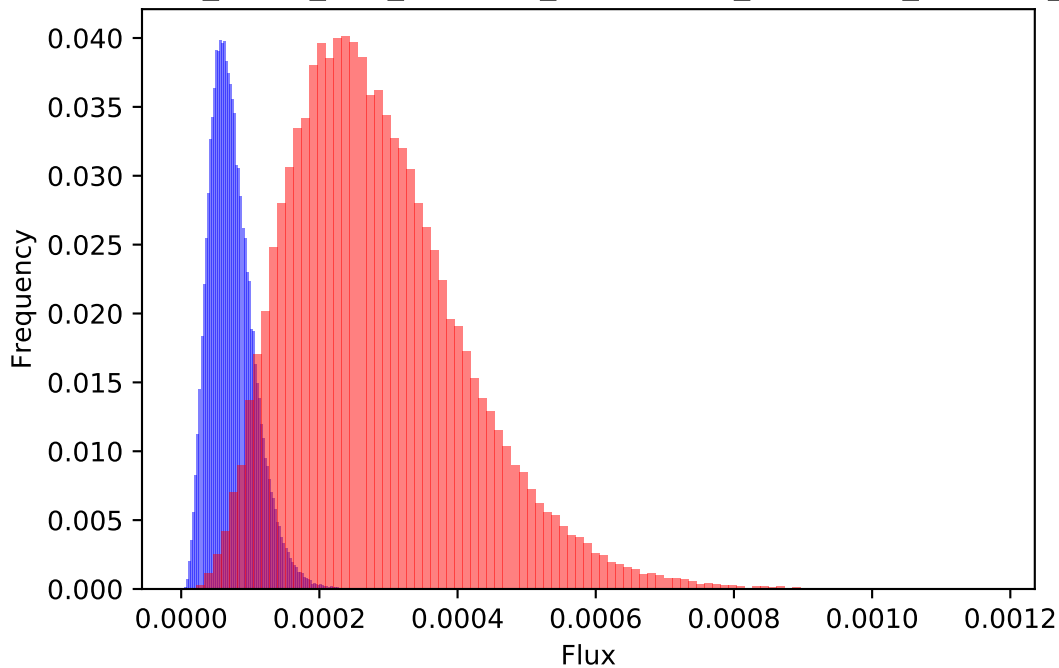
279 : Gln_h + H2O_h + PRPP_h --> Glu_h + H_h + PPI_h + PRA_h



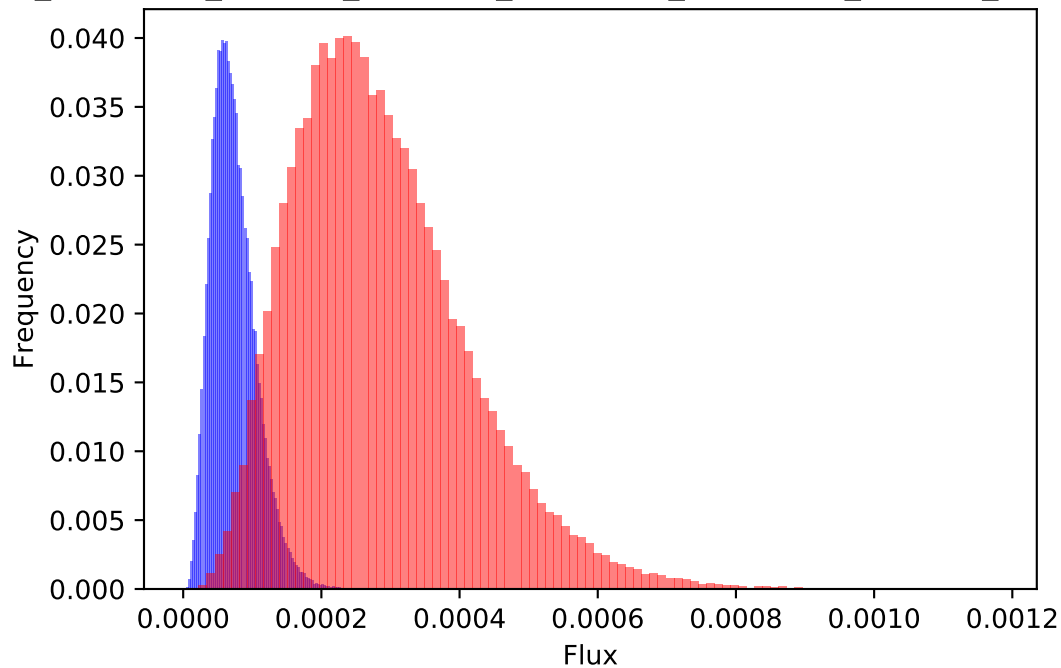
280 : ATP_h + Gly_h + PRA_h --> ADP_h + GAR_h + H_h + Pi_h



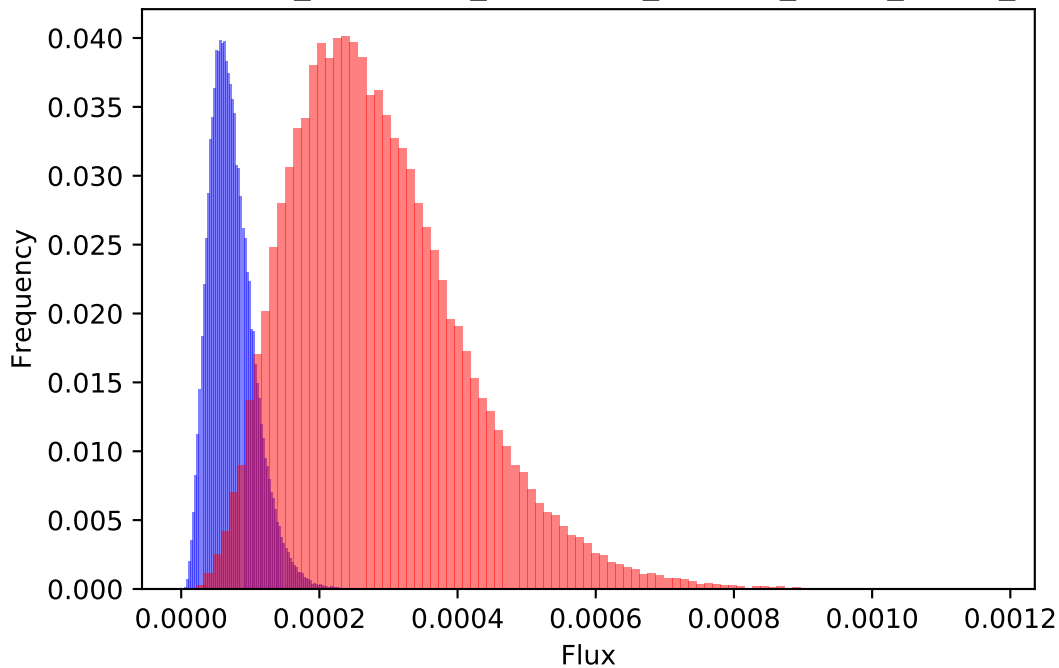
281 : F_DASH_THF_h + GAR_h --> FGAR_h + 2.0 H_h + THF_h



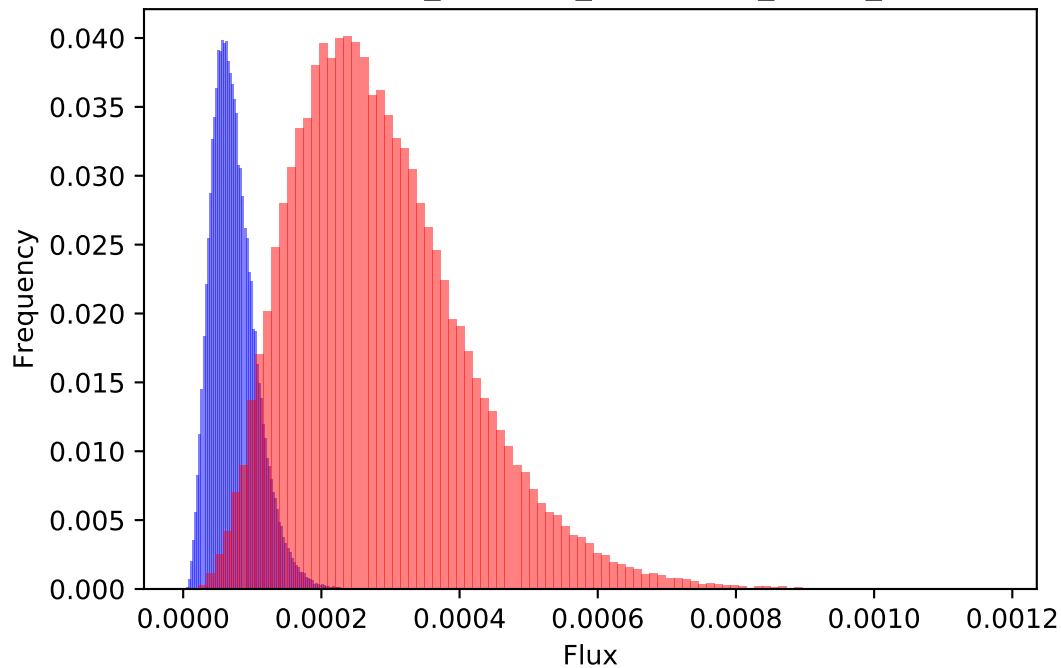
TP_h + FGAR_h + Gln_h + H2O_h --> ADP_h + FGAM_h + Glu_h + 2.0 H₂



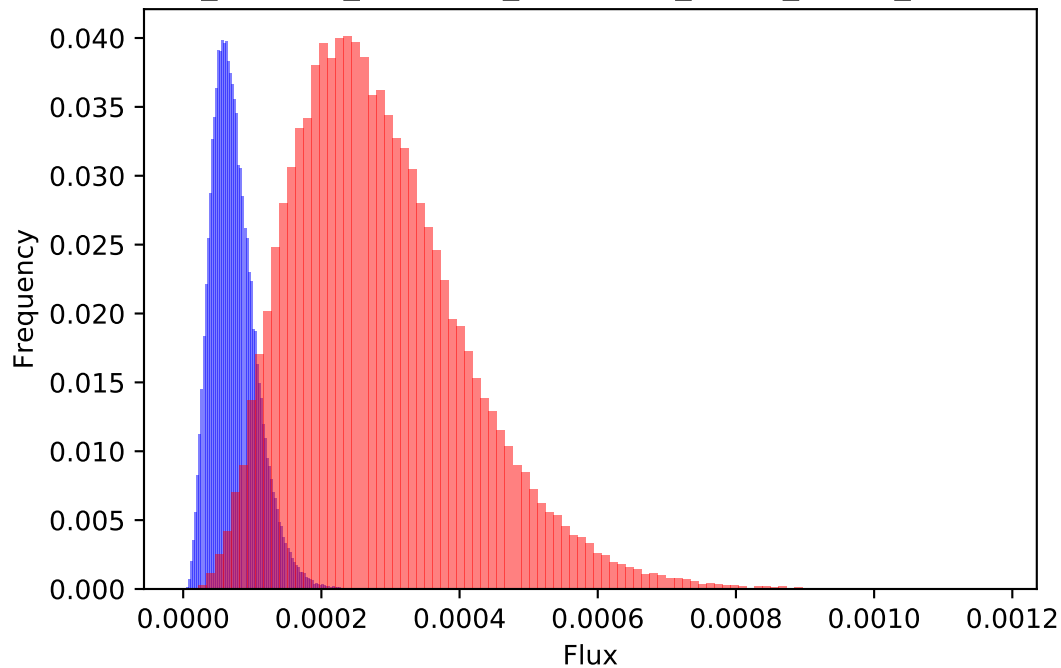
283 : ATP_h + FGAM_h --> ADP_h + AIR_h + H_h + Pi_h



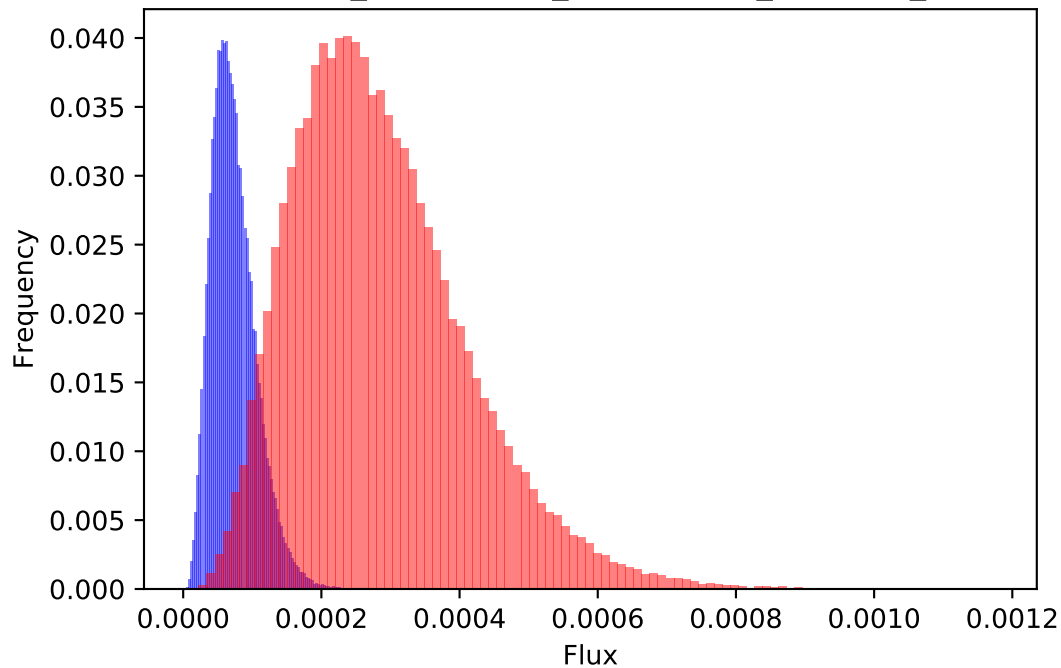
284 : AIR_h + CO2_h --> CAIR_h + H_h



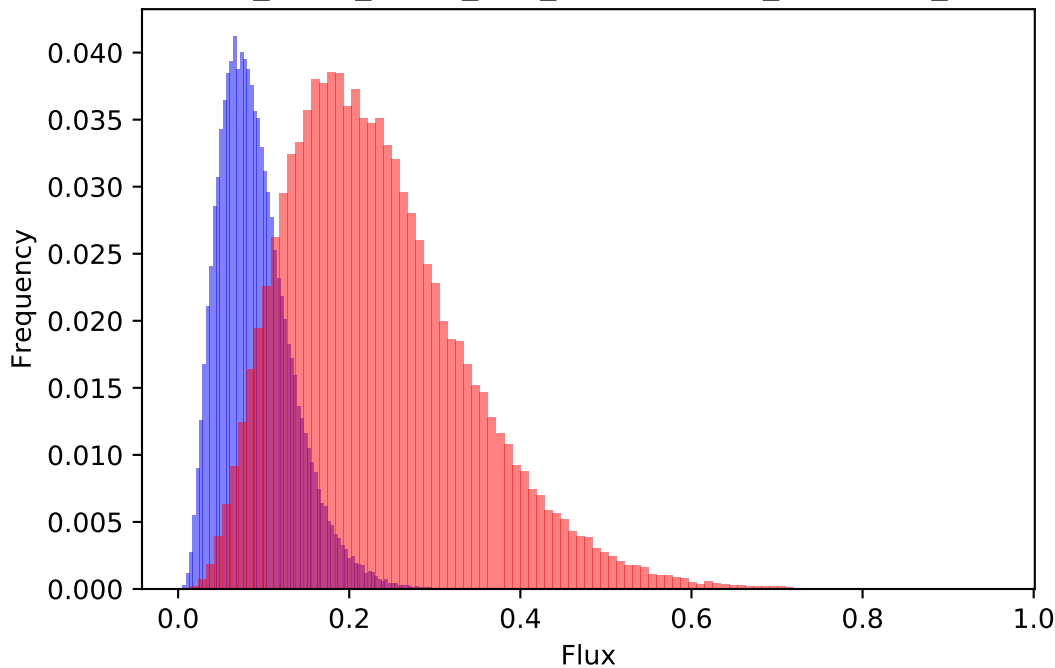
285 : ATP_h + Asp_h + CAIR_h --> ADP_h + H_h + Pi_h + SAICAR_h



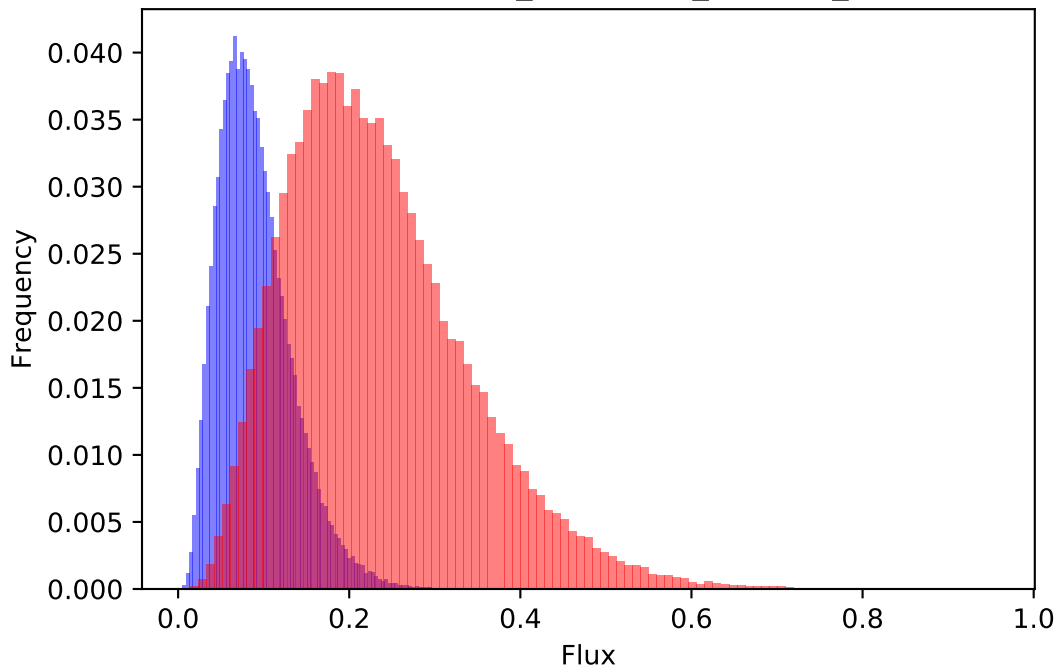
286 : H_h + SAICAR_h --> AICAR_h + Fum_h



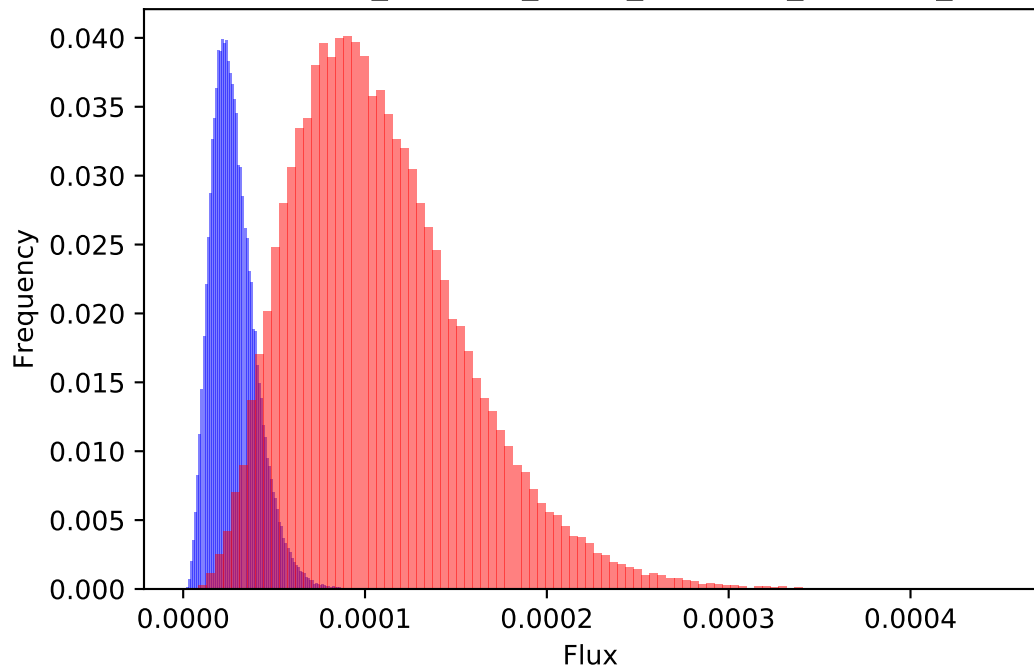
287 : AICAR_h + F_DASH_THF_h --> FAICAR_h + 2.0 H_h + THF_h



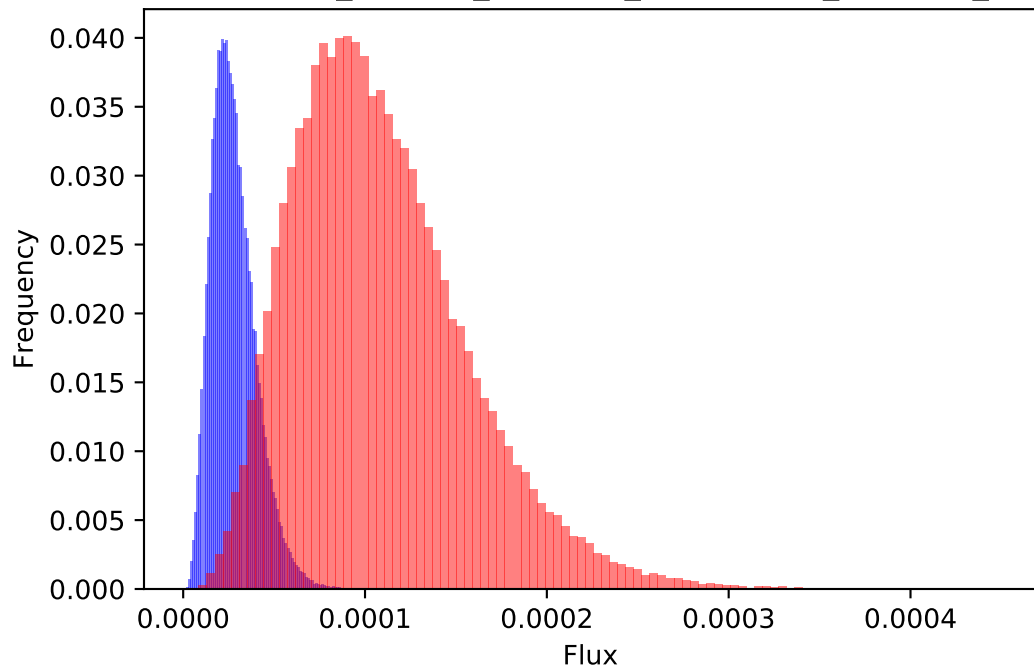
288 : FAICAR_h --> H2O_h + IMP_h



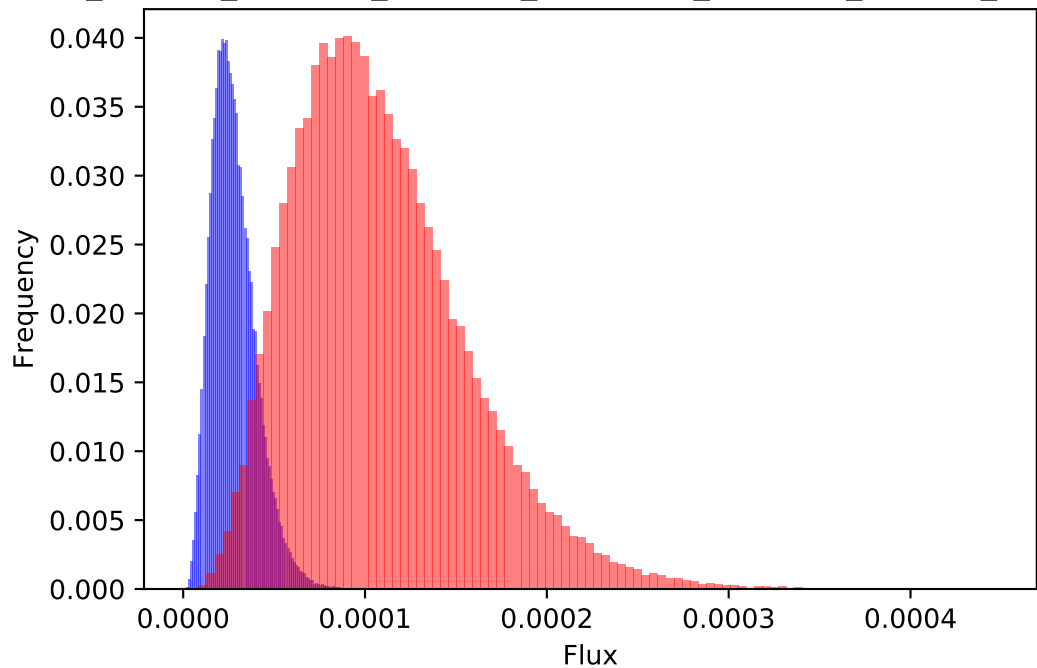
289 : AMP_c + H2O_c + H_c --> IMP_c + NH4_c



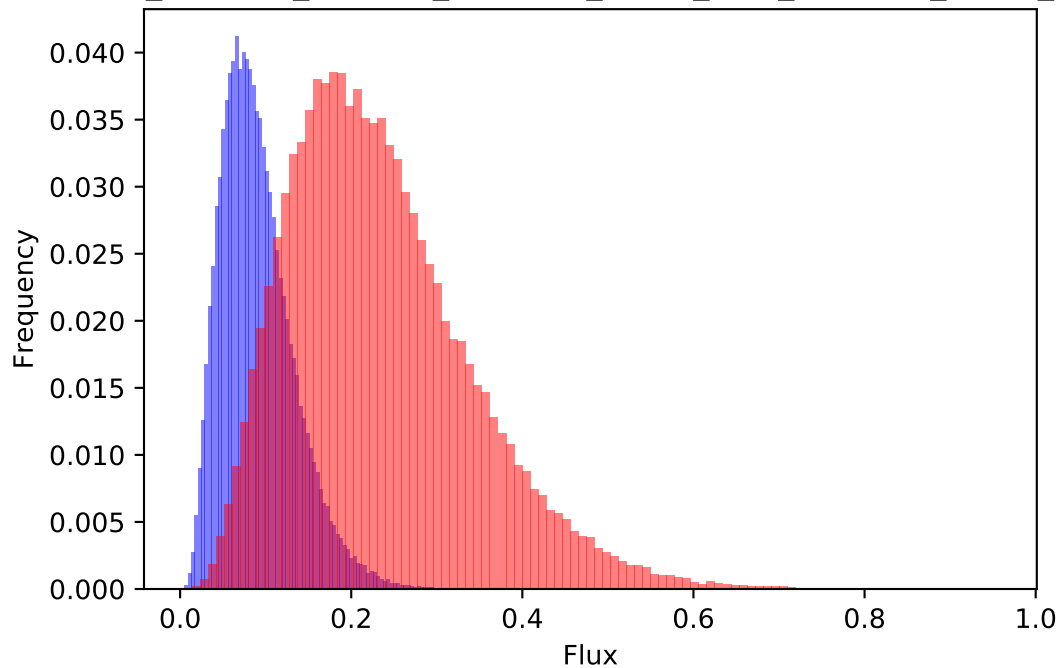
290 : H2O_c + IMP_c + NAD_c --> NADH_c + XMP_c



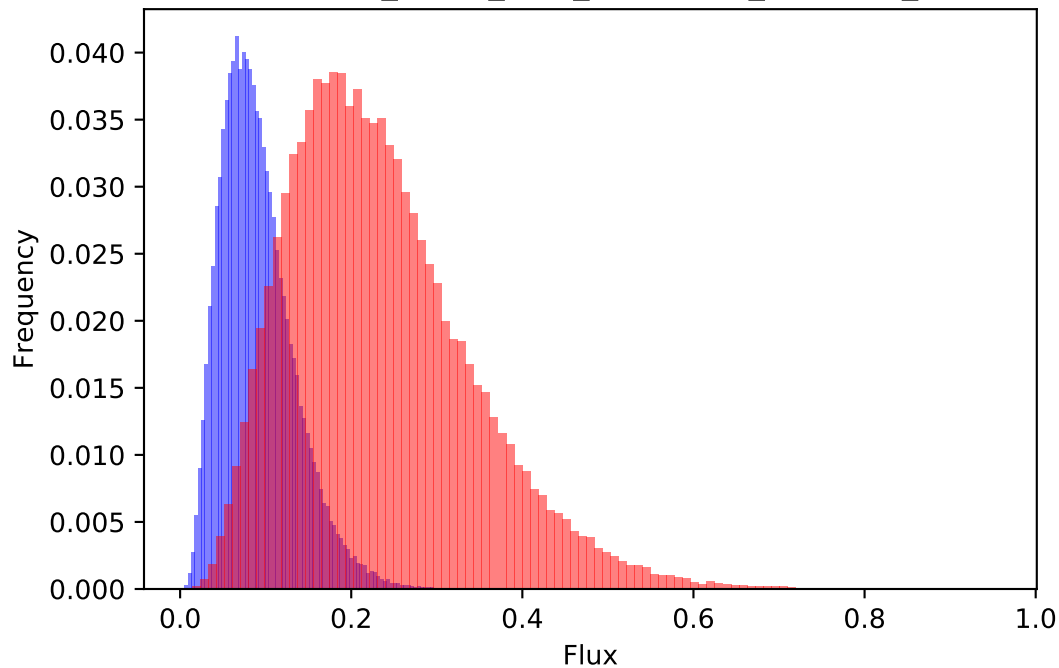
: ATP_c + Gln_c + H2O_c + XMP_c --> AMP_c + GMP_c + Glu_c + H_c +



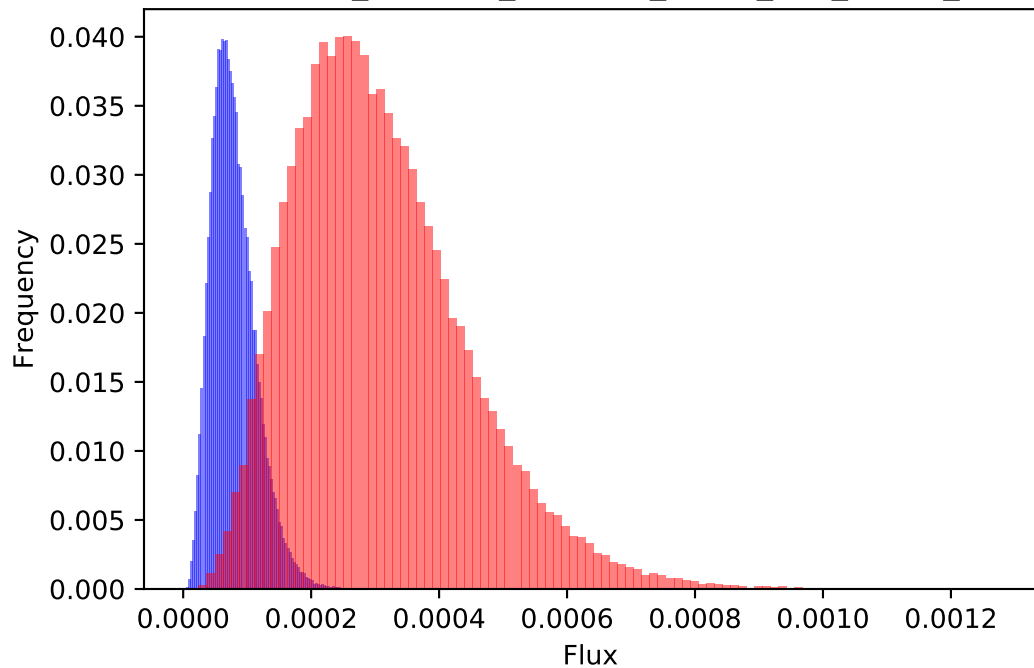
292 : Asp_h + GTP_h + IMP_h --> DC_DASH_AMP_h + GDP_h + H_h + Pi



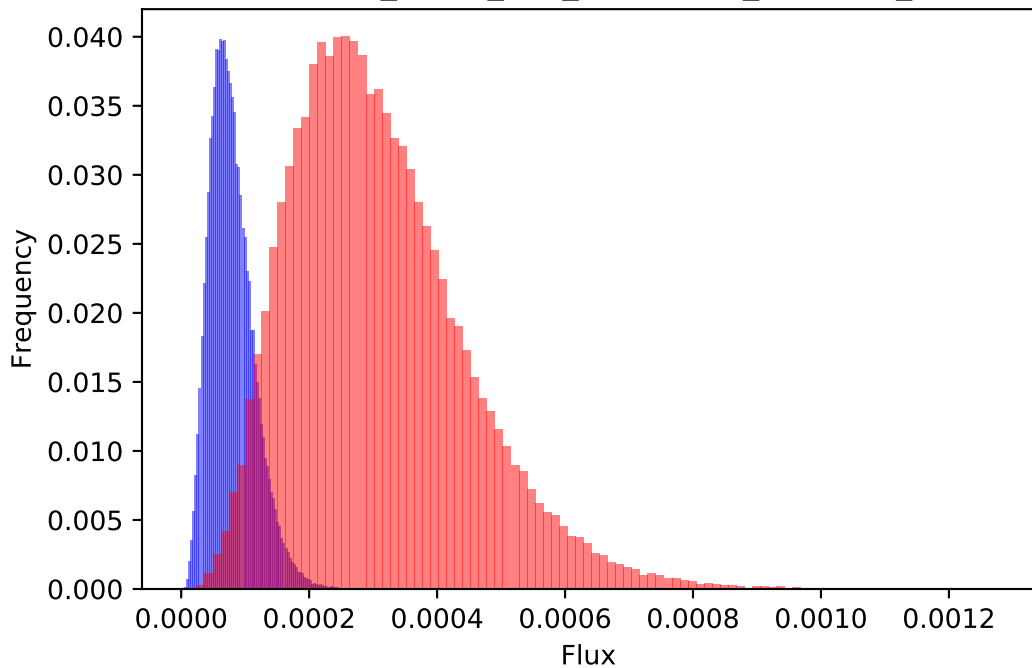
293 : DC_DASH_AMP_h --> AMP_h + Fum_h



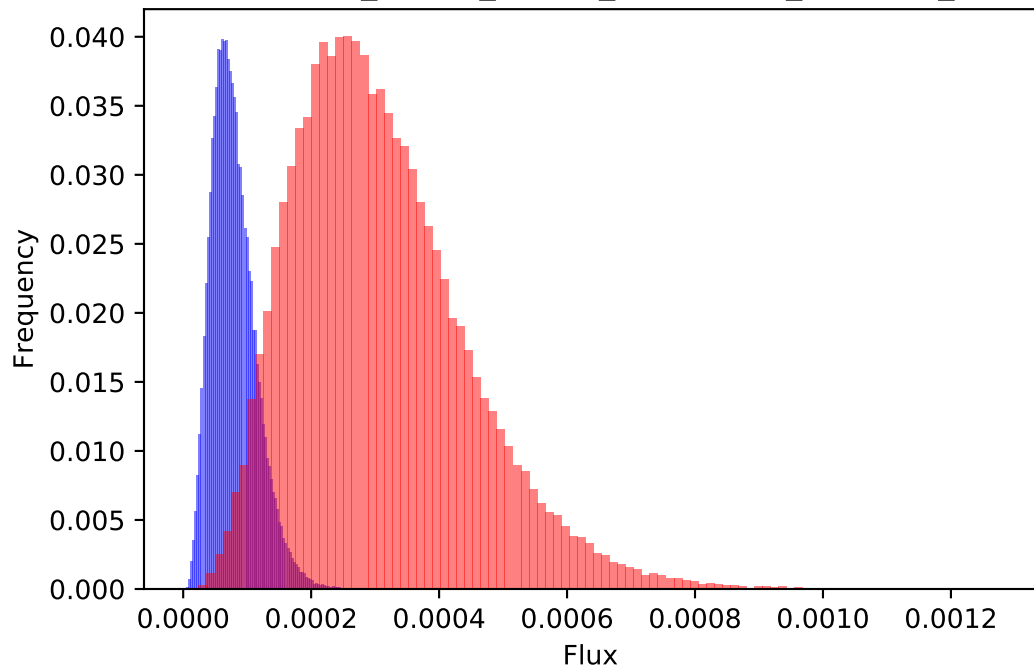
294 : Asp_h + CBP_h --> CB_DASH_Asp_h + Pi_h



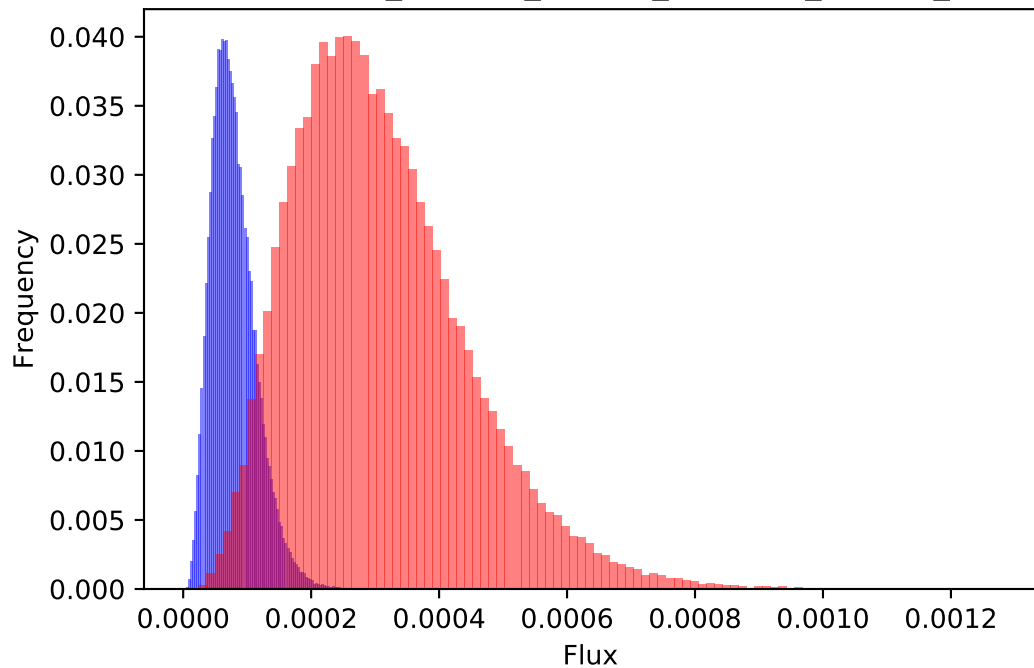
295 : CB_DASH_Asp_h --> DHO_h + H2O_h



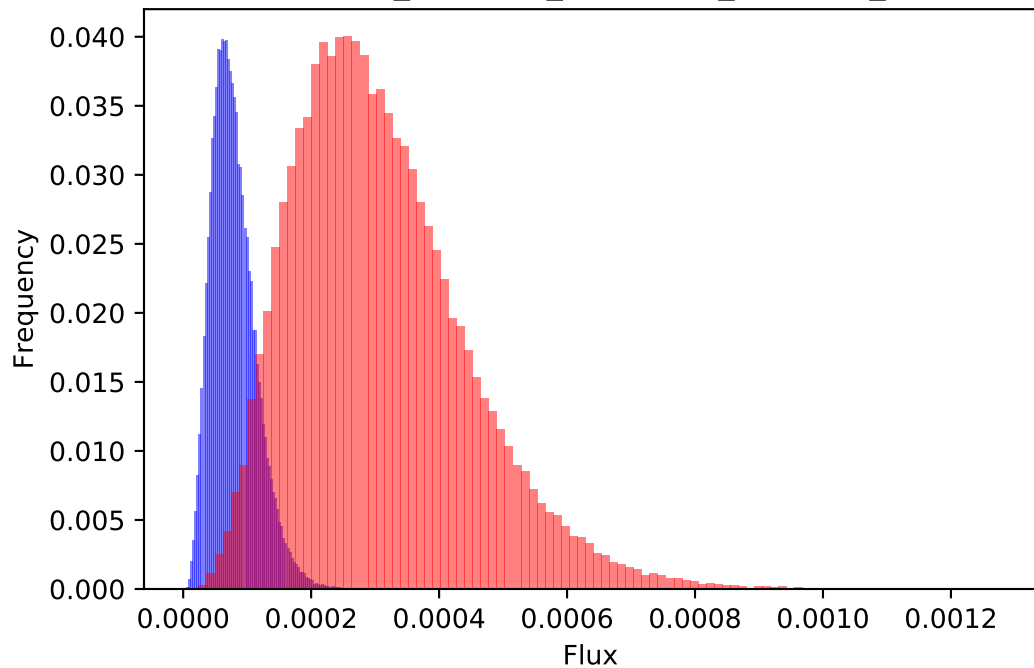
296 : DHO_m + H_m + Q_m --> QH2_m + orO_m



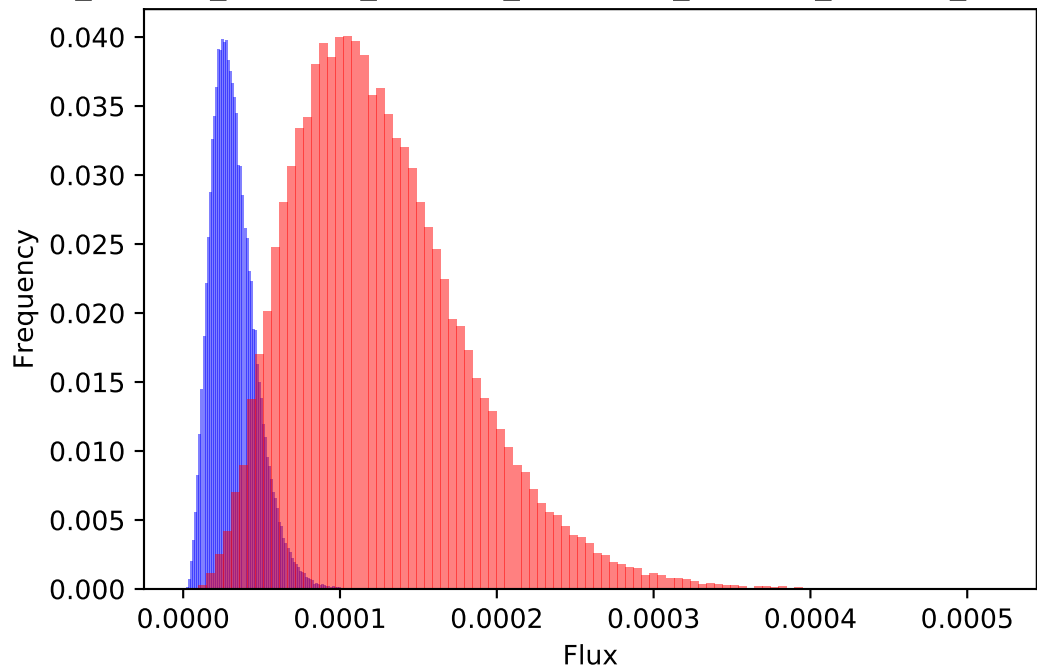
297 : PRPP_c + orO_c --> H_c + OMP_c + PPI_c



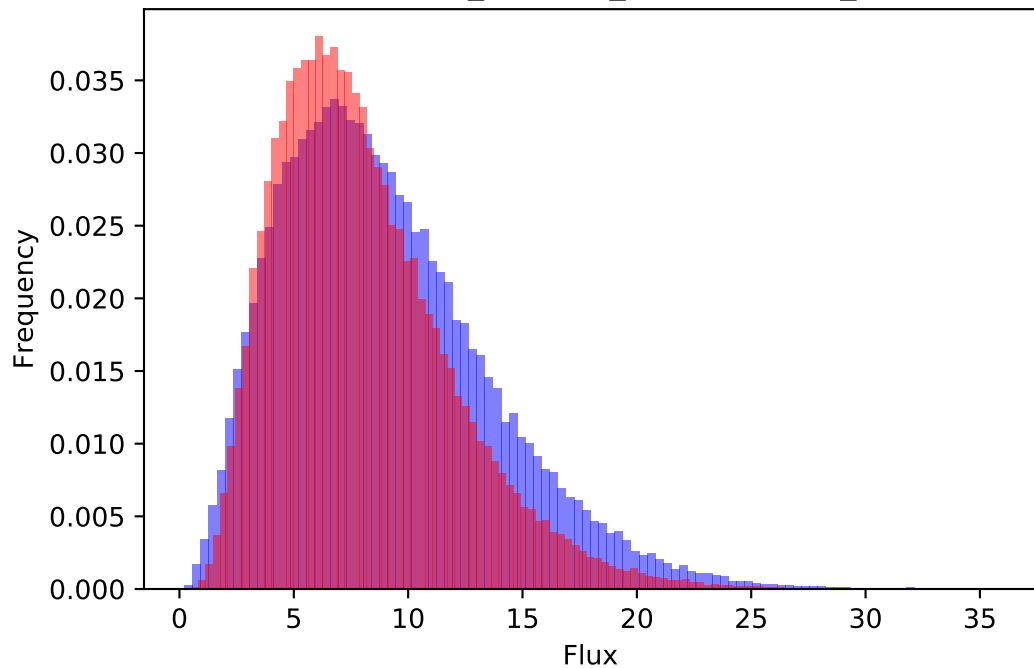
298 : H_c + OMP_c --> CO2_c + UMP_c



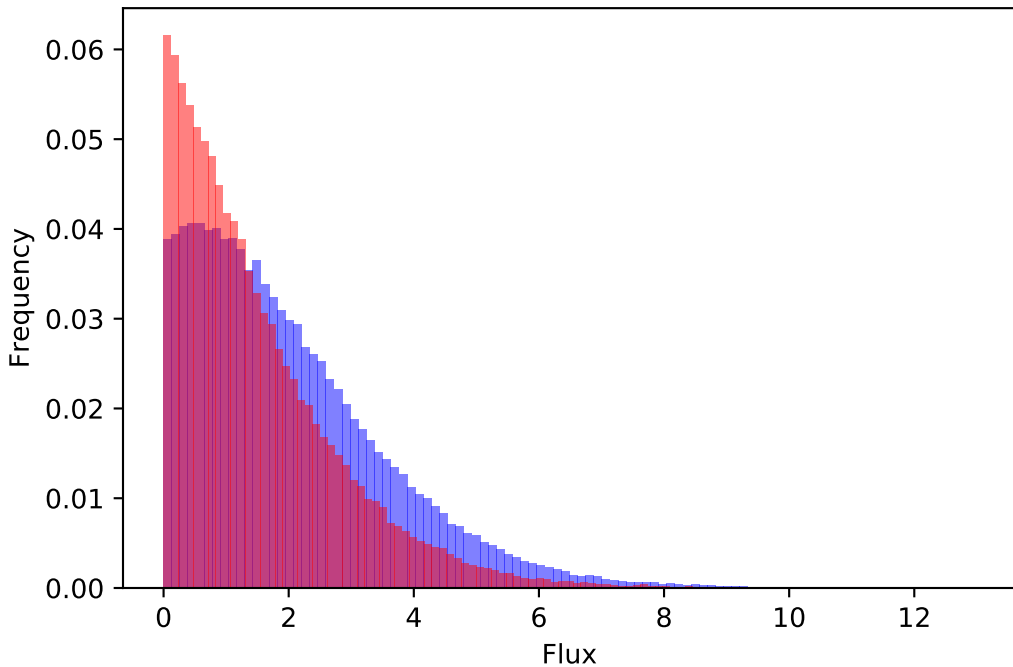
ATP_c + Gln_c + H2O_c + UTP_c --> ADP_c + CTP_c + Glu_c + 2.0 H_c



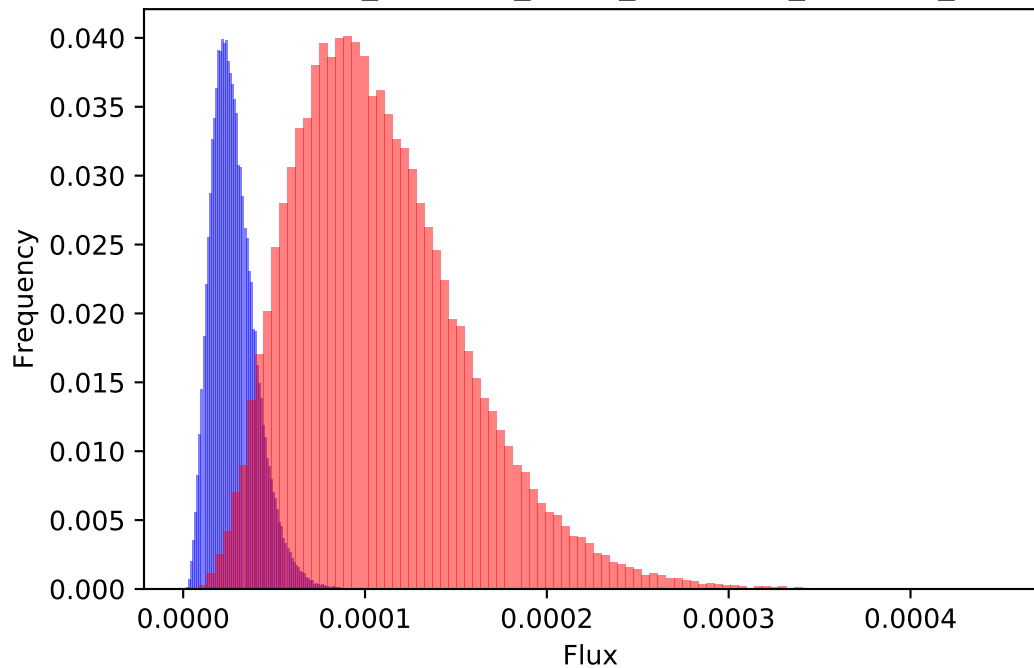
300 : AMP_c + ATP_c --> 2.0 ADP_c



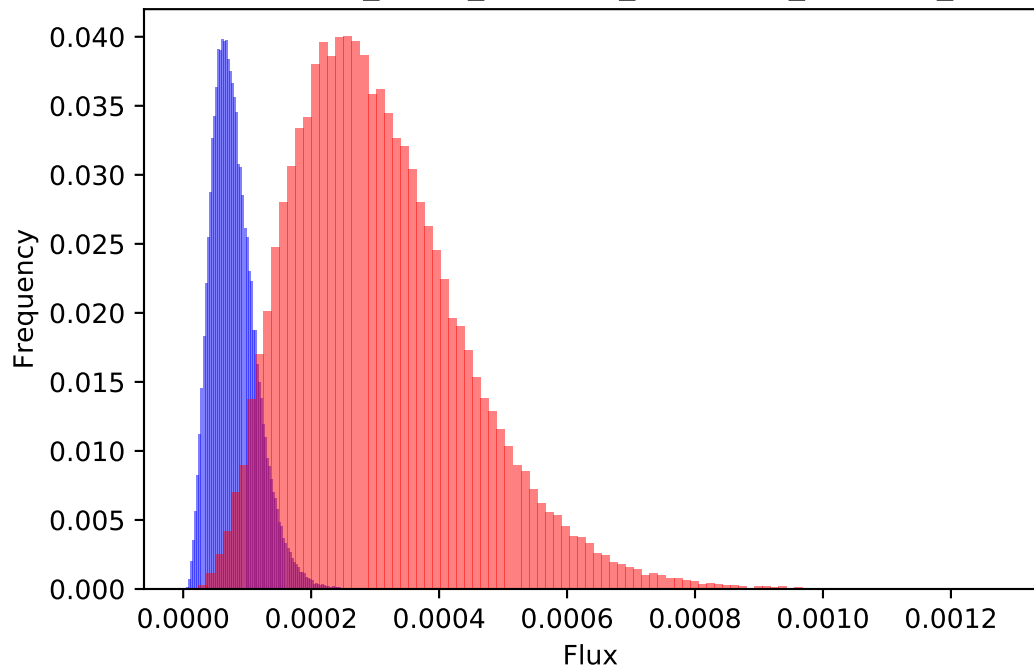
301 : AMP_h + ATP_h --> 2.0 ADP_h



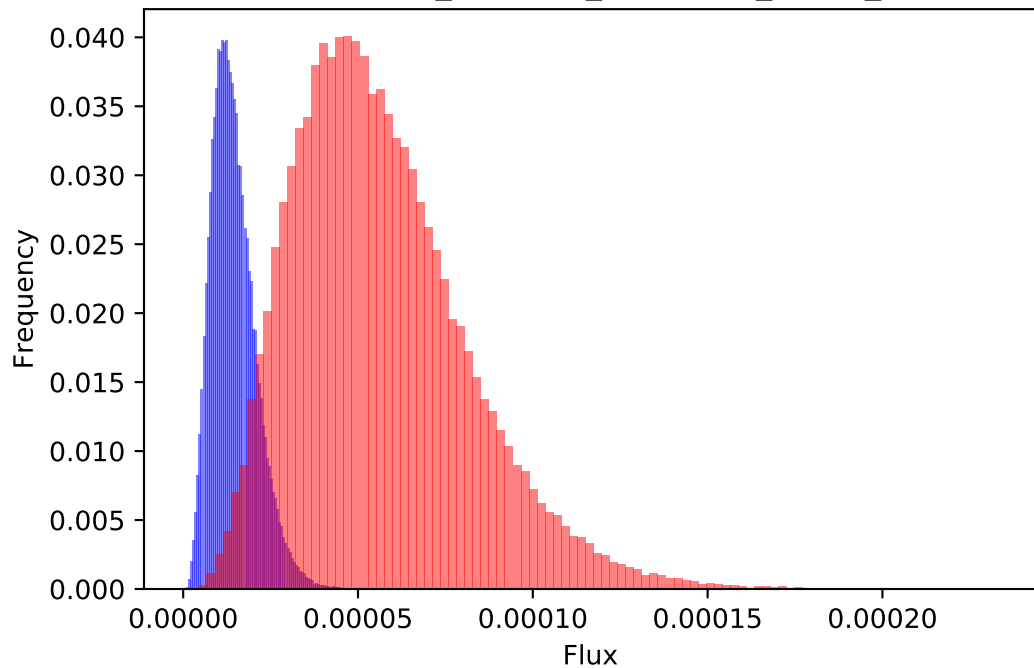
302 : ATP_c + GMP_c + H_c --> ADP_c + GDP_c



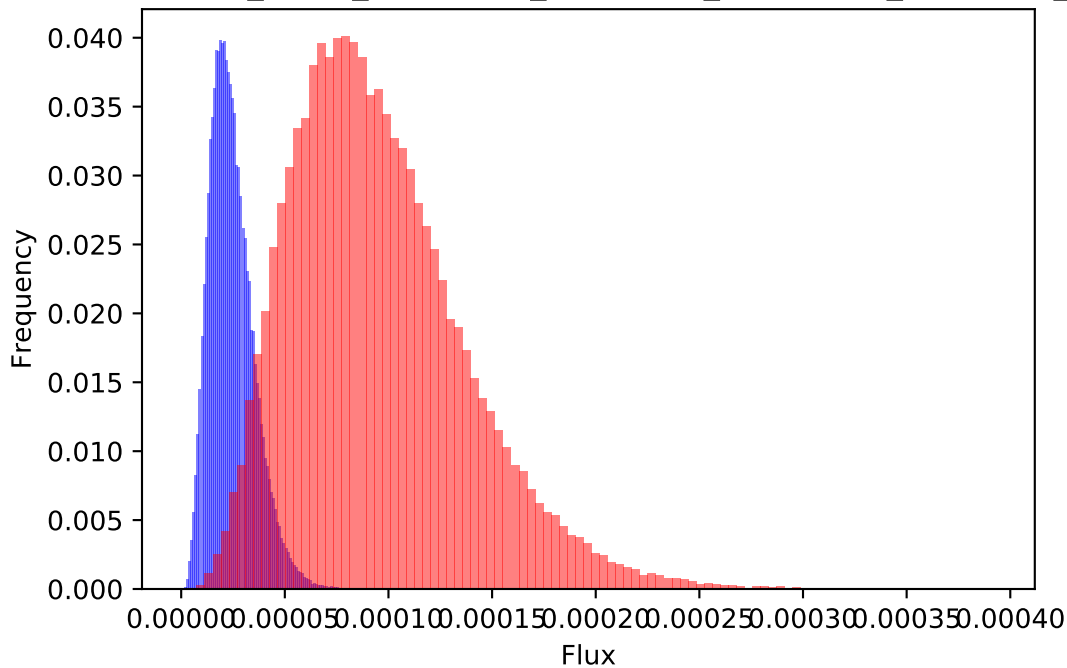
303 : $\text{ATP}_c + \text{H}_c + \text{UMP}_c \rightarrow \text{ADP}_c + \text{UDP}_c$



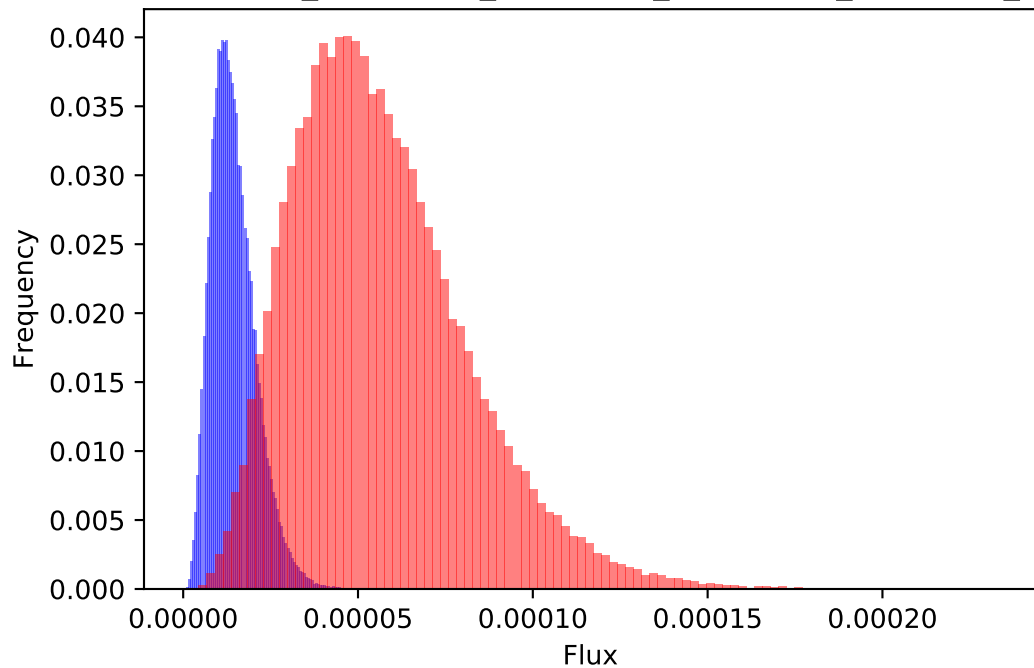
304 : CTP_c + H2O_c --> CDP_c + Pi_c



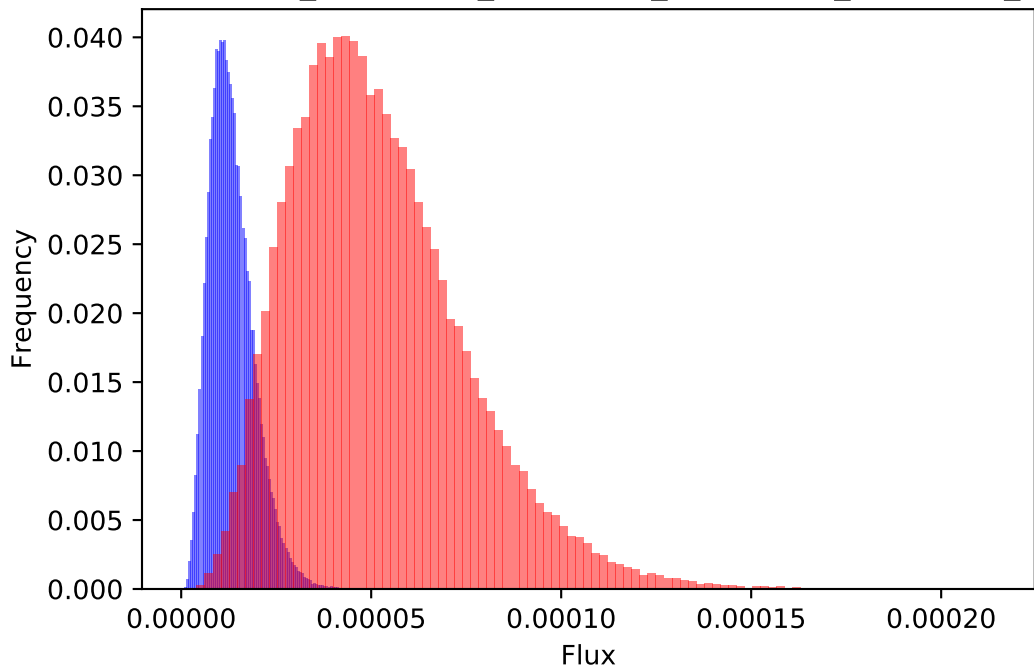
305 : ADP_c + H_c + TRXrd_c --> H2O_c + TRXox_c + dADP_c



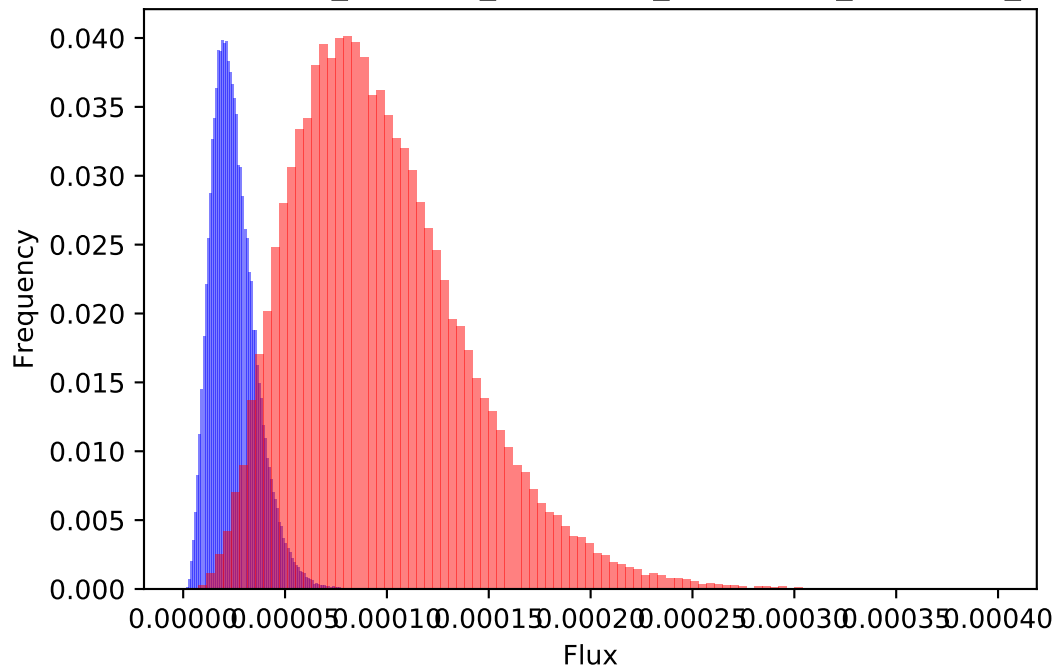
306 : CDP_c + TRXrd_c --> H2O_c + TRXox_c + dCDP_c



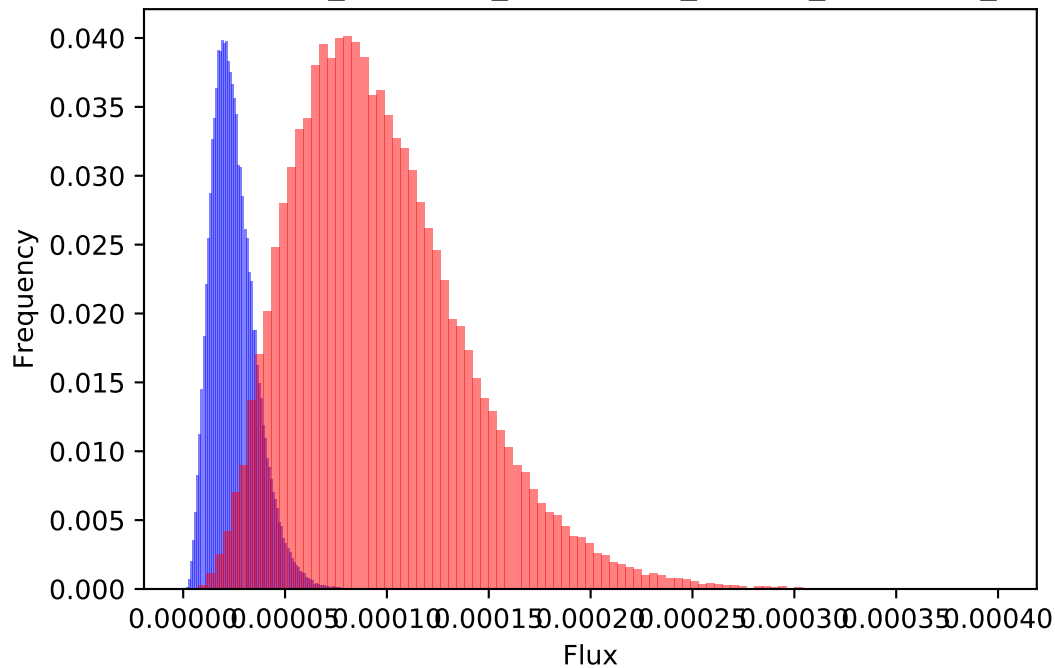
307 : GDP_c + TRXrd_c --> H2O_c + TRXox_c + dGDP_c



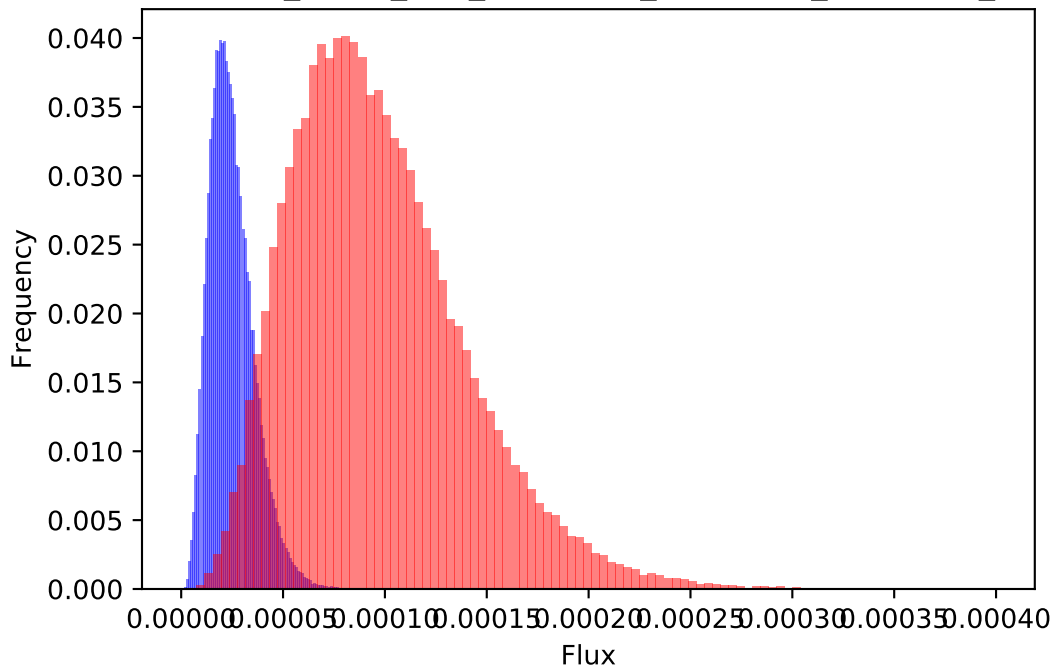
308 : TRXrd_c + UDP_c --> H2O_c + TRXox_c + dUDP_c



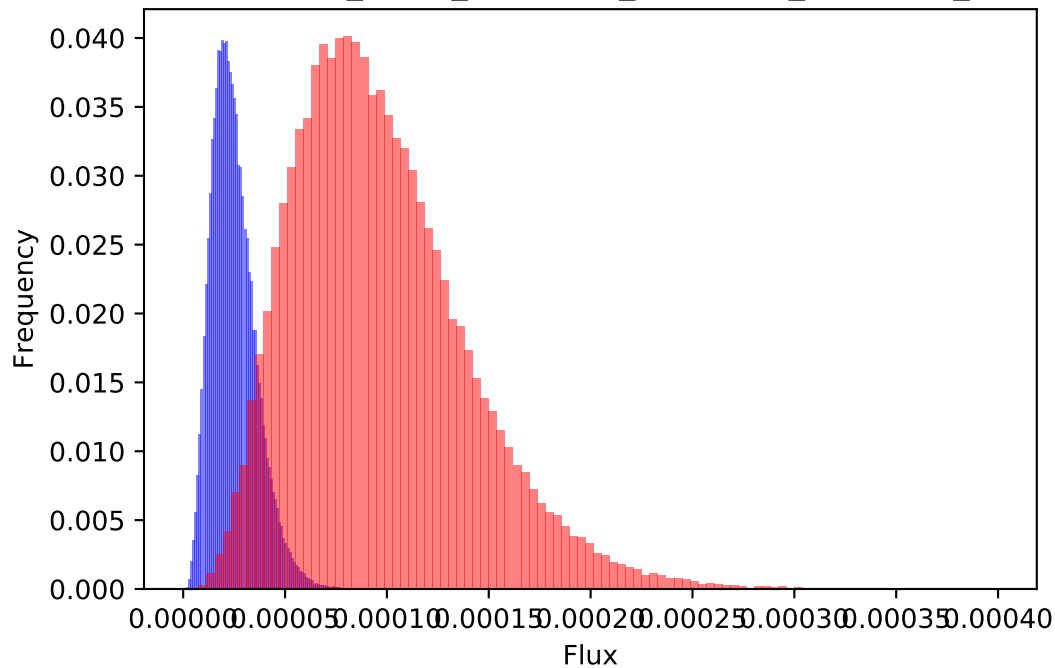
309 : H₂O_c + dUTP_c --> 2.0 H_c + PPI_c + dUMP_c



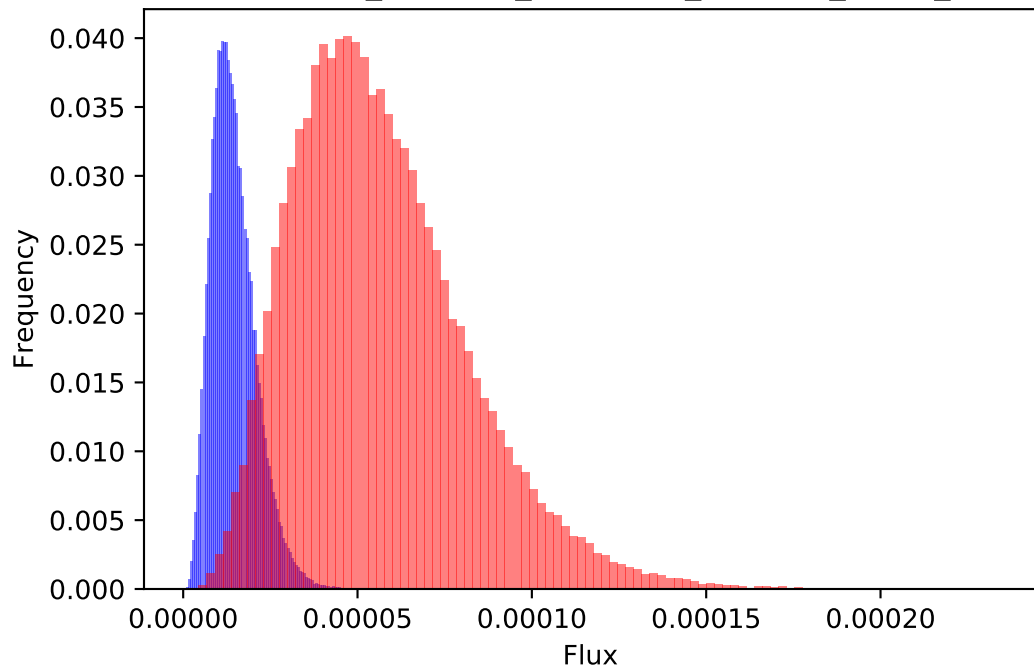
310 : M_DASH_THF_c + dUMP_c --> DHF_c + dTMP_c



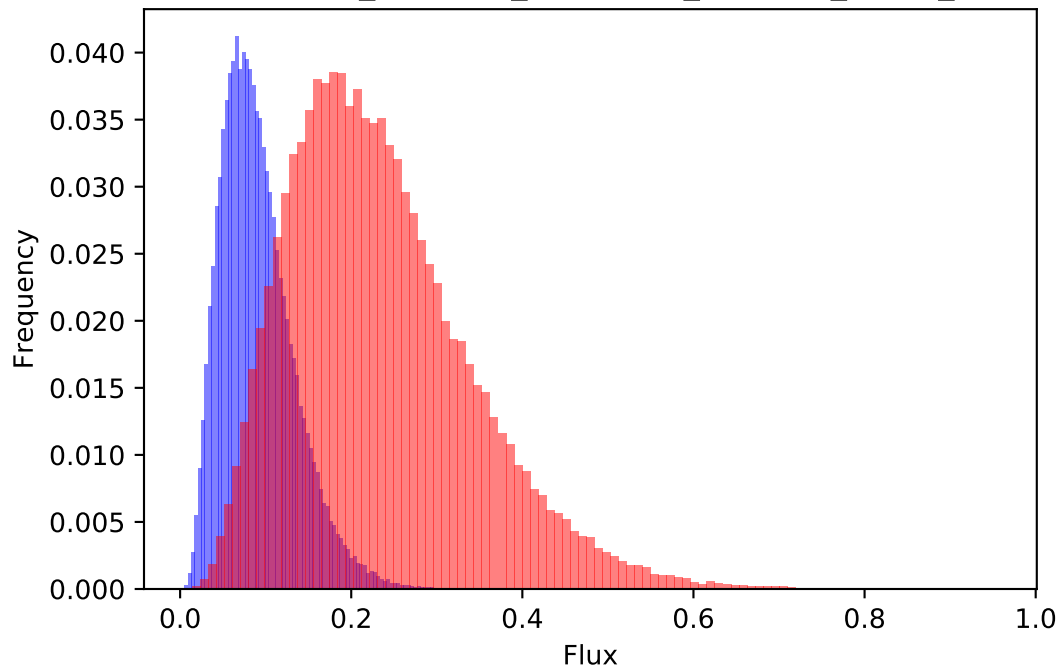
311 : $\text{ATP_c} + \text{H_c} + \text{dTMP_c} \rightarrow \text{ADP_c} + \text{dTDP_c}$



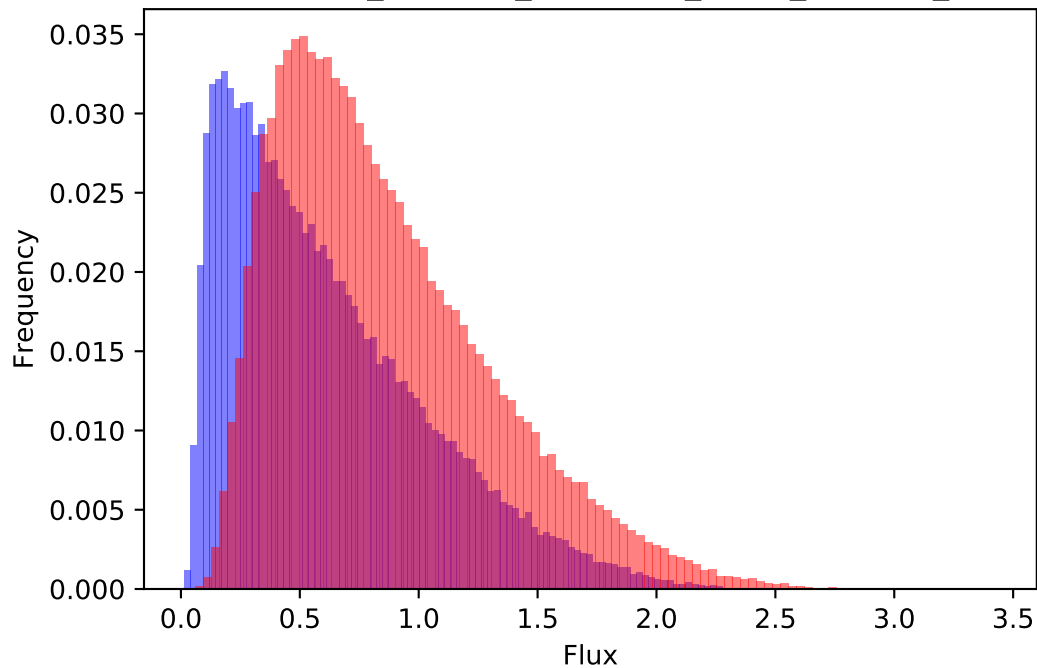
312 : ATP_c + GDP_c --> ADP_c + GTP_c + H_c



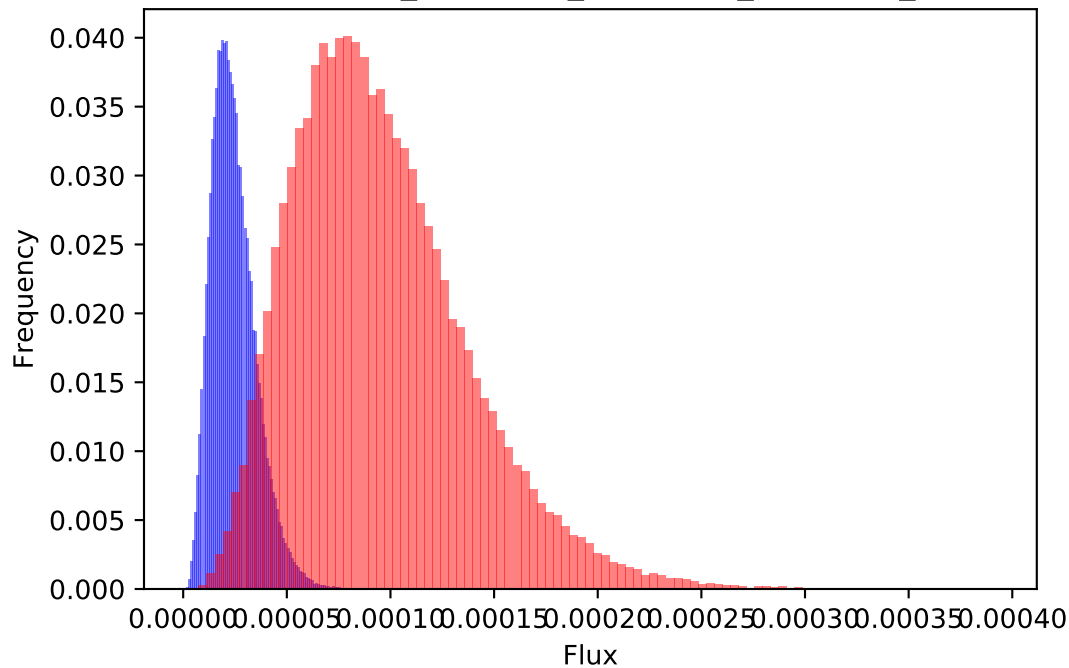
313 : ATP_h + GDP_h --> ADP_h + GTP_h + H_h



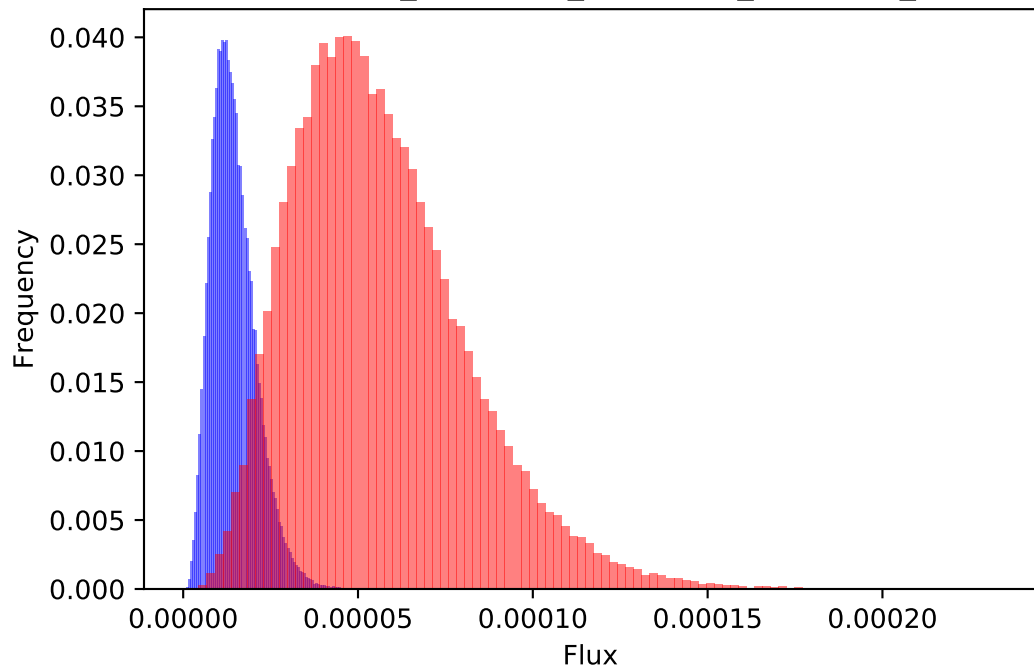
314 : ATP_c + UDP_c --> ADP_c + H_c + UTP_c



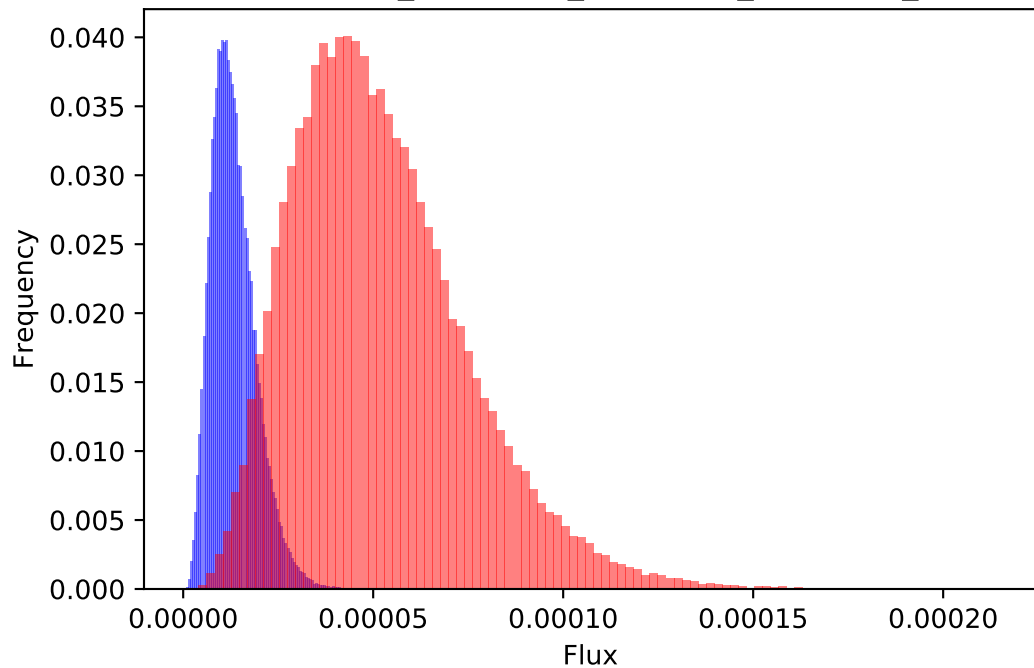
315 : $\text{ATP_c} + \text{dADP_c} \rightarrow \text{ADP_c} + \text{dATP_c}$



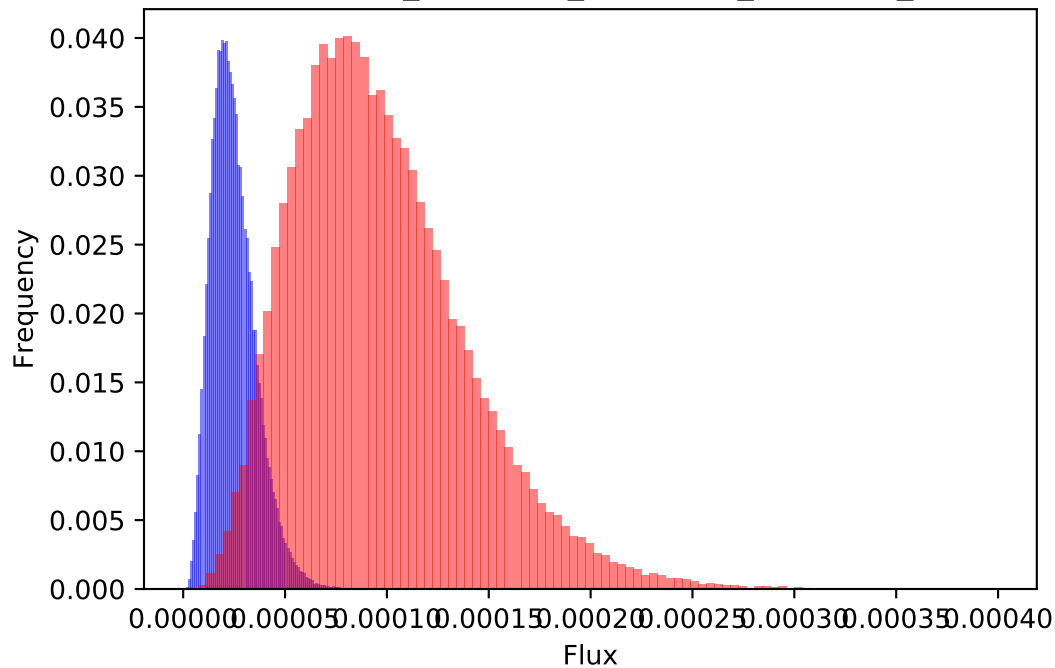
316 : $\text{ATP_c} + \text{dCDP_c} \rightarrow \text{ADP_c} + \text{dCTP_c}$



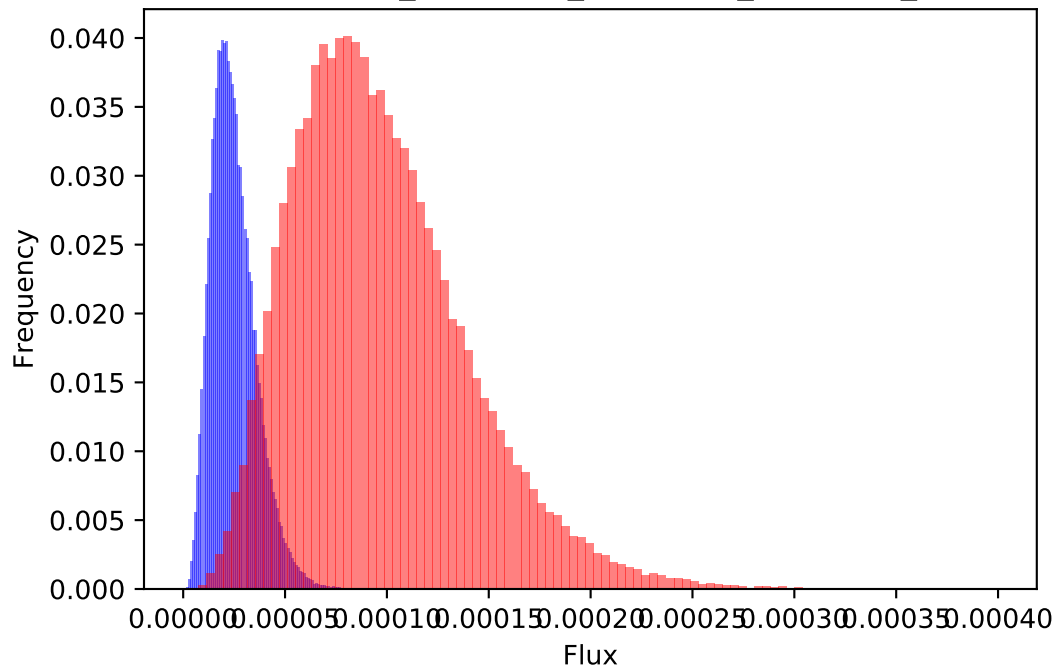
317 : ATP_c + dGDP_c --> ADP_c + dGTP_c



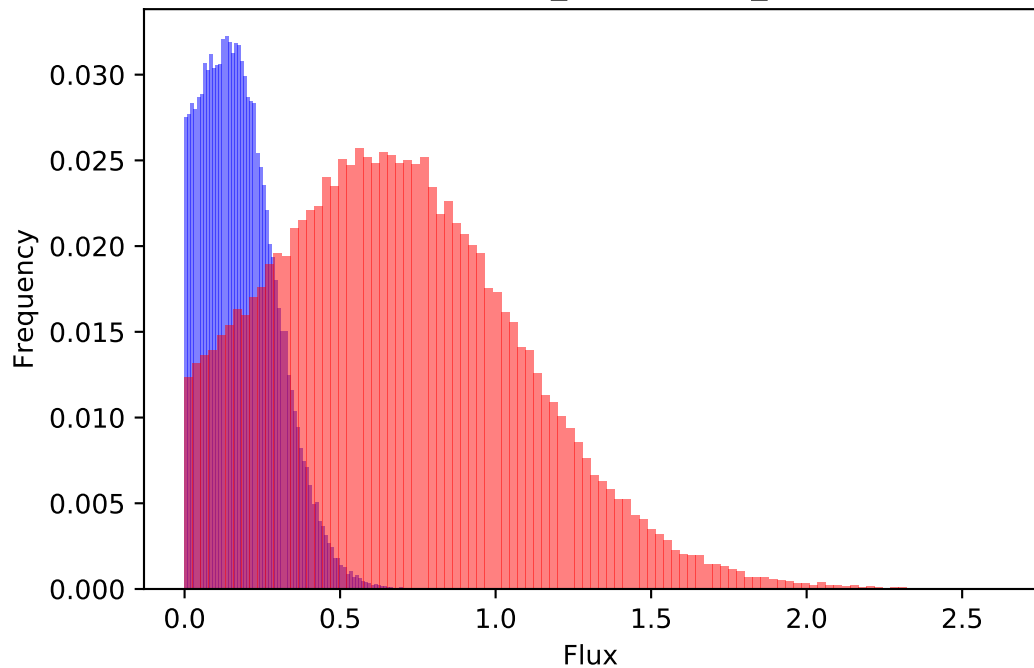
318 : ATP_c + dTDP_c --> ADP_c + dTTP_c



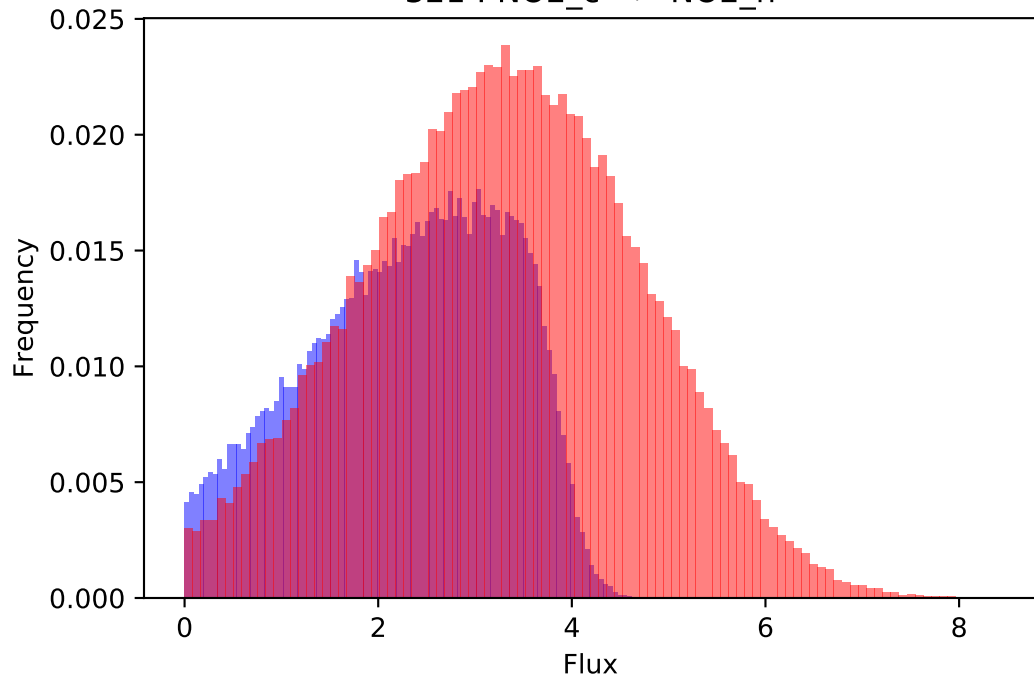
319 : ATP_c + dUDP_c --> ADP_c + dUTP_c



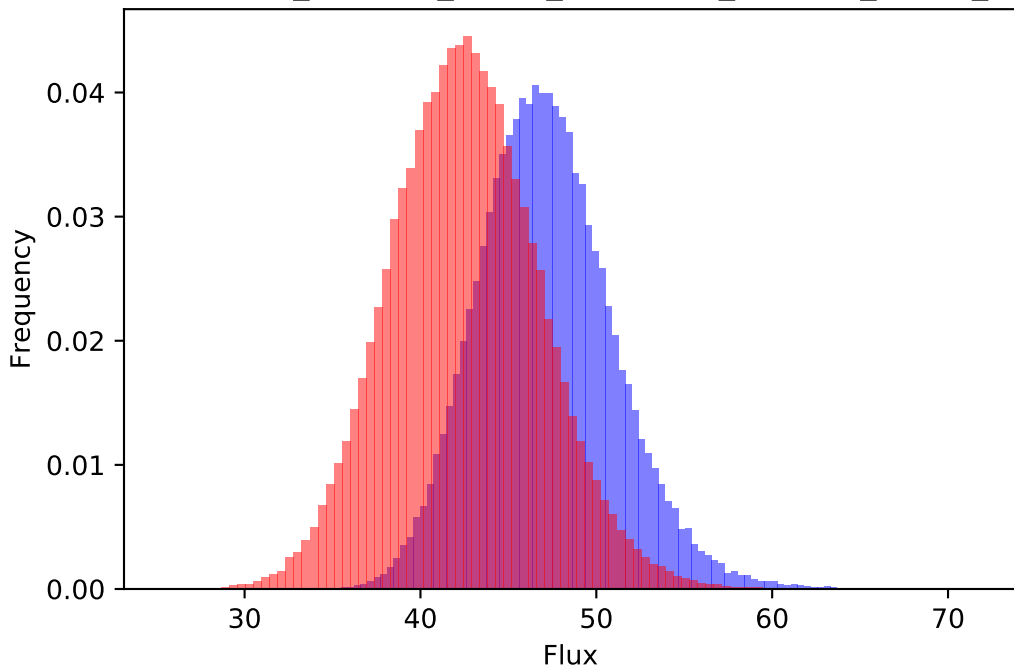
320 : SO4_c <=> SO4_h



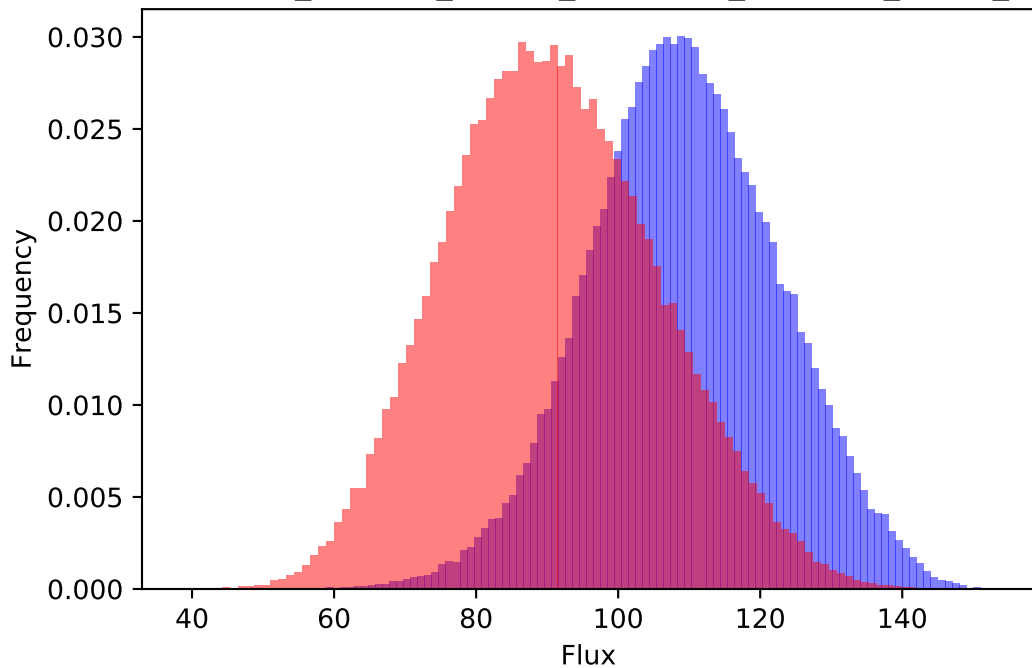
321 : NO2_c --> NO2_h



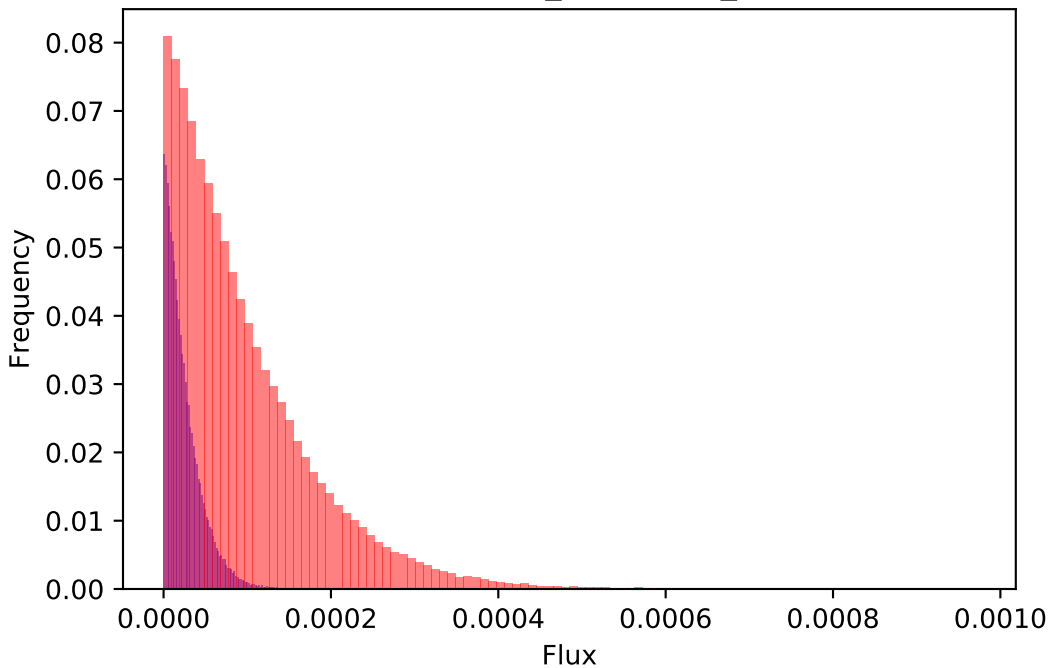
322 : ADP_h + ATP_c + Pi_h --> ADP_c + ATP_h + Pi_c



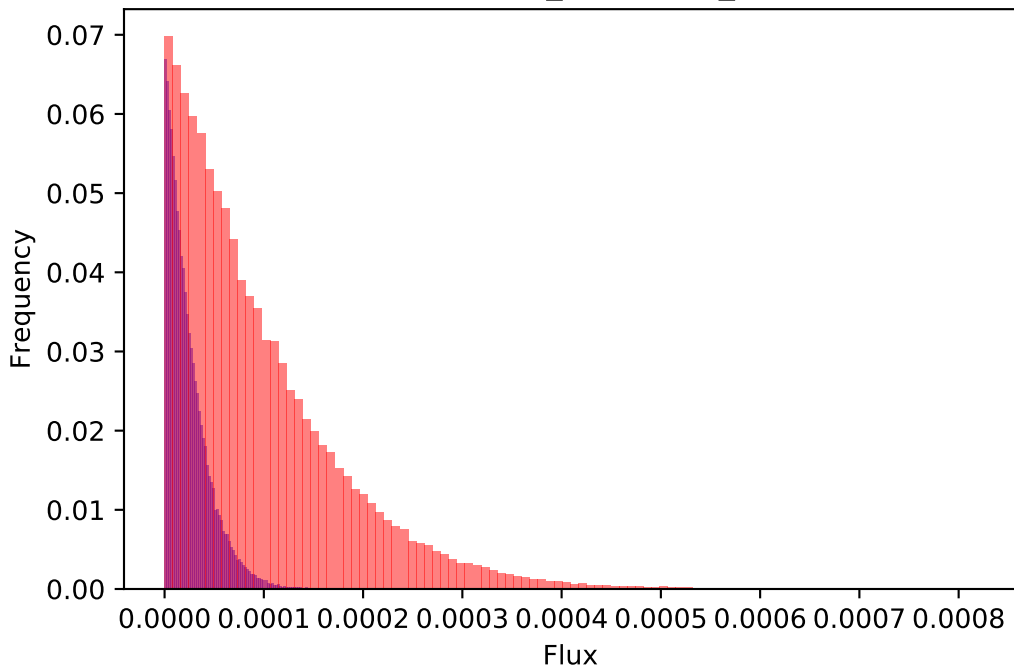
323 : $\text{ADP}_c + \text{ATP}_m + \text{Pi}_c \rightarrow \text{ADP}_m + \text{ATP}_c + \text{Pi}_m$



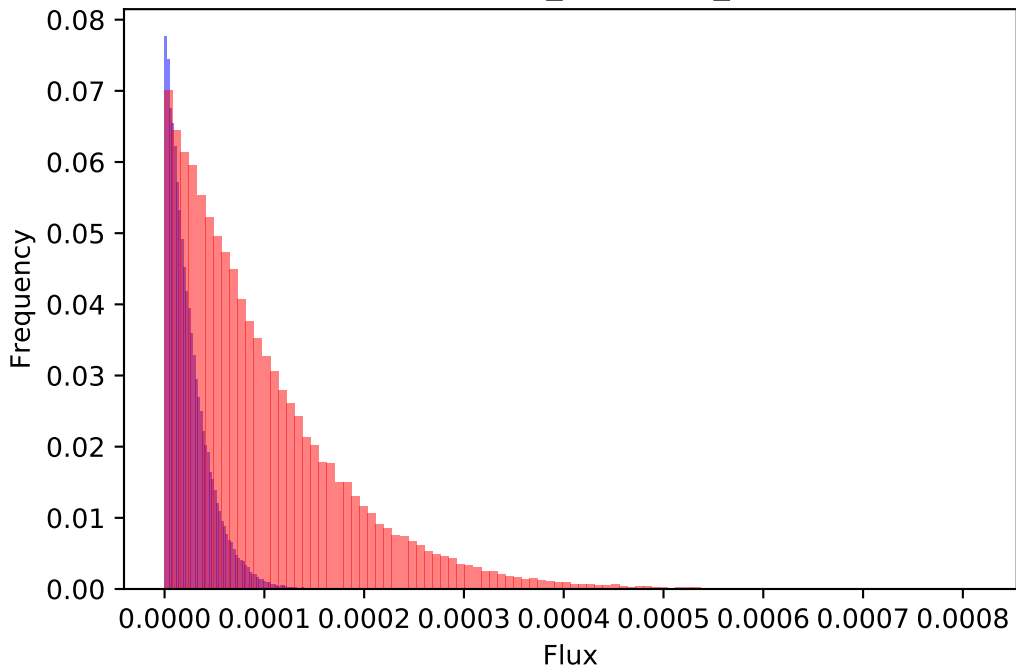
324 : AMP_h --> AMP_c



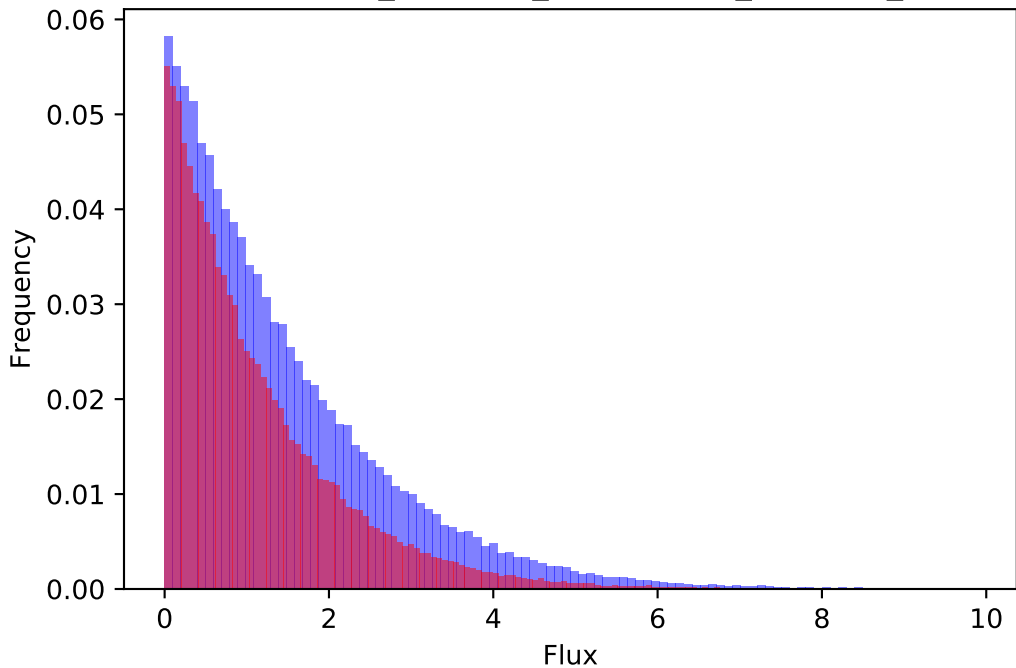
325 : ADP_h --> ADP_c



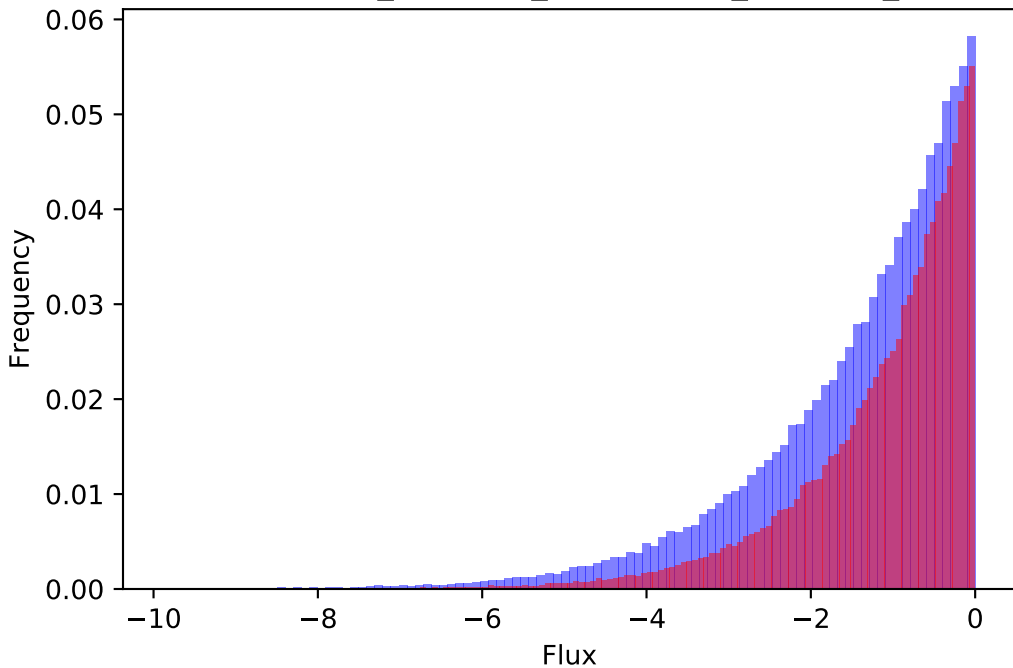
326 : ATP_h --> ATP_c



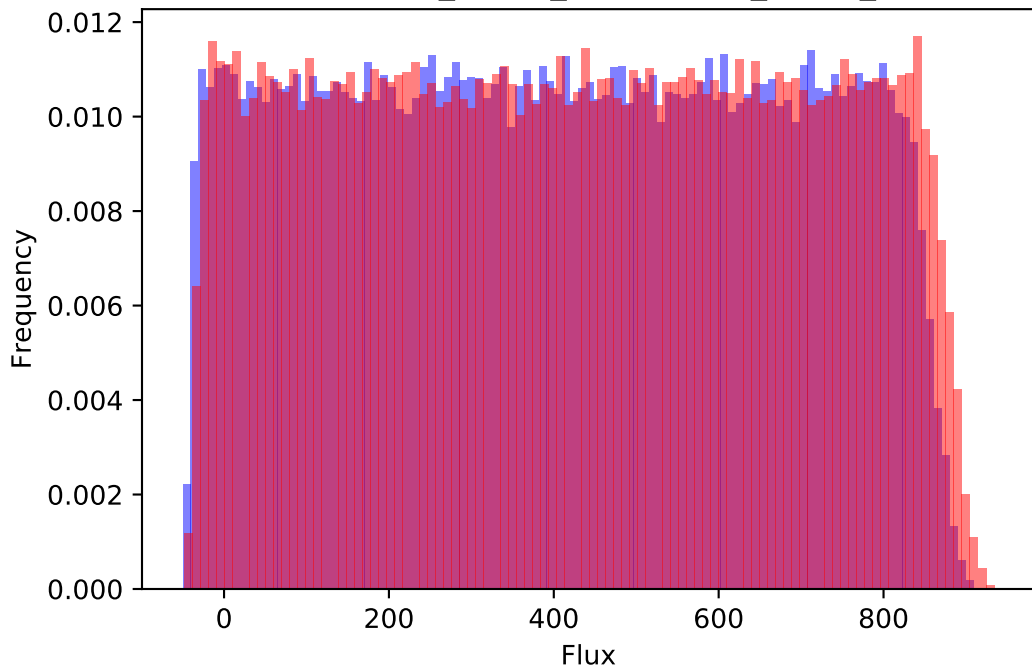
327 : AMP_h + NAD_c <=> AMP_c + NAD_h



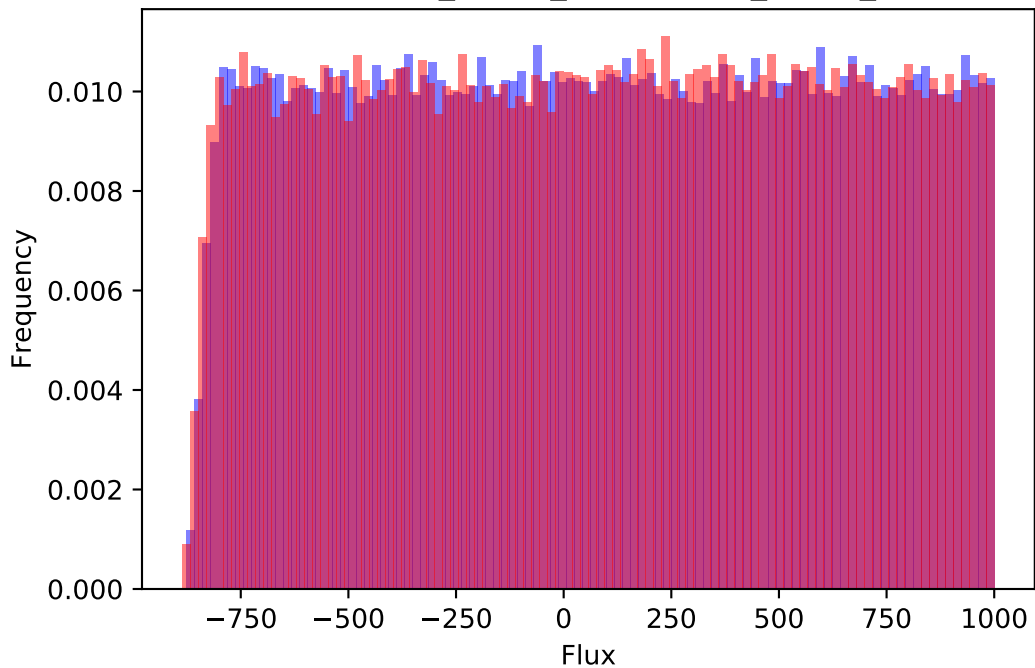
328 : $\text{ADP}_h + \text{NAD}_c \rightleftharpoons \text{ADP}_c + \text{NAD}_h$



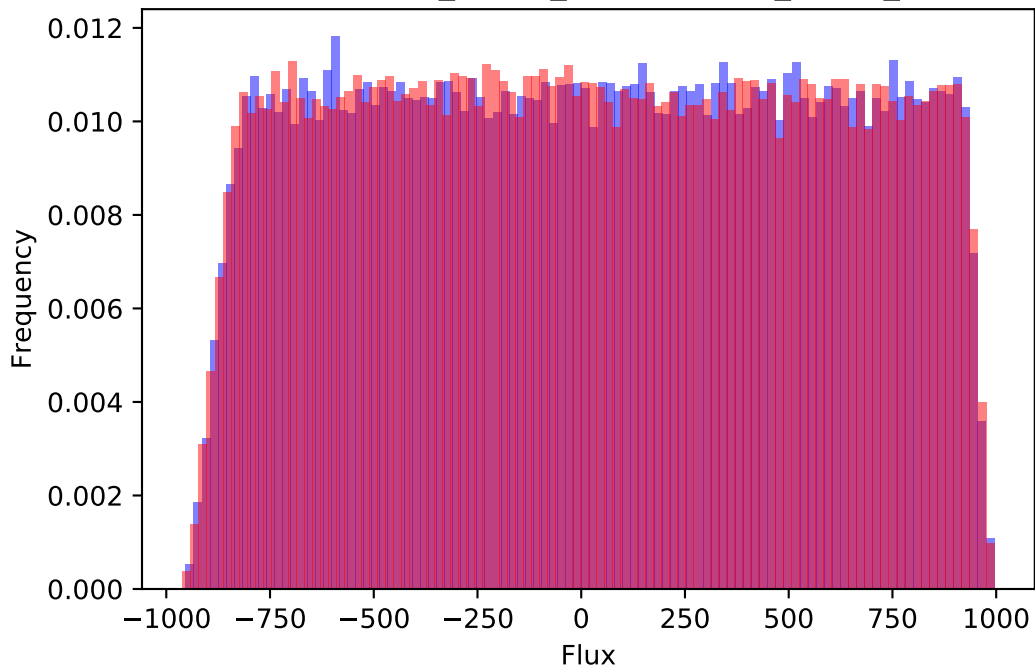
329 : $\text{PGA}_h + \text{Pi}_c \leq \text{PGA}_c + \text{Pi}_h$



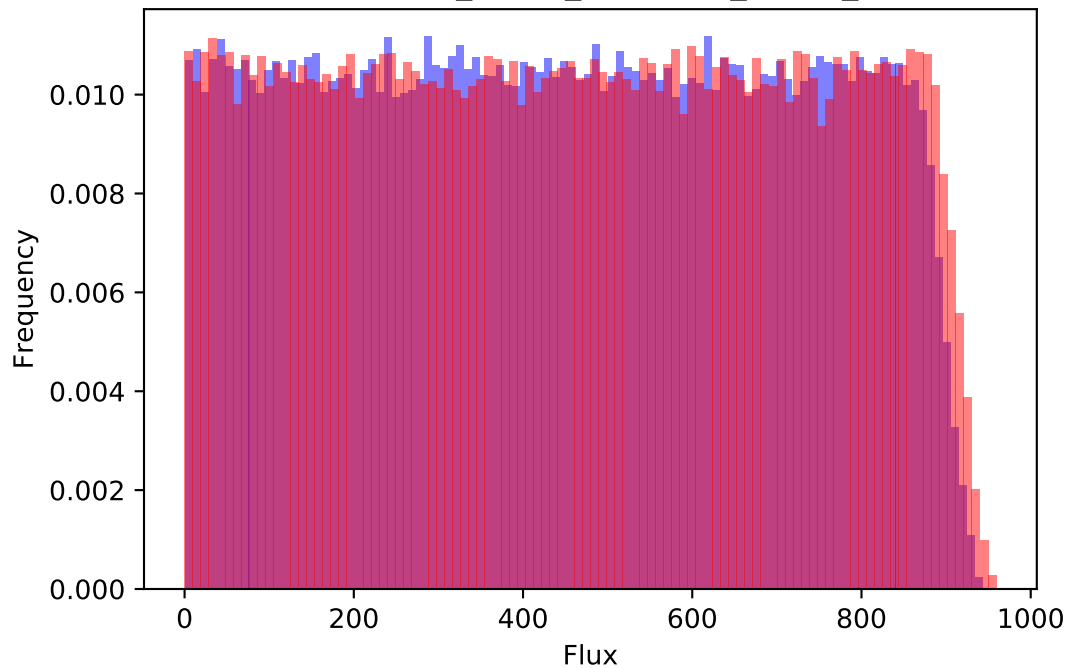
330 : $\text{GAP}_h + \text{Pi}_c \leq \text{GAP}_c + \text{Pi}_h$



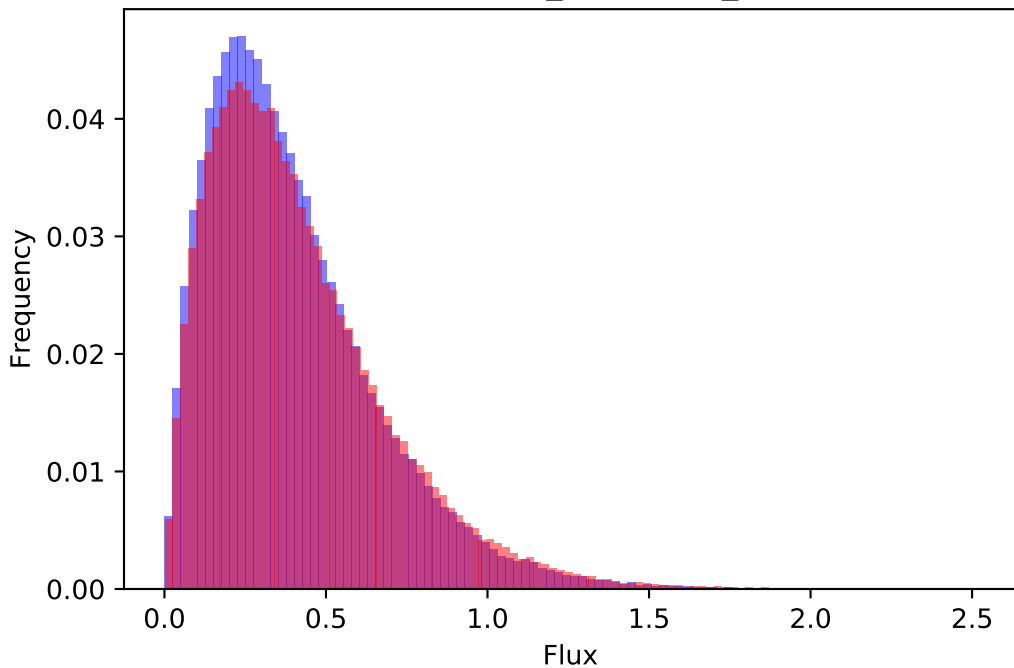
331 : DHAP_h + Pi_c <=> DHAP_c + Pi_h



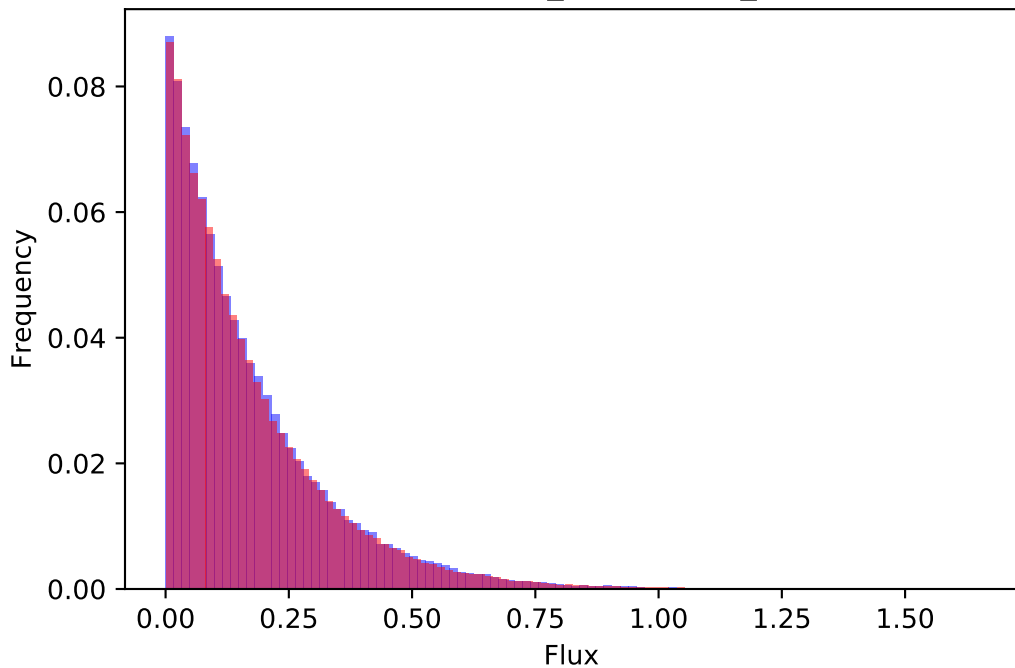
332 : PEP_c + Pi_h --> PEP_h + Pi_c



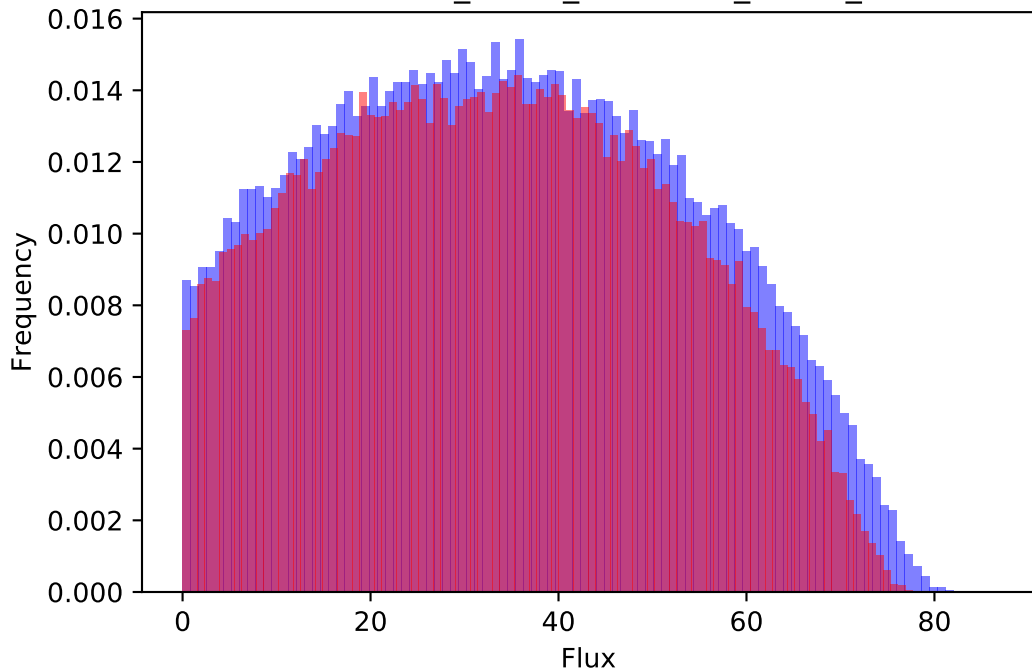
333 : GCA_h --> GCA_c



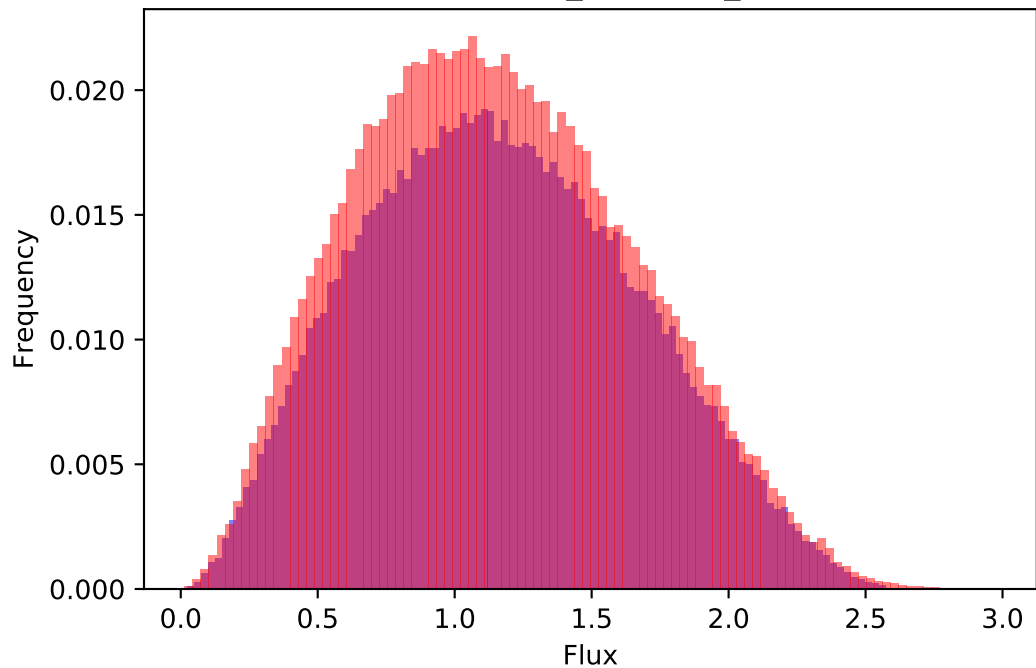
334 : GCEA_c --> GCEA_h



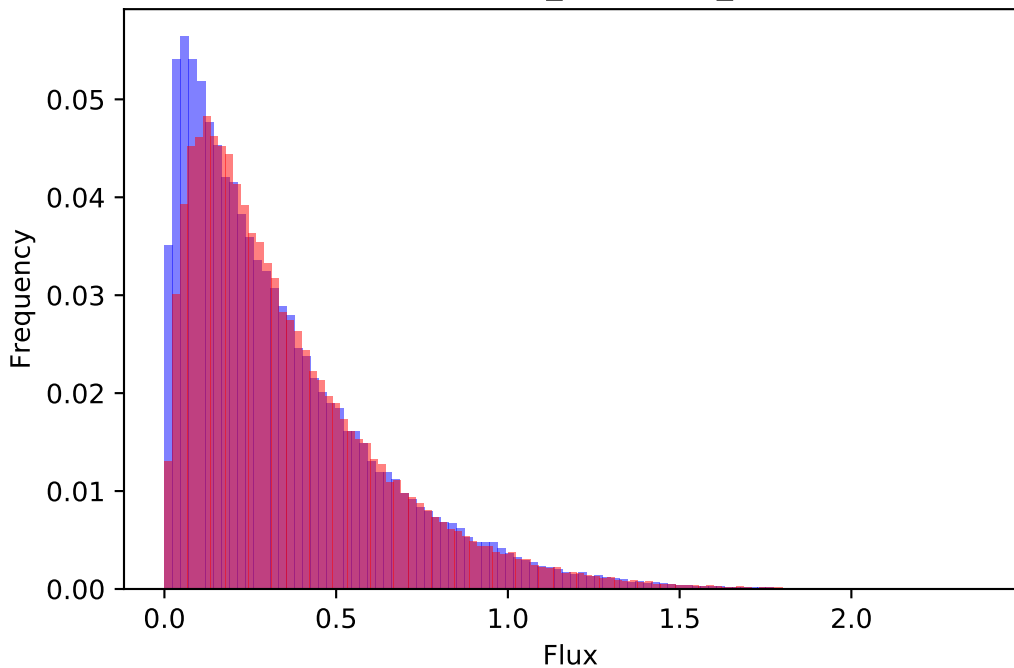
335 : G6P_c + Pi_h --> G6P_h + Pi_c



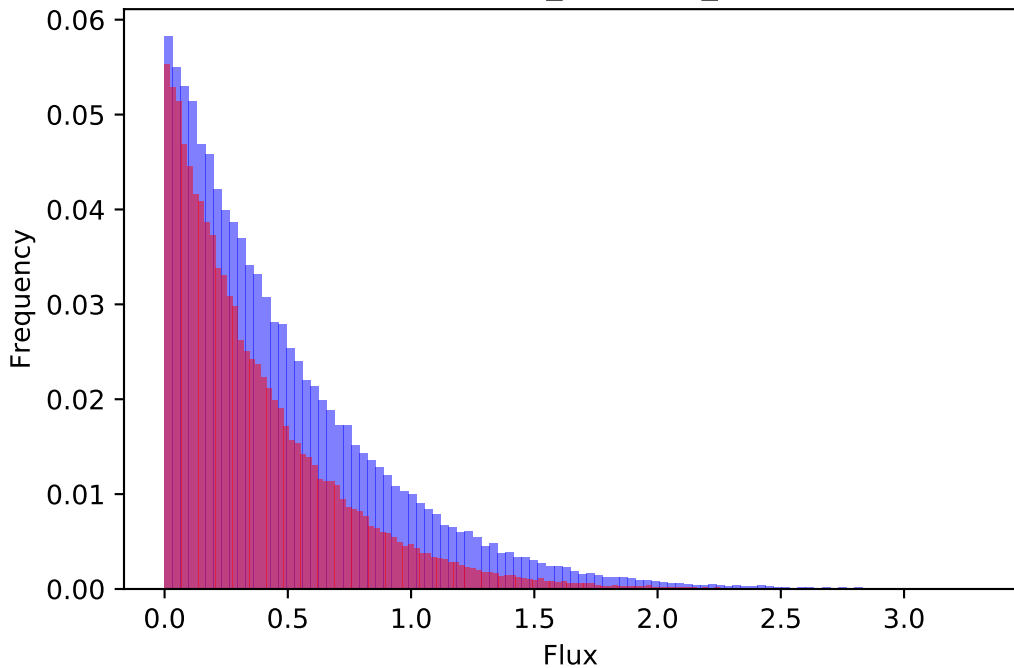
336 : Glc_h --> Glc_c



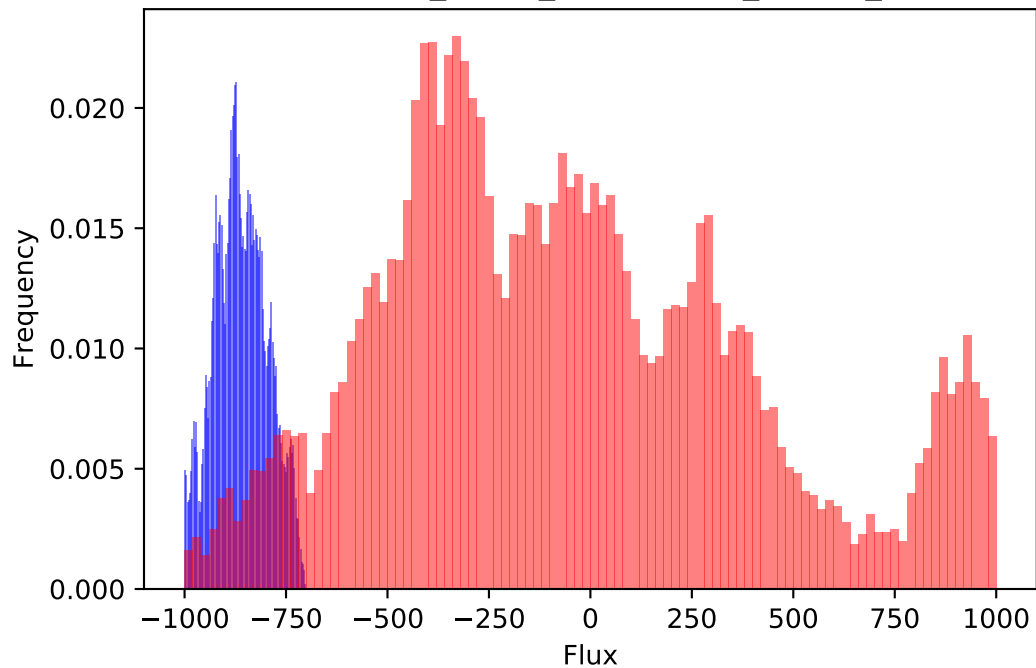
337 : Mas_h --> Mas_c



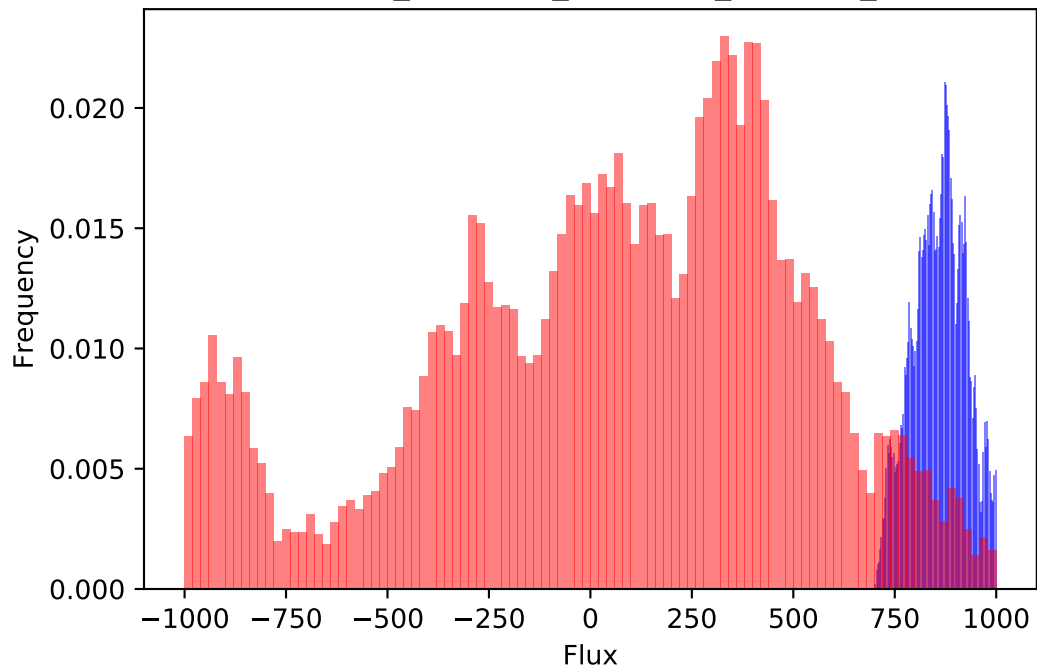
338 : Rib_c --> Rib_h



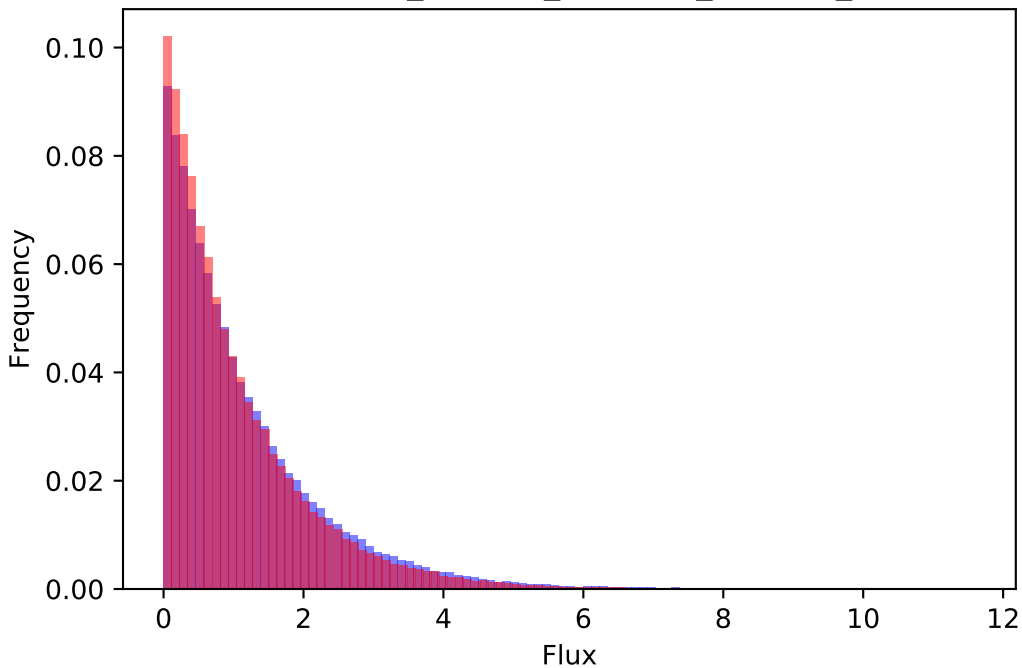
339 : Mal_c + Pi_m <=> Mal_m + Pi_c



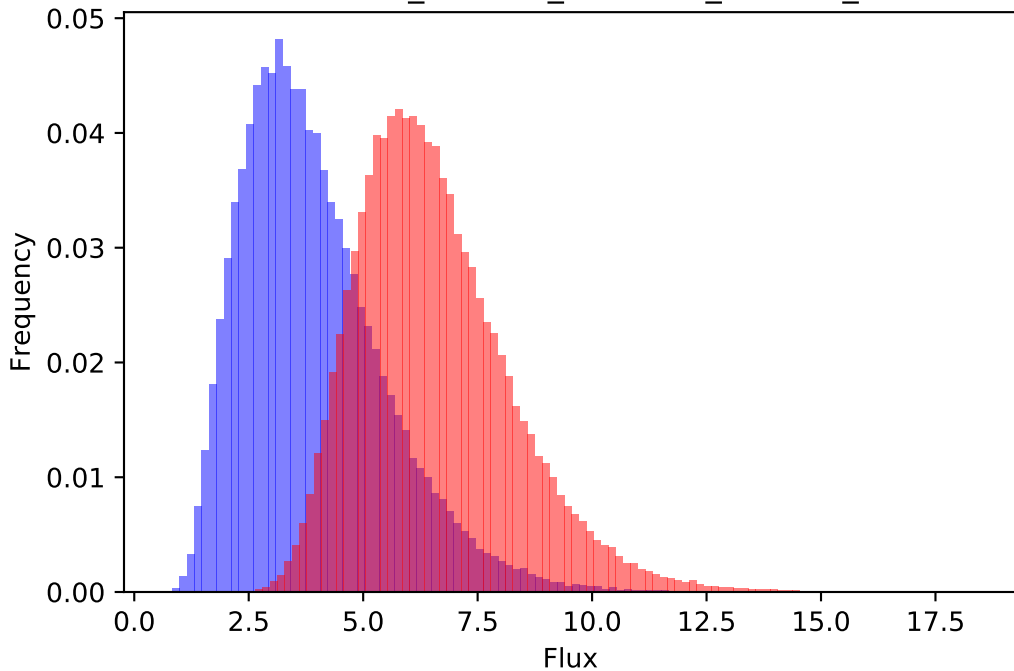
340 : $\text{Pi}_m + \text{SCA}_c \leq \text{Pi}_c + \text{SCA}_m$



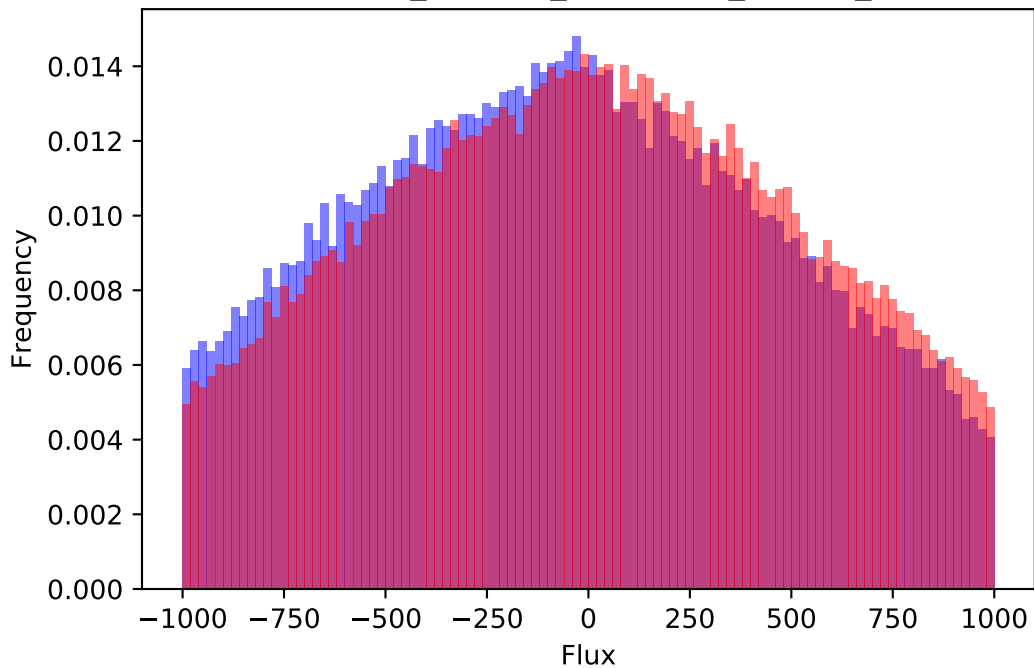
341 : KG_c + Mal_h --> KG_h + Mal_c



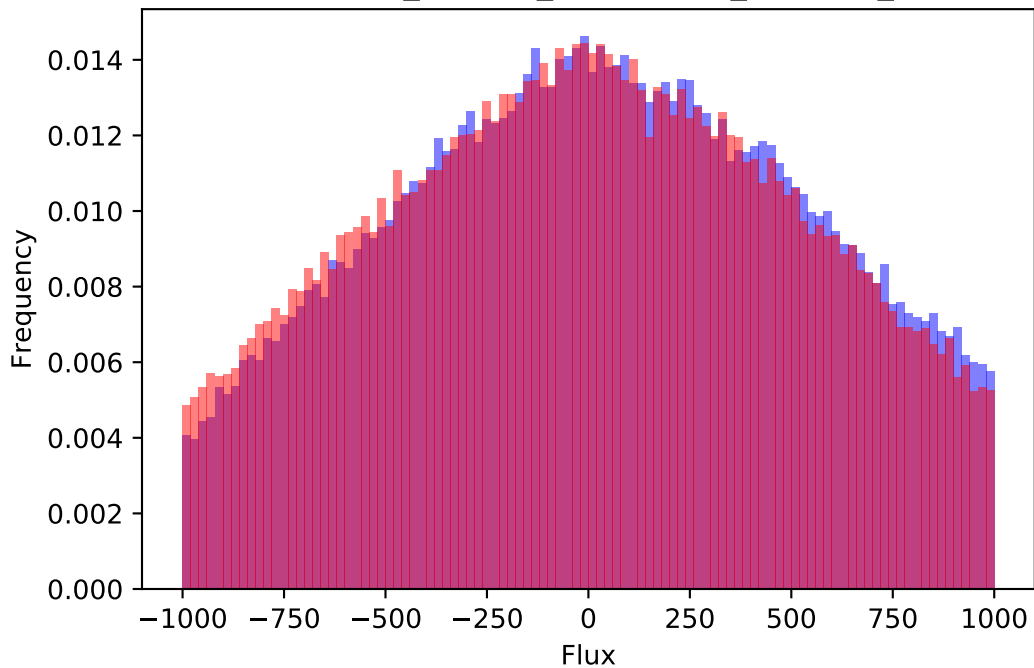
342 : Glu_h + Mal_c --> Glu_c + Mal_h



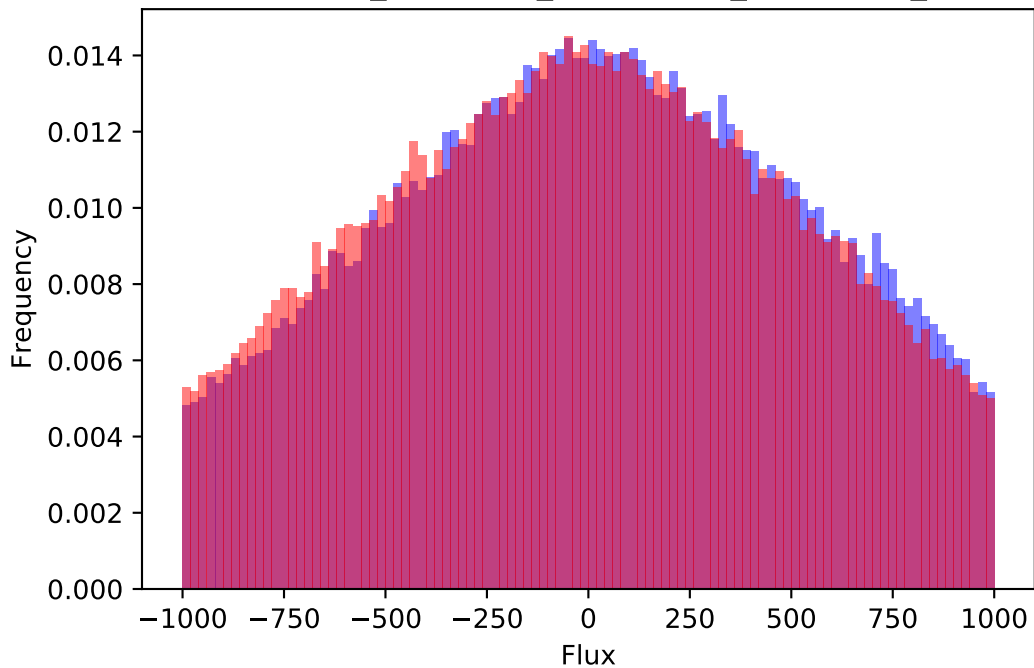
343 : Cit_m + KG_c <=> Cit_c + KG_m



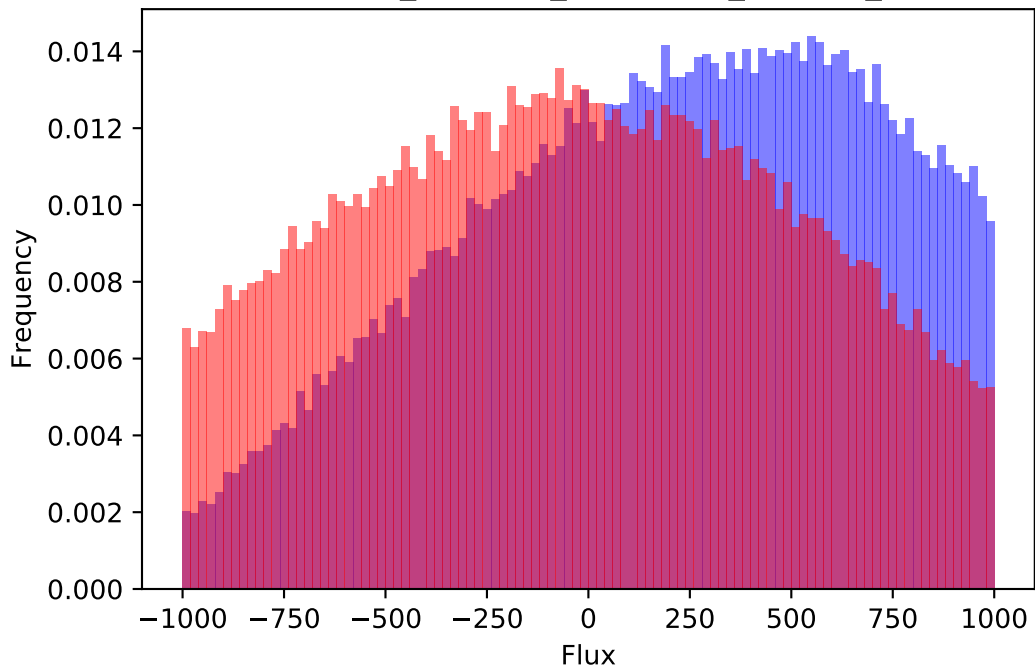
344 : KG_c + iCit_m <=> KG_m + iCit_c



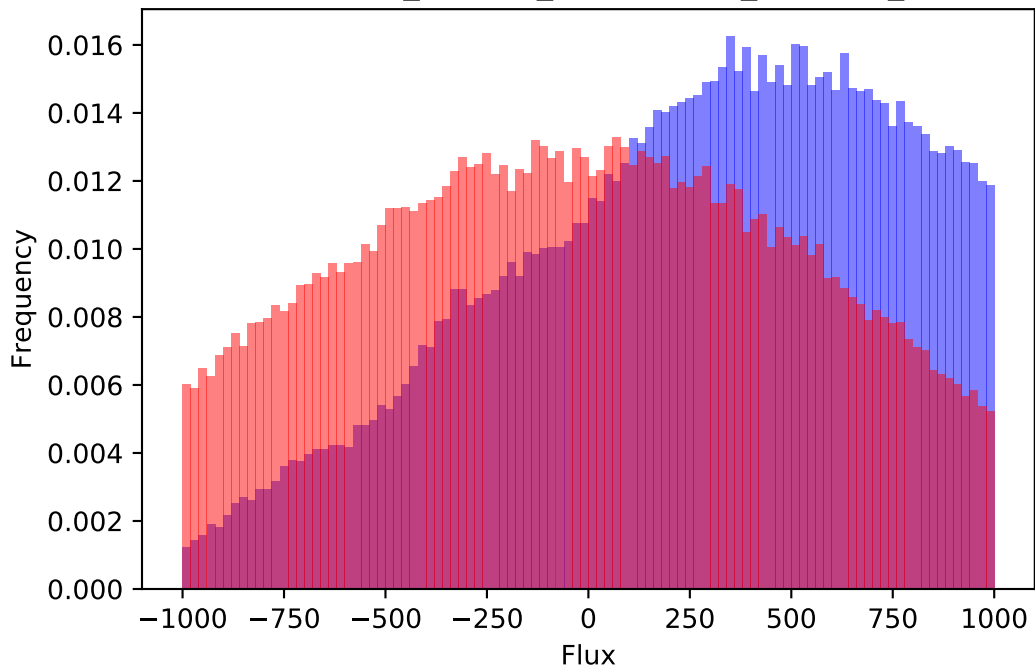
345 : KG_c + cACN_m <=> KG_m + cACN_c



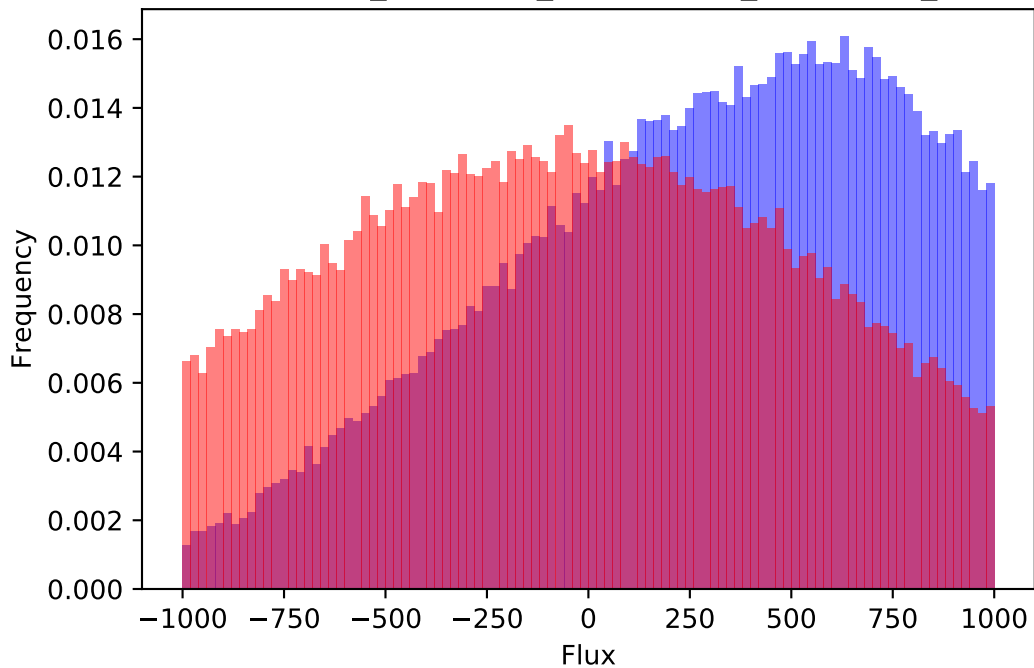
346 : Cit_m + Mal_c <=> Cit_c + Mal_m



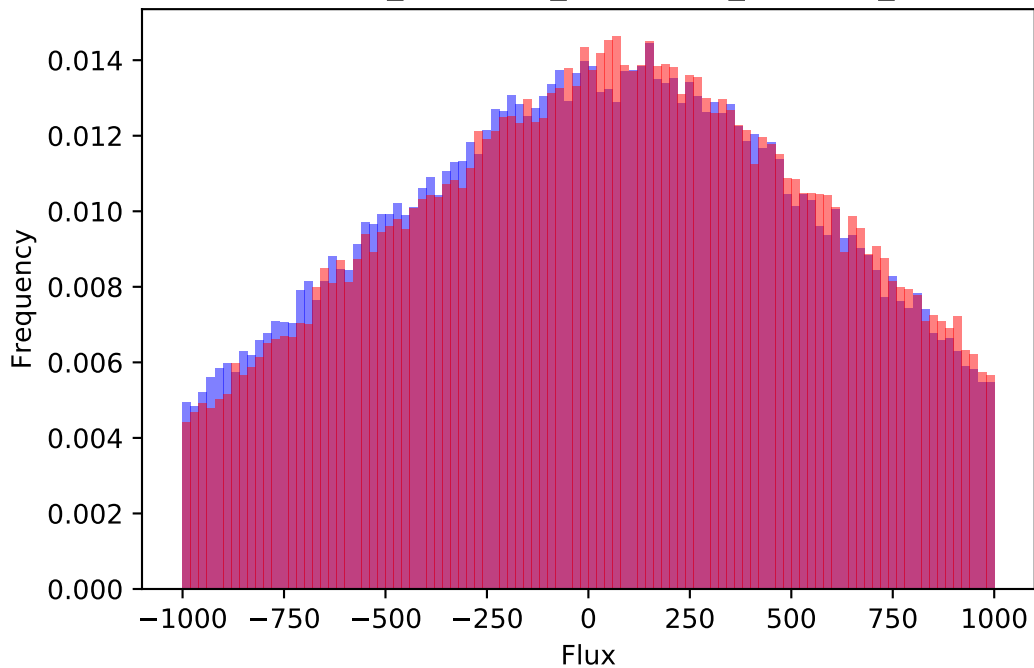
347 : Mal_c + iCit_m \rightleftharpoons Mal_m + iCit_c



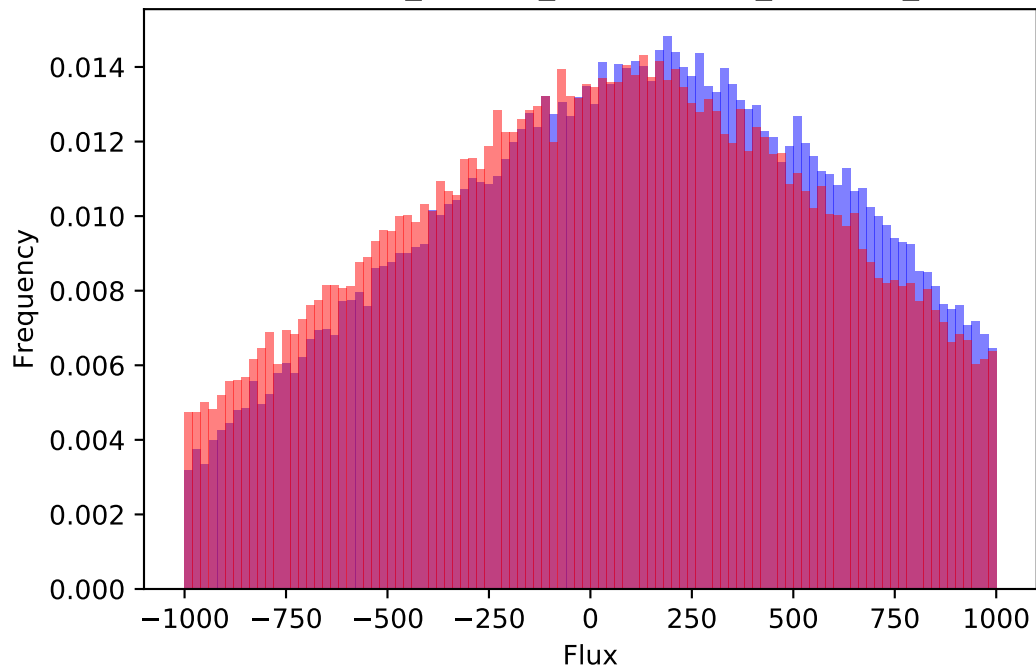
348 : Mal_c + cACN_m \leq Mal_m + cACN_c



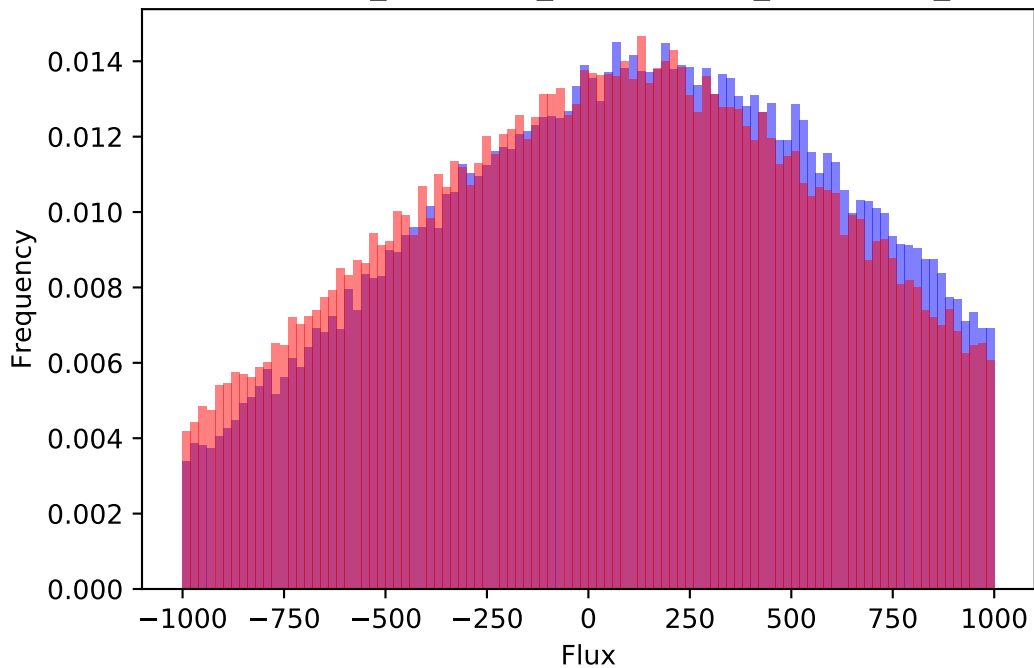
349 : Cit_m + OAA_c \leq Cit_c + OAA_m



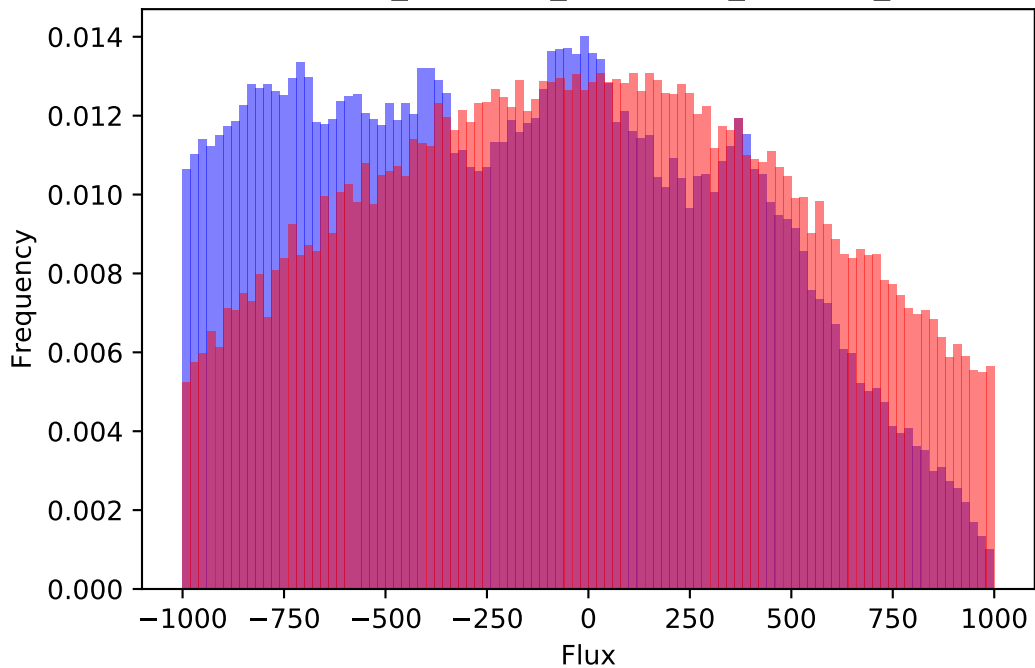
350 : OAA_c + iCit_m \rightleftharpoons OAA_m + iCit_c



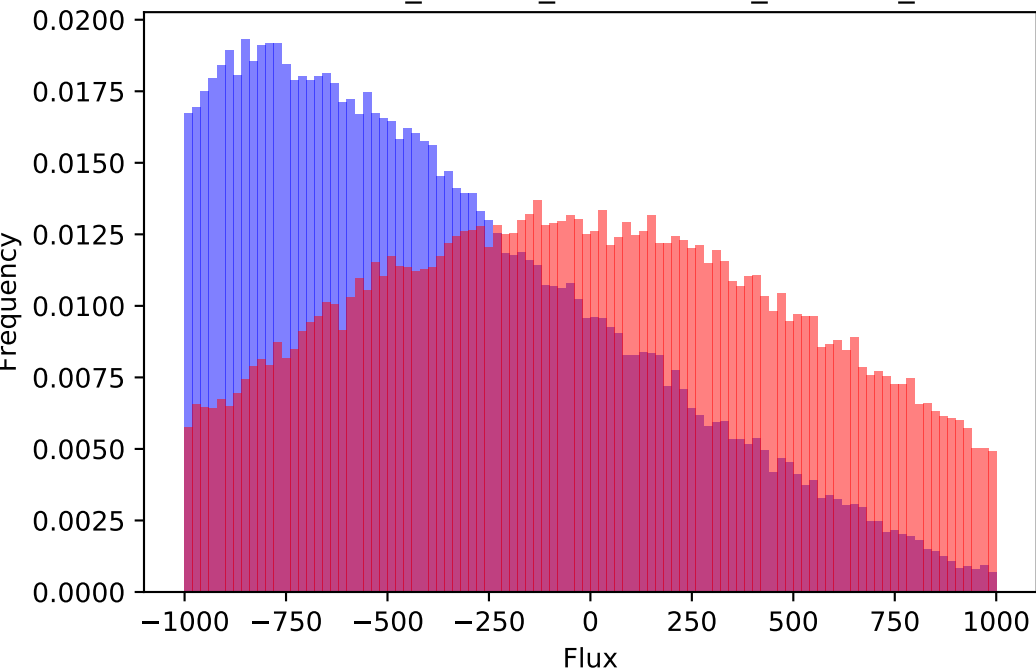
351 : OAA_c + cACN_m \leq OAA_m + cACN_c



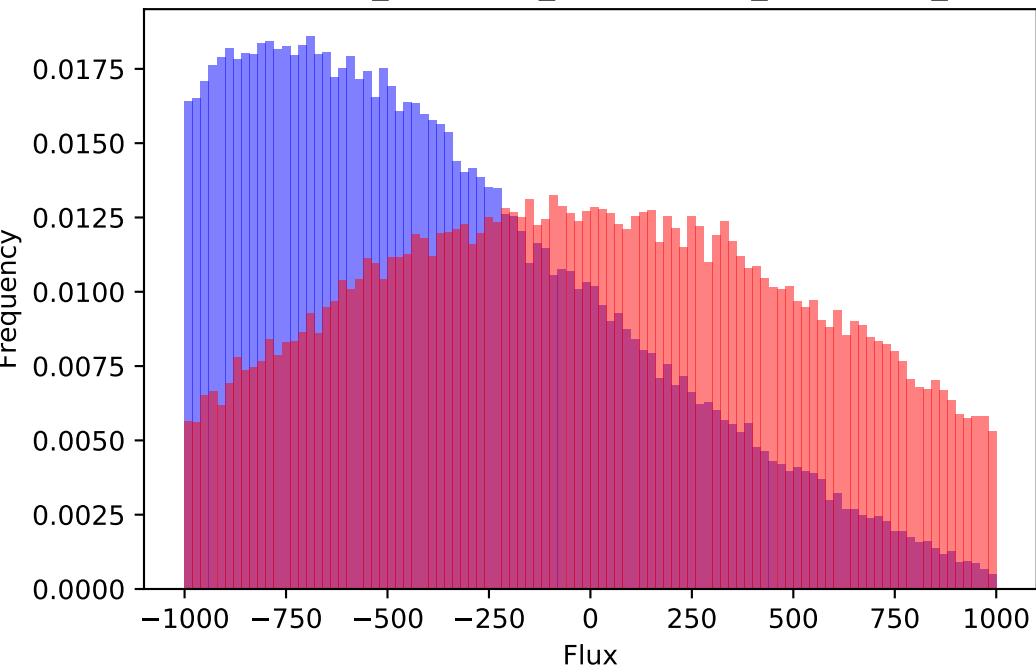
352 : Cit_m + SCA_c <=> Cit_c + SCA_m



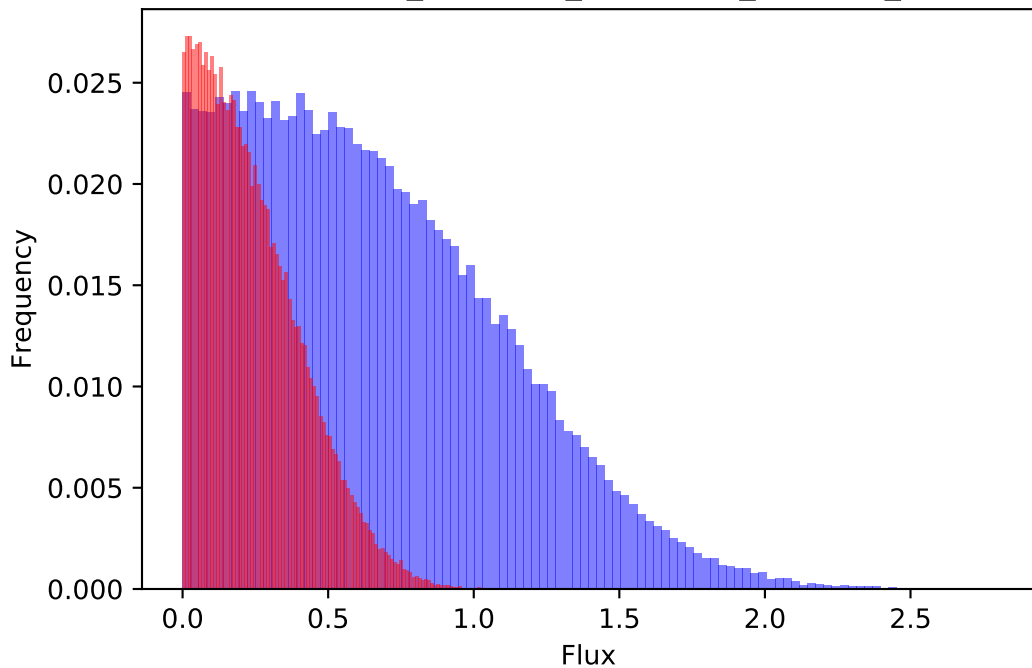
353 : SCA_c + iCit_m \rightleftharpoons SCA_m + iCit_c



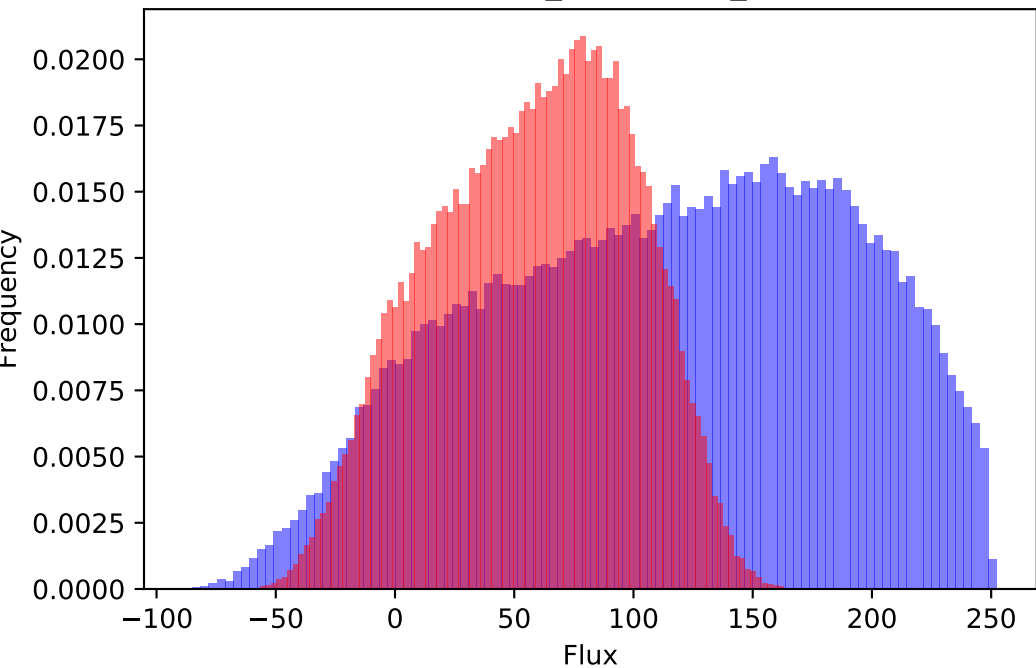
354 : SCA_c + cACN_m <=> SCA_m + cACN_c



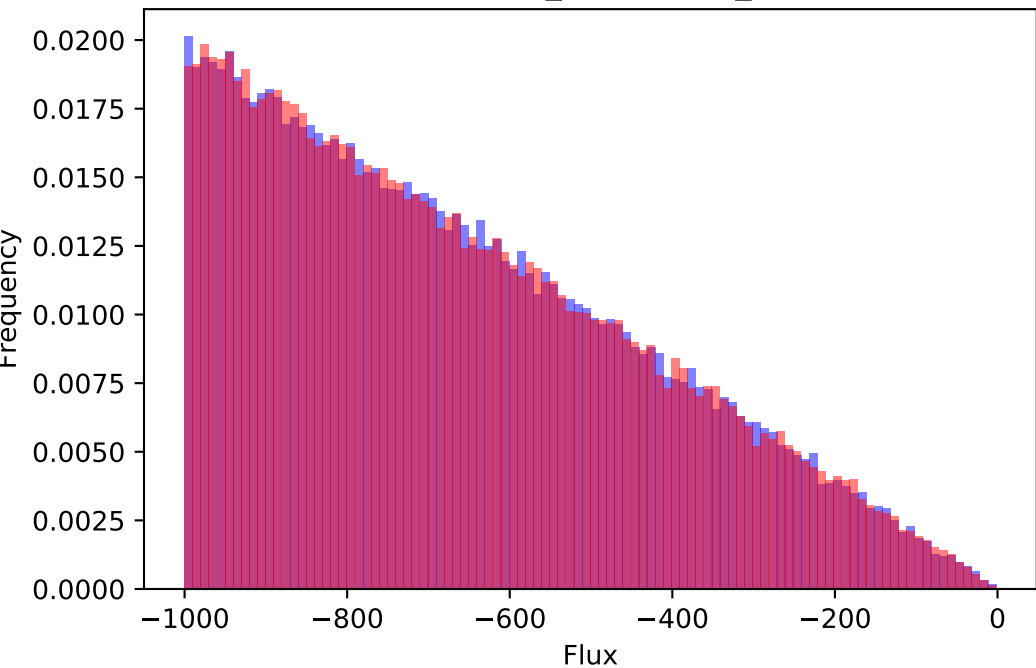
355 : Fum_m + SCA_c --> Fum_c + SCA_m



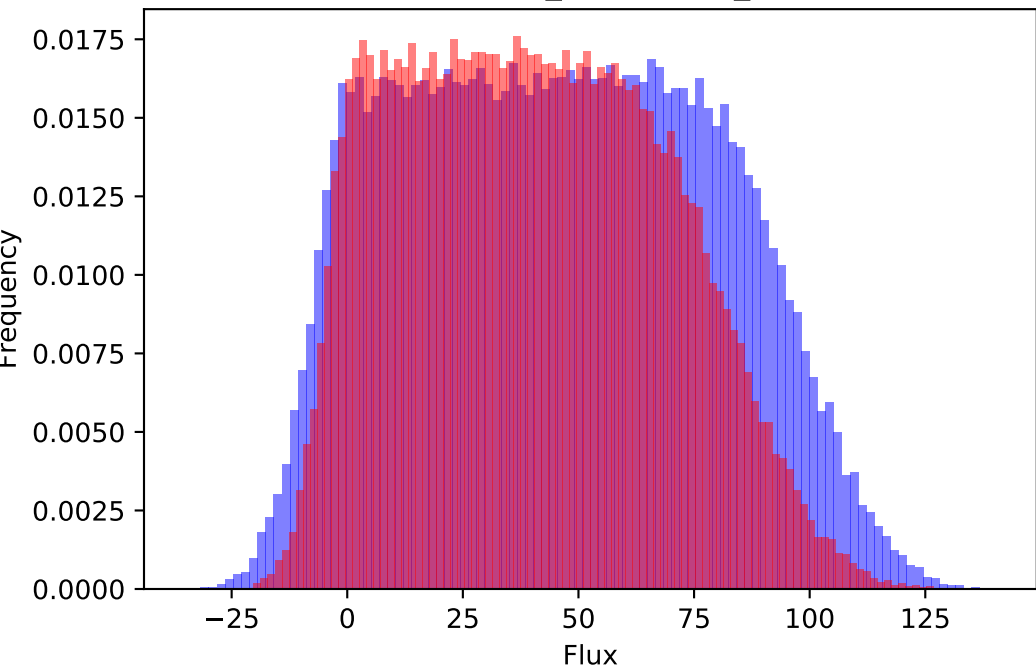
356 : Ala_c <=> Ala_m



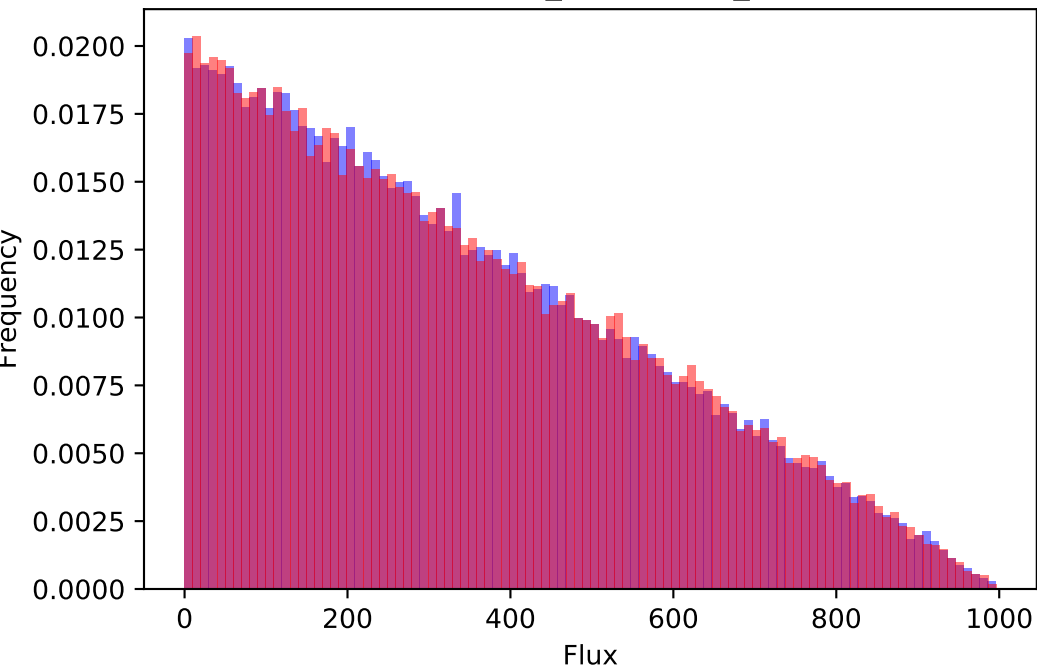
357 : Arg_c <=> Arg_m



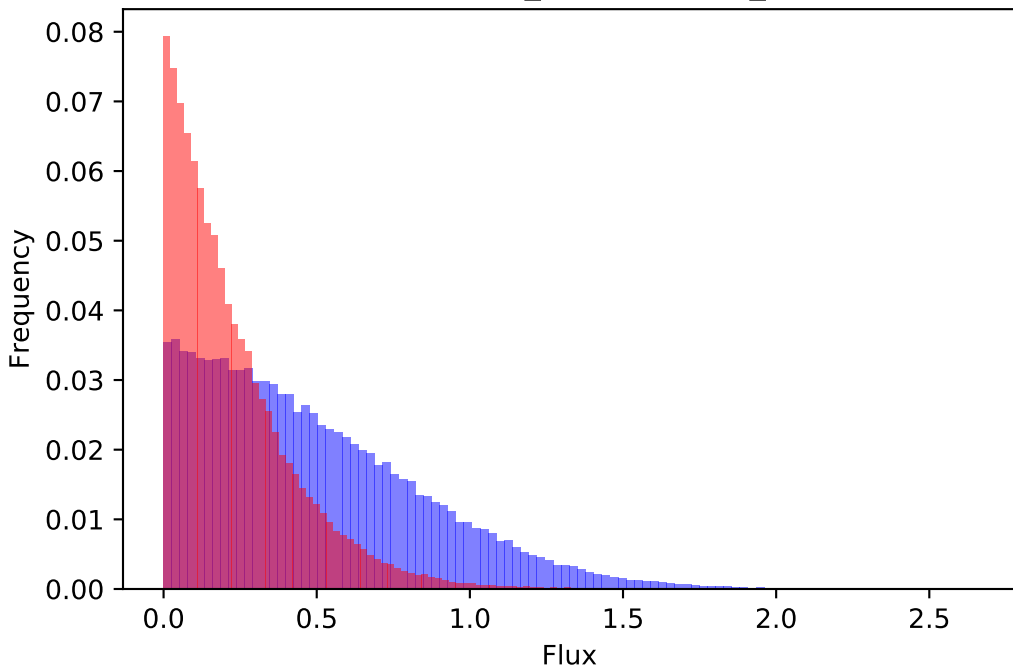
358 : Glu_c <=> Glu_m



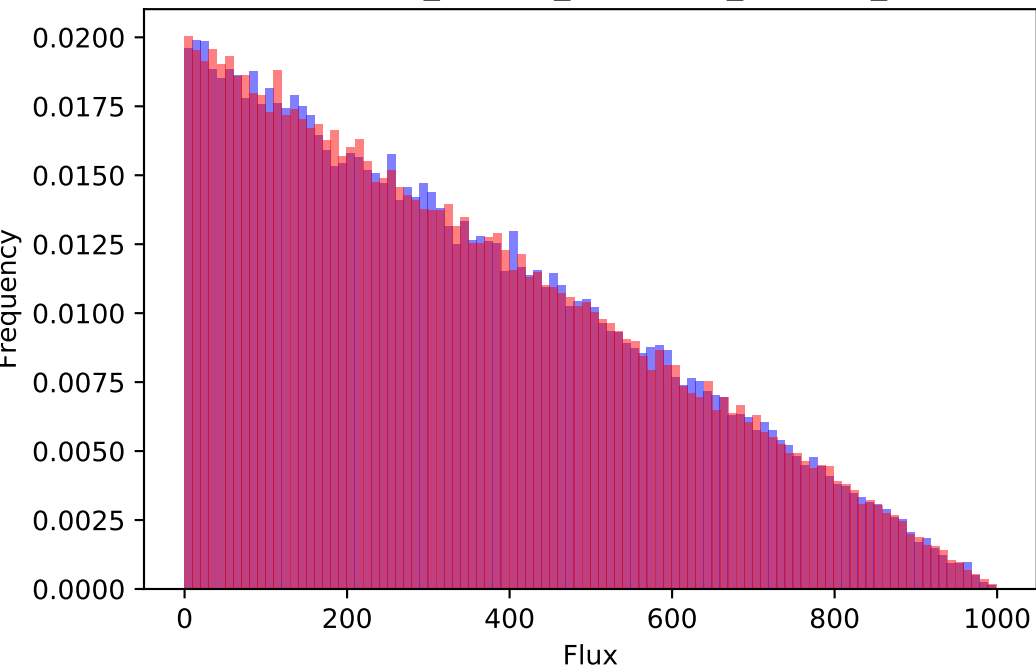
359 : Lys_c <=> Lys_m



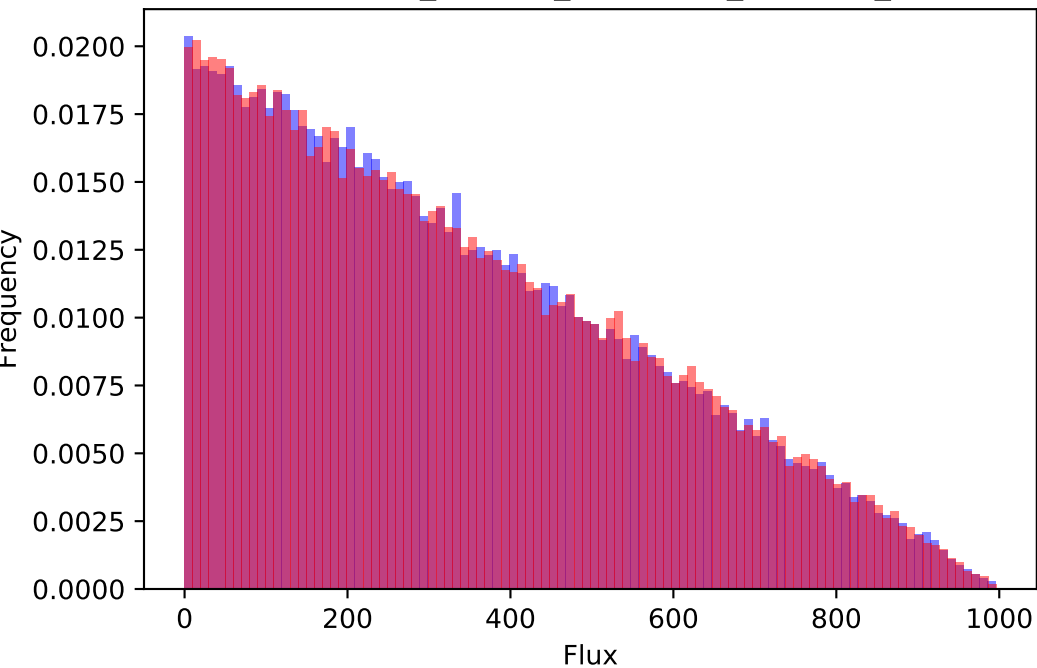
360 : GABA_c \Leftrightarrow GABA_m



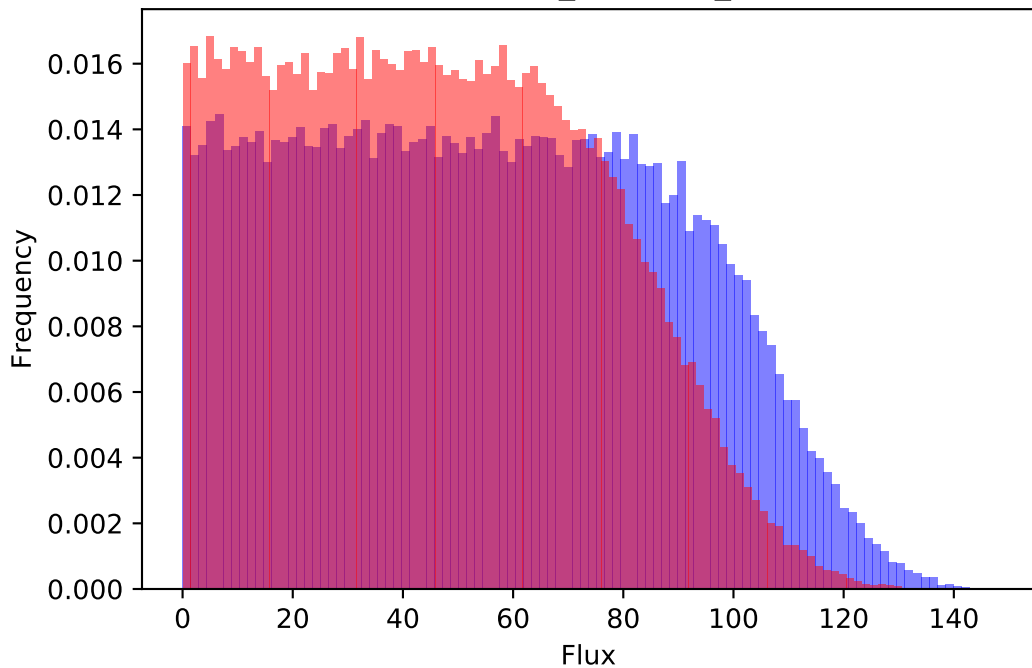
361 : Arg_c + His_m --> Arg_m + His_c



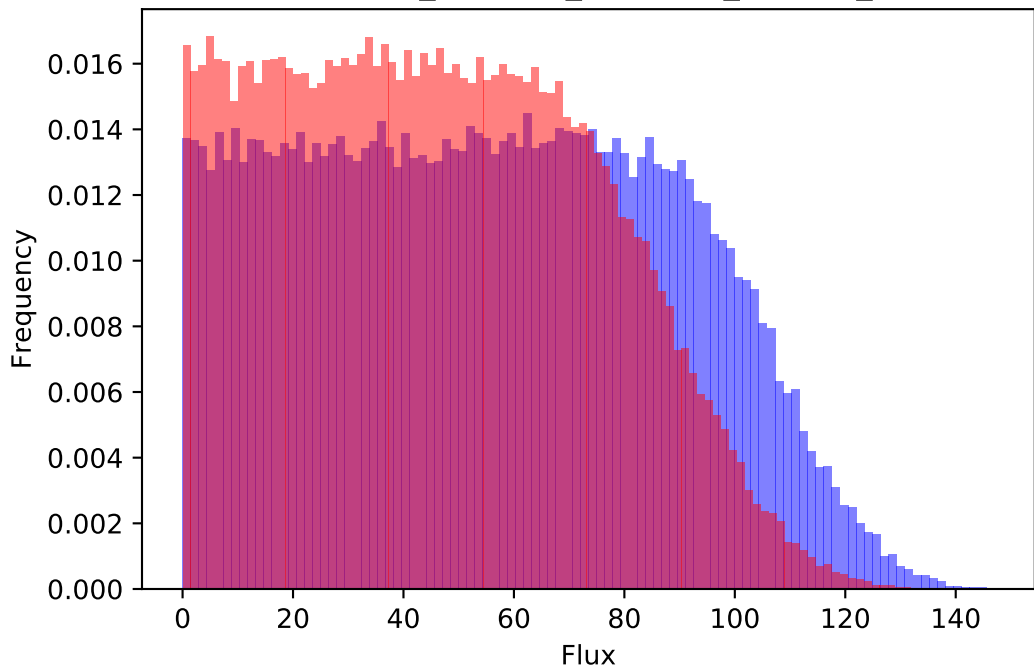
362 : Arg_c + Lys_m --> Arg_m + Lys_c



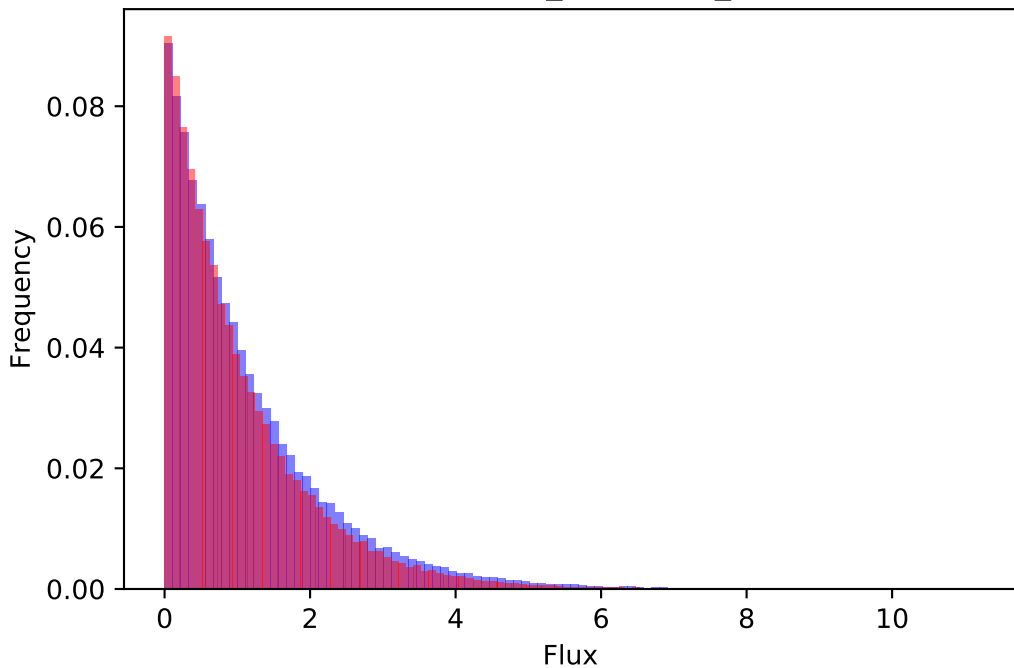
363 : Pro_c --> Pro_m



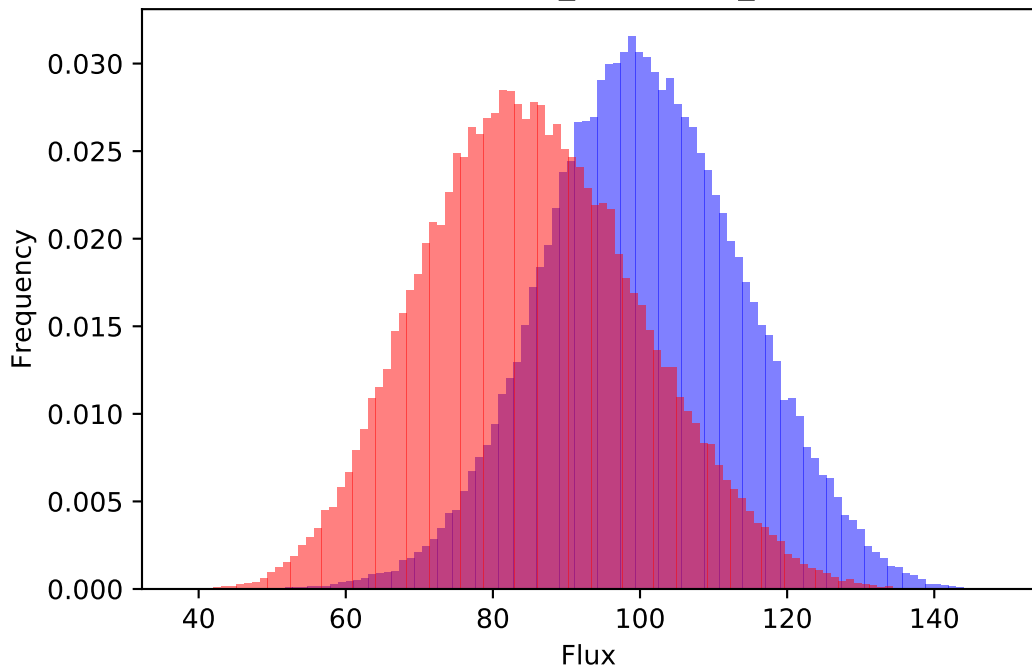
364 : Glu_m + Pro_c --> Glu_c + Pro_m



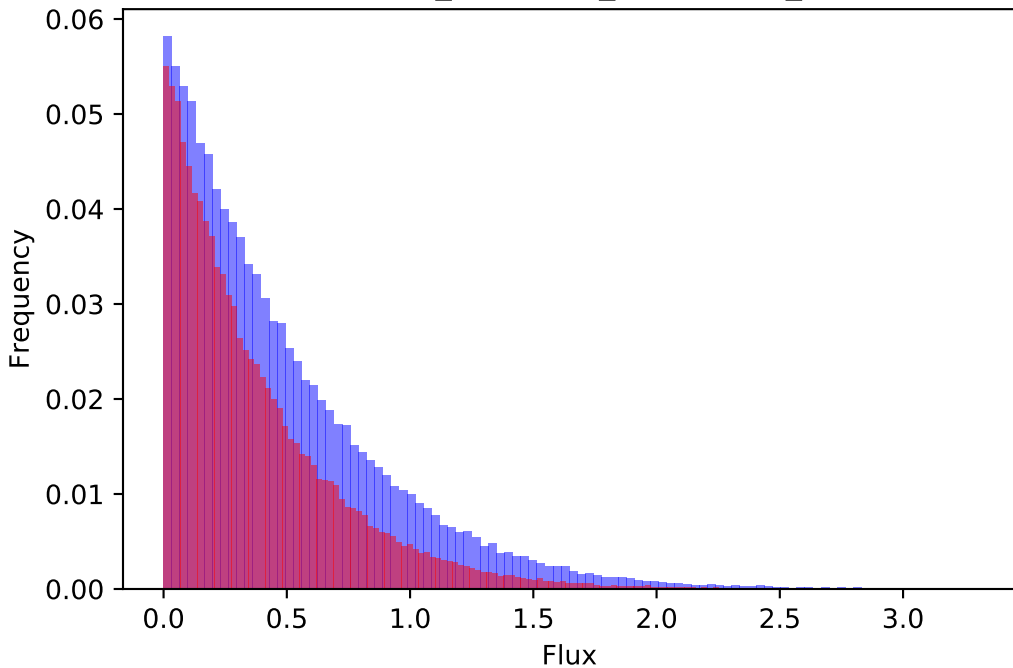
365 : P5C_h --> P5C_c



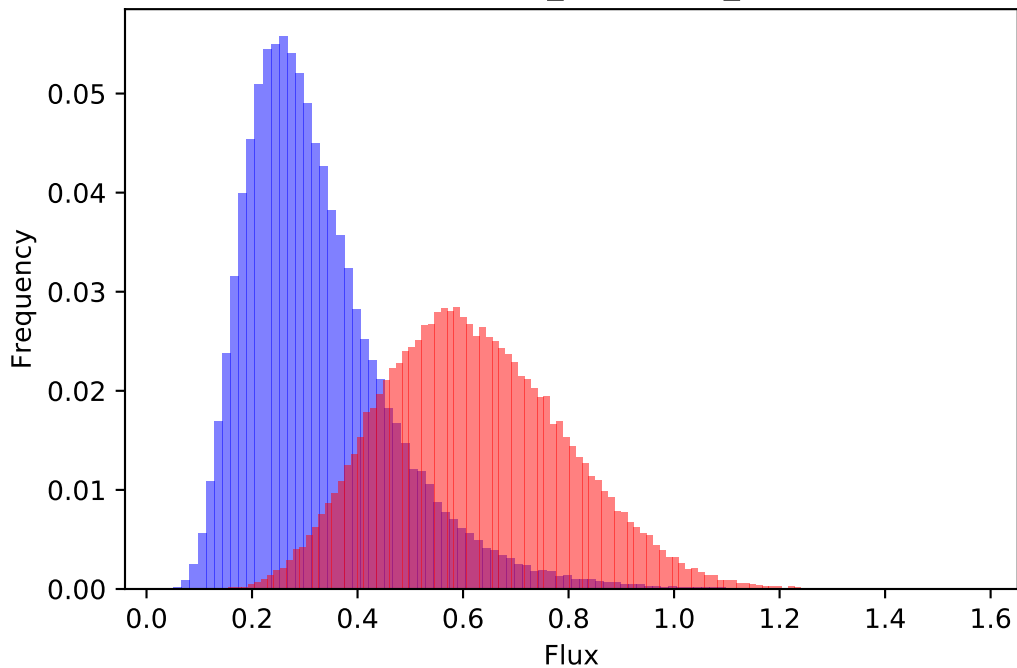
366 : P5C_m --> P5C_c



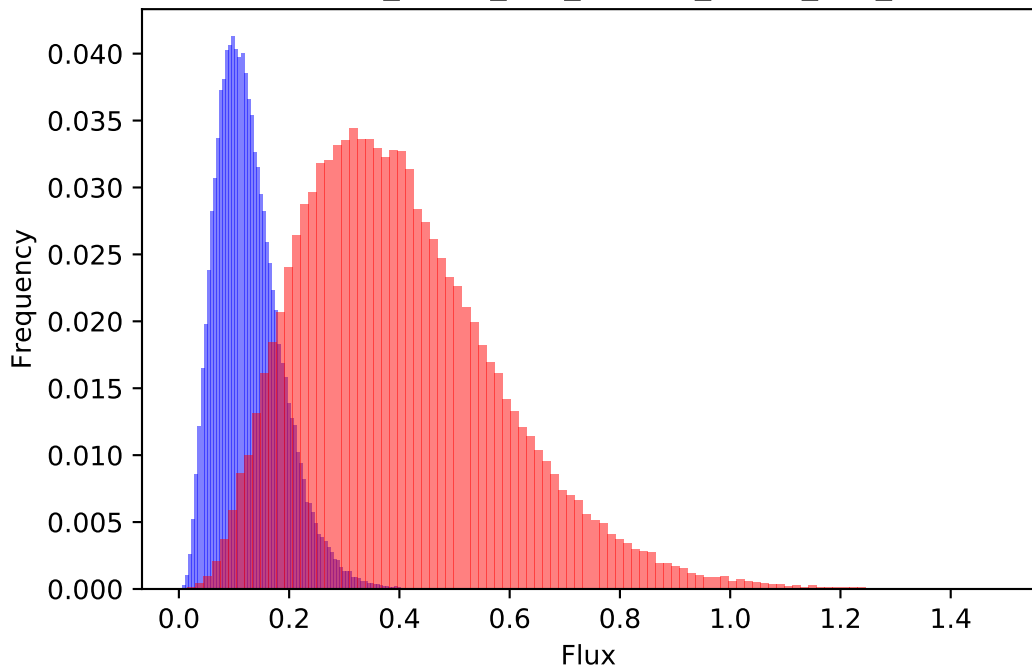
367 : H_h + PRPP_h --> PRPP_c



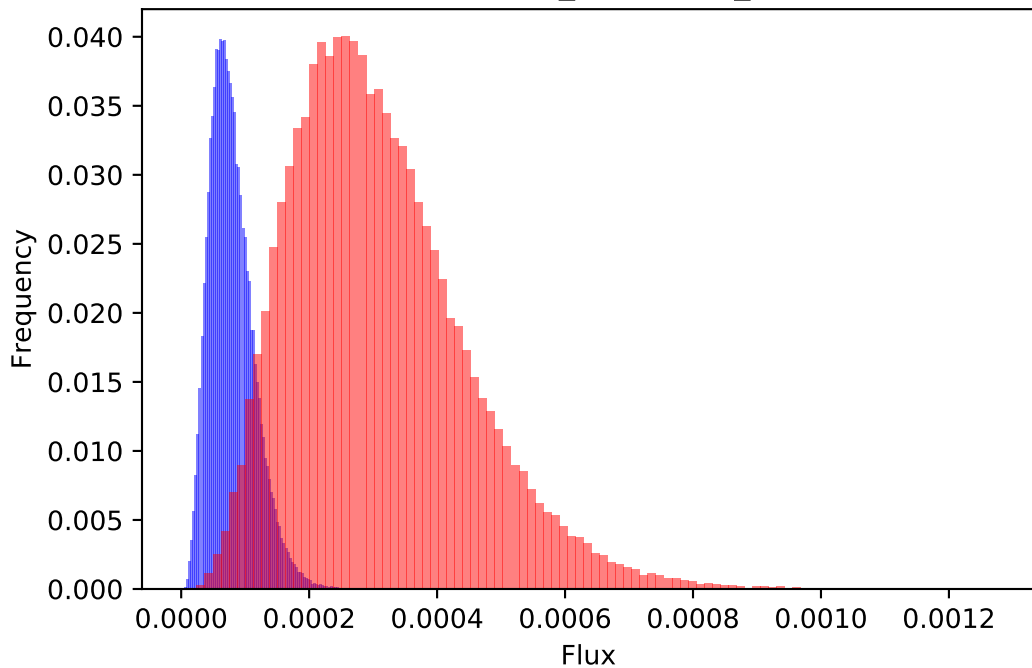
368 : Fum_h --> Fum_c



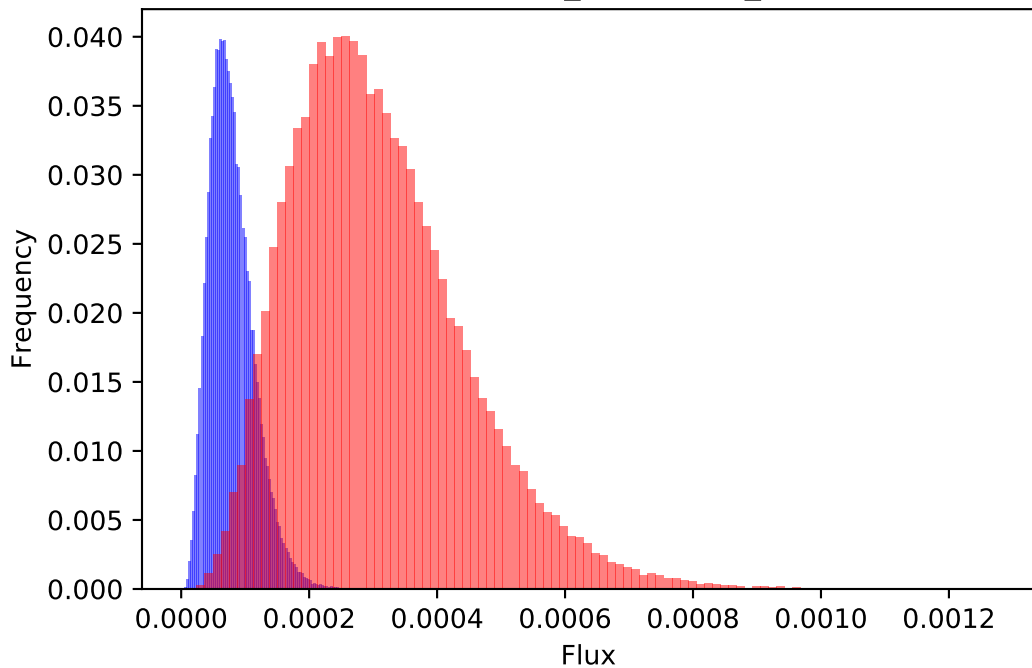
369 : H_DASH_Cys_h --> H_DASH_Cys_c



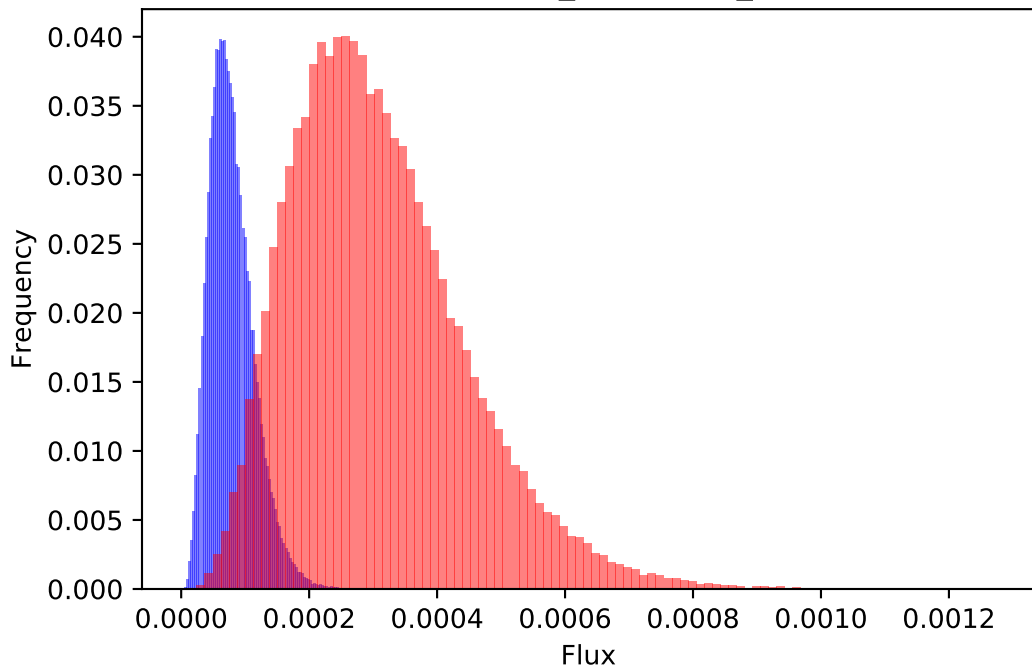
370 : orO_m --> orO_c



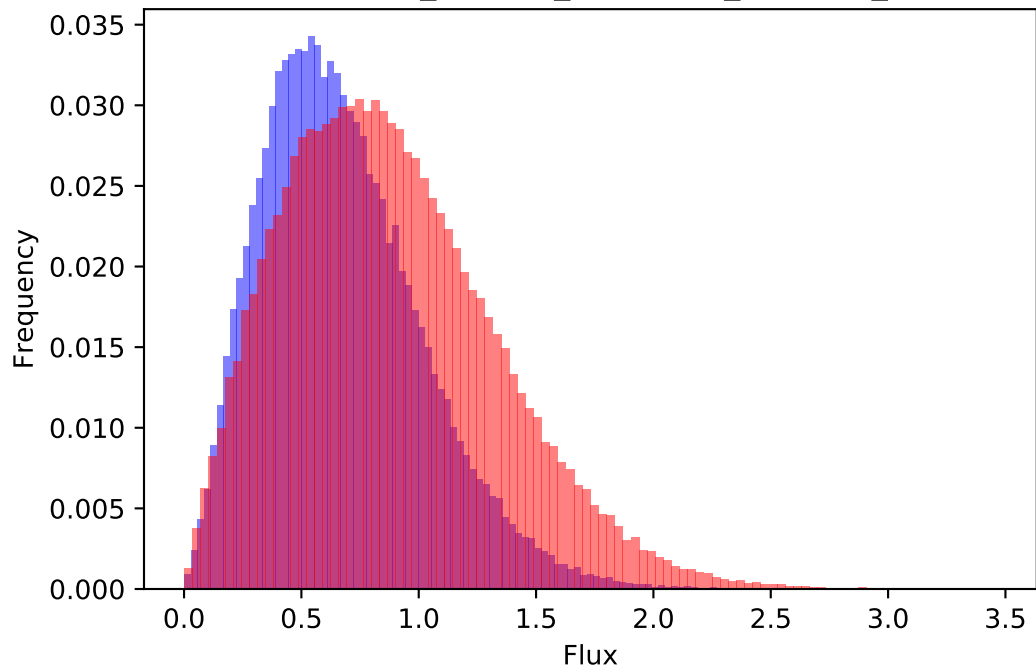
371 : DHO_h --> DHO_c



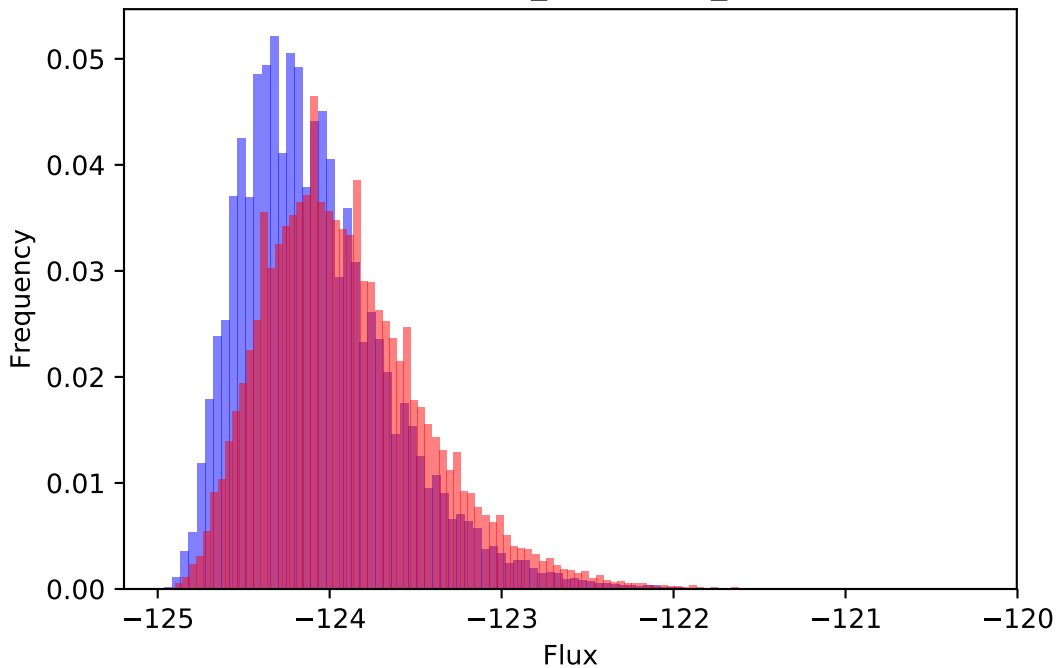
372 : DHO_c --> DHO_m



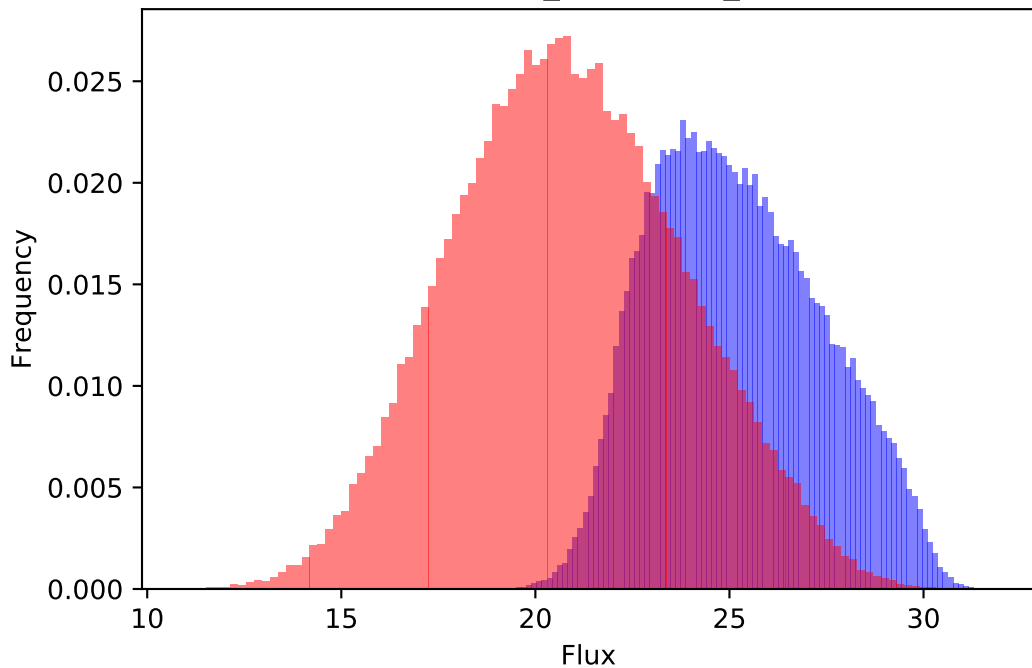
373 : Gly_c + Ser_m --> Gly_m + Ser_c



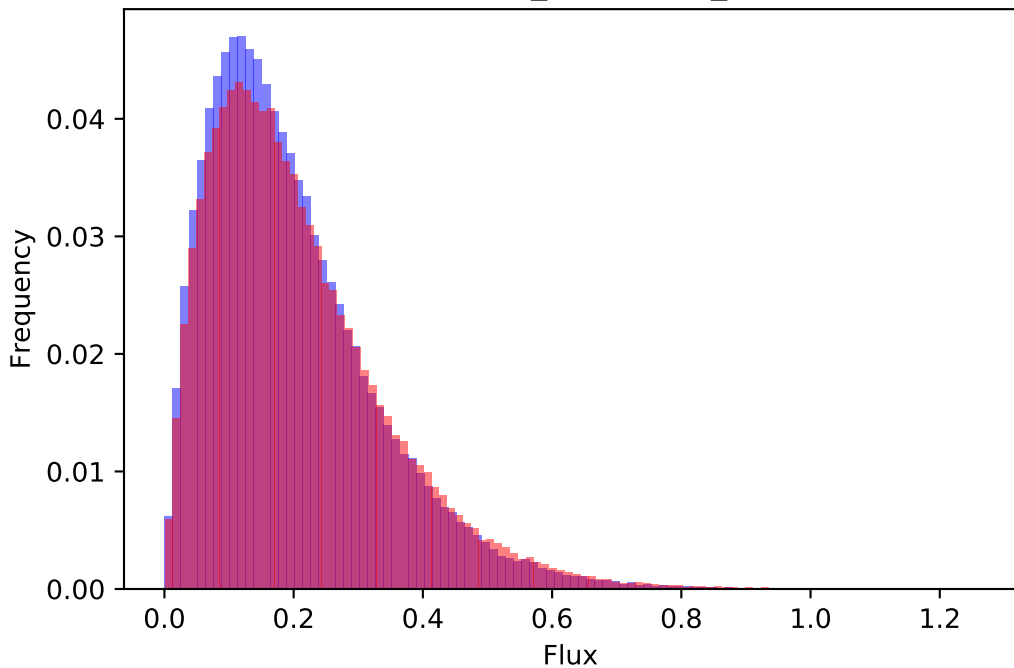
374 : O2_c <=> O2_h



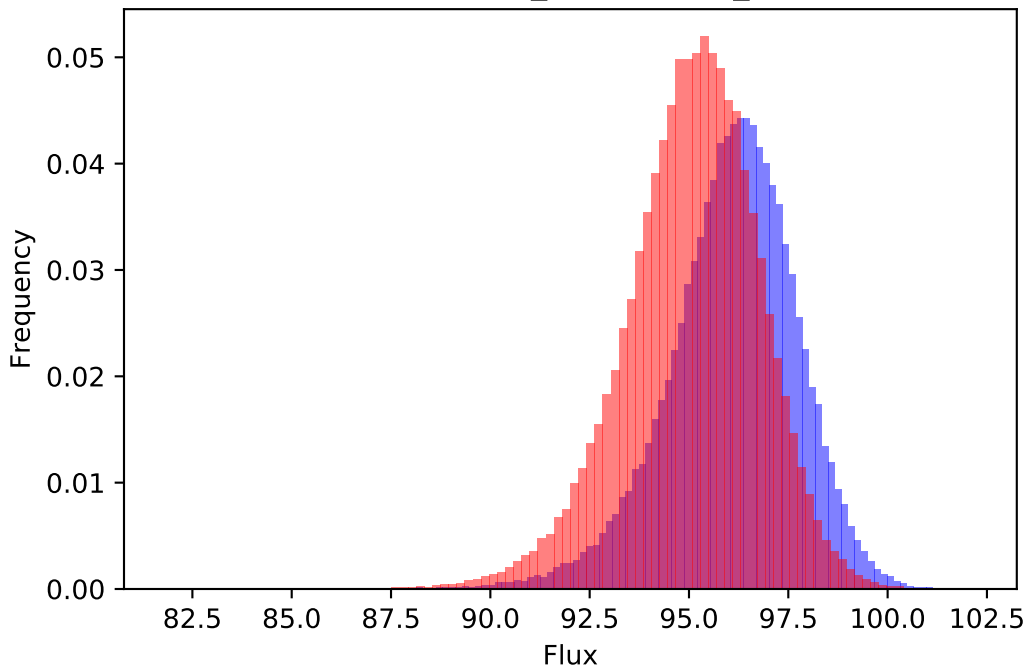
375 : O2_c <=> O2_m



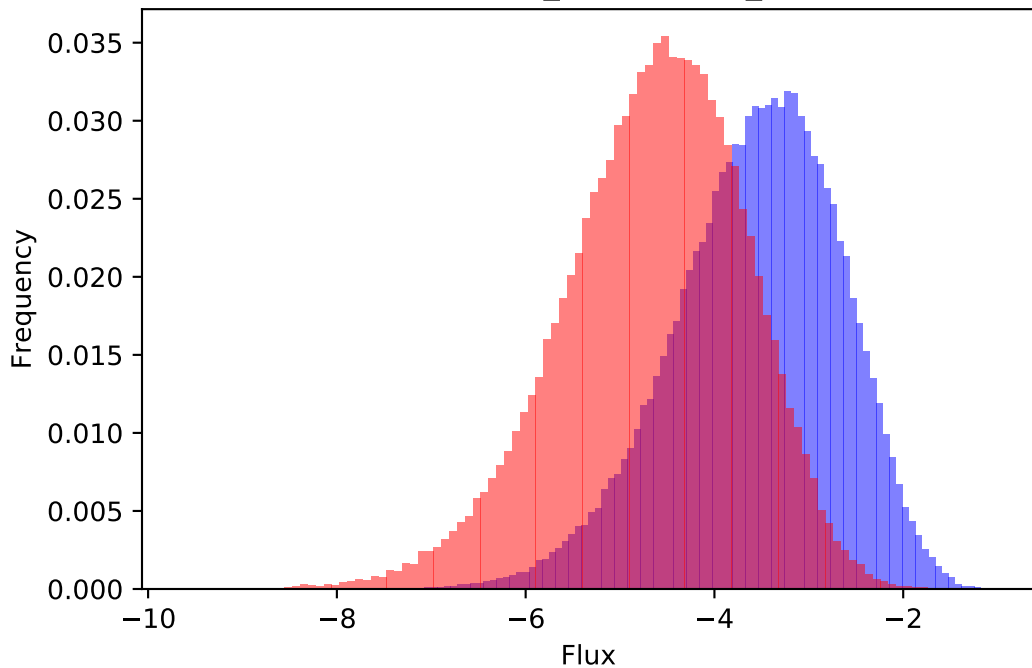
376 : O2_c <=> O2_p



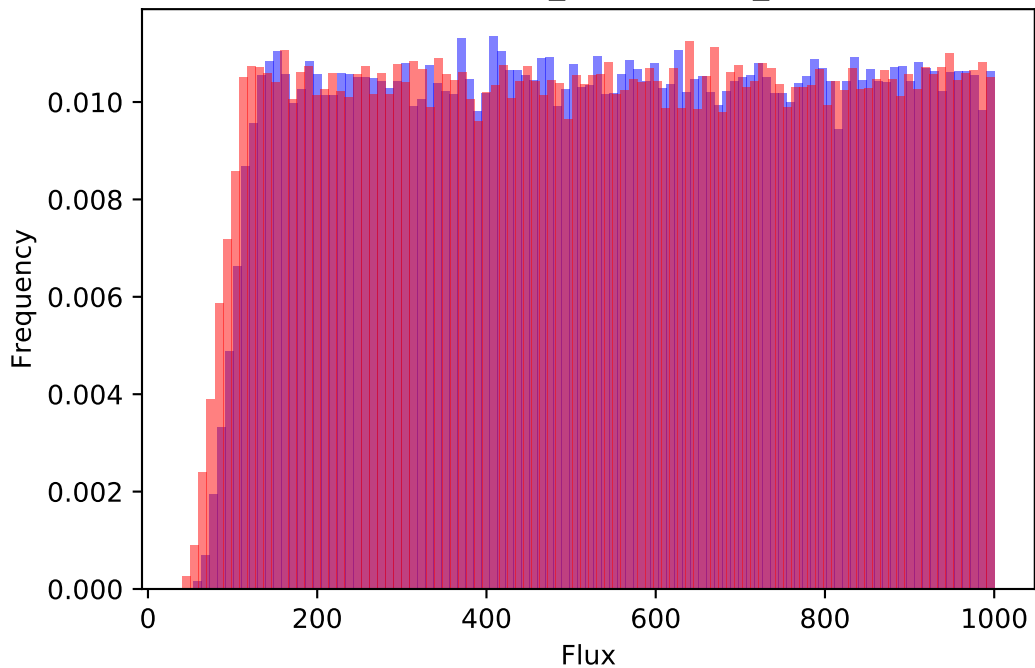
377 : CO2_c <=> CO2_h



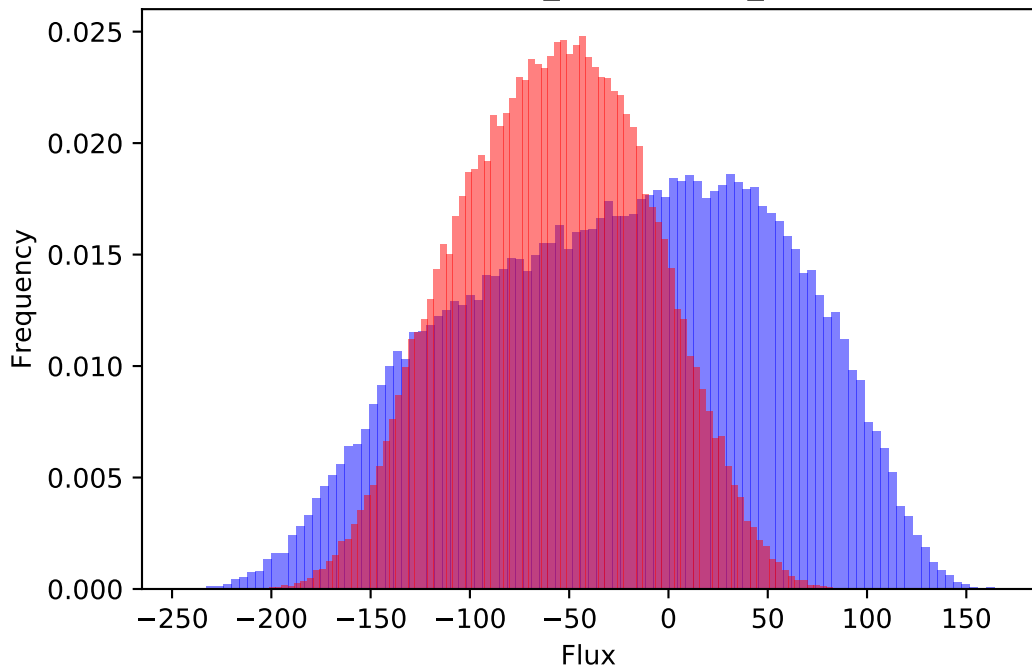
378 : CO2_c <=> CO2_m



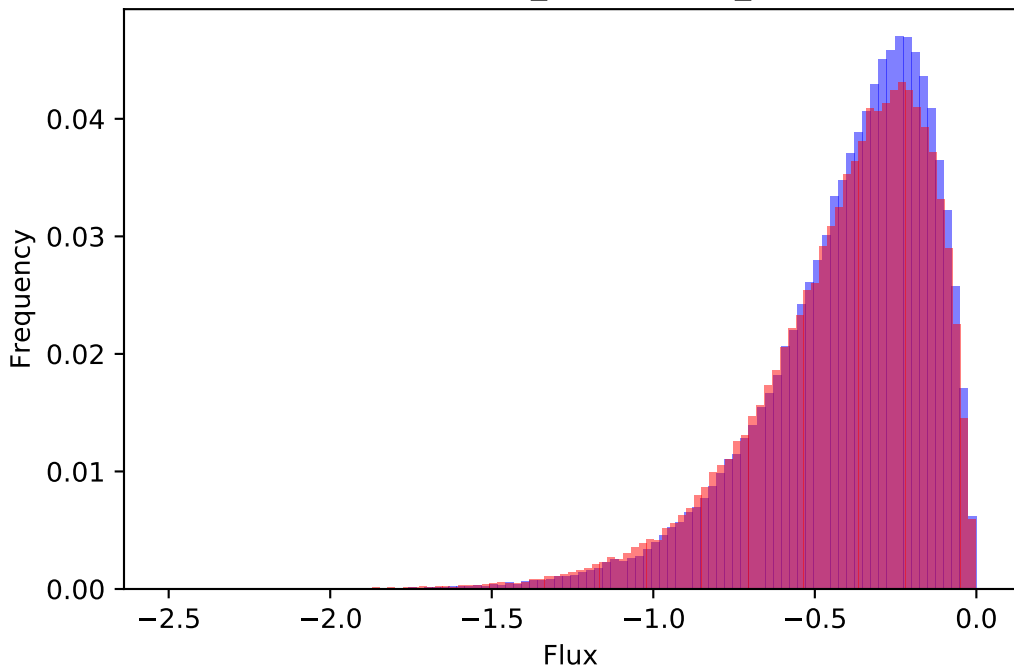
379 : H2O_c <=> H2O_h



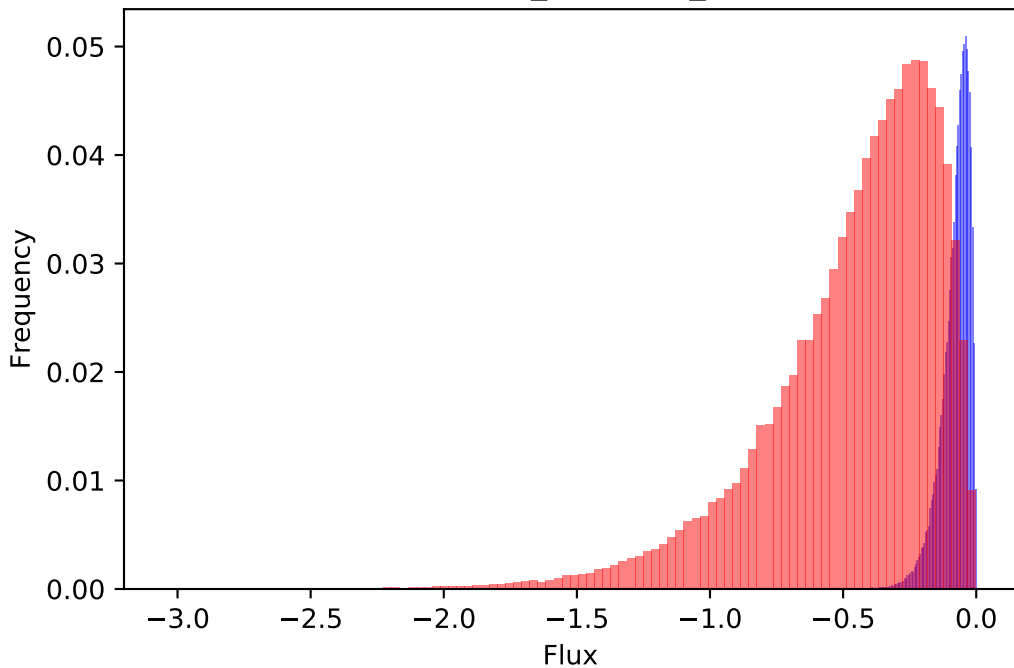
380 : H2O_c <=> H2O_m



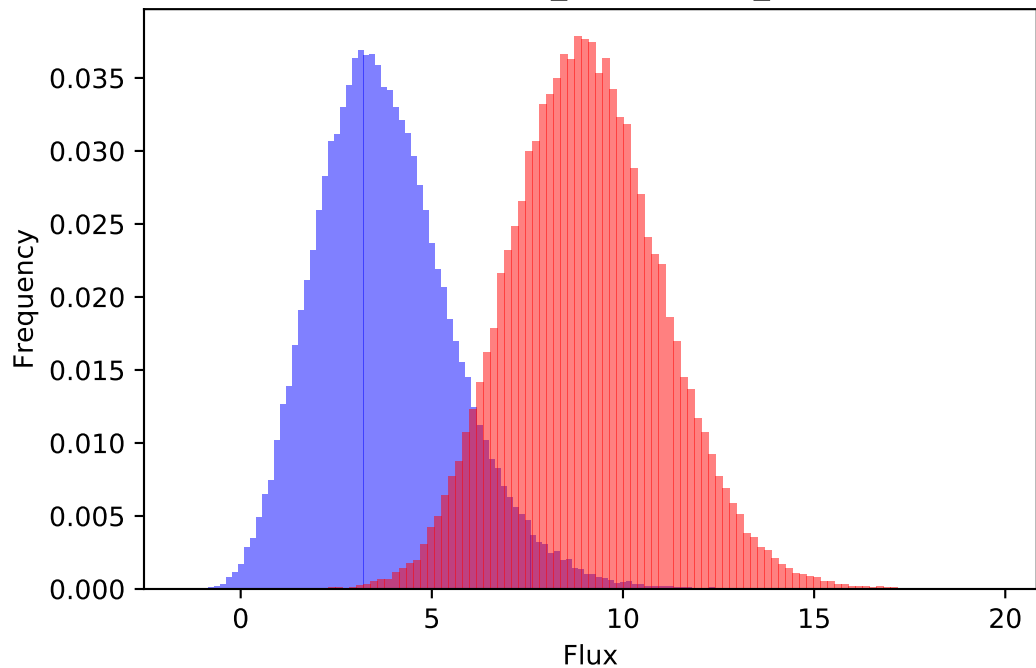
381 : H2O_c <=> H2O_p



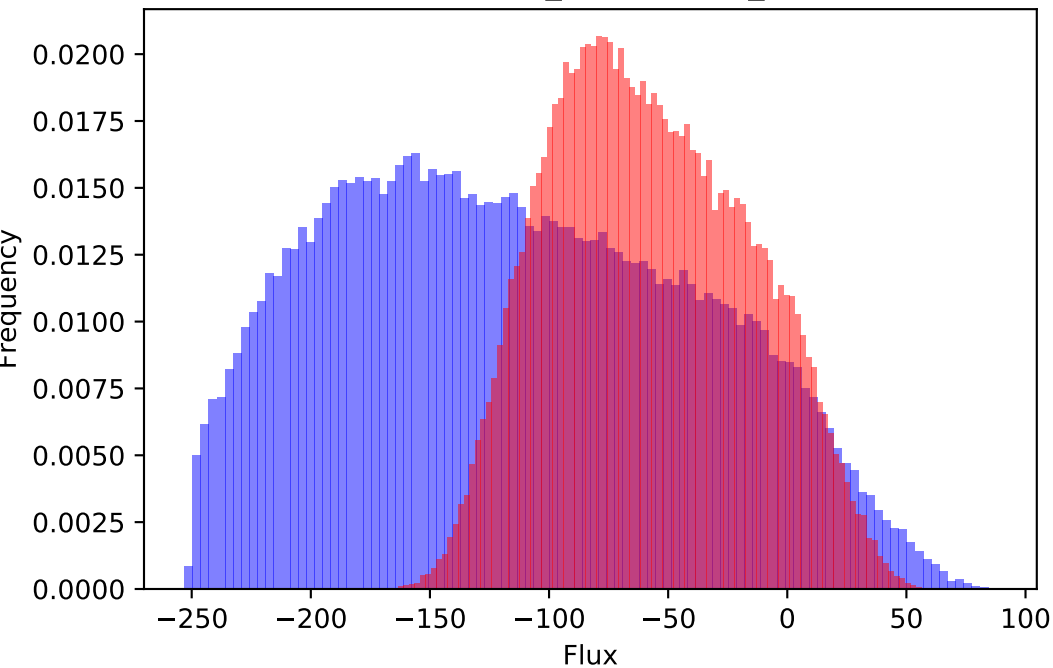
382 : H_c \Leftrightarrow H_p



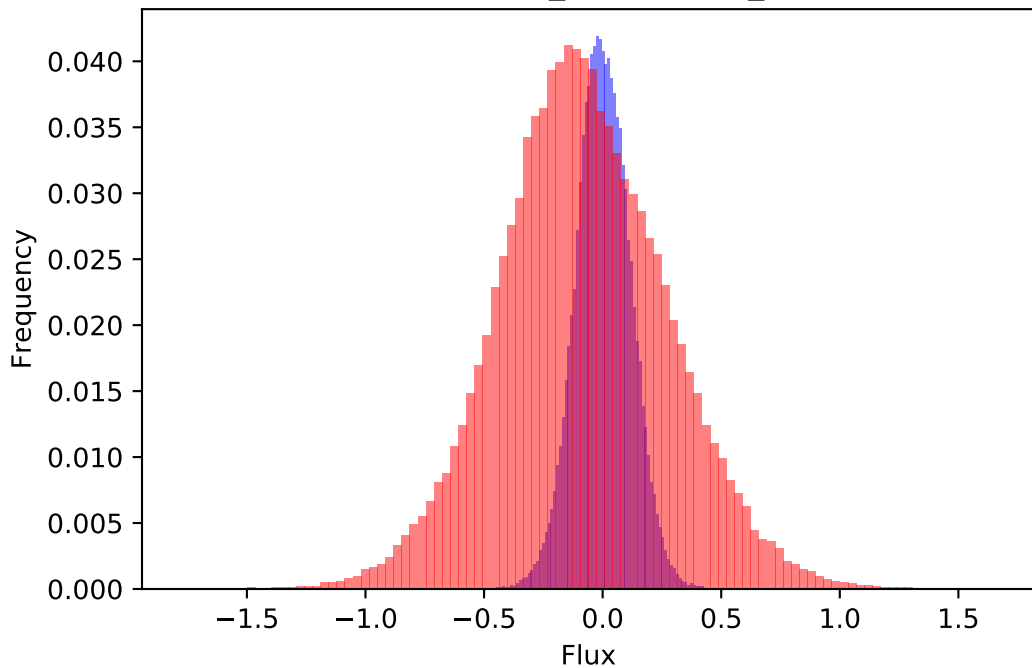
383 : NH4_c <=> NH4_h



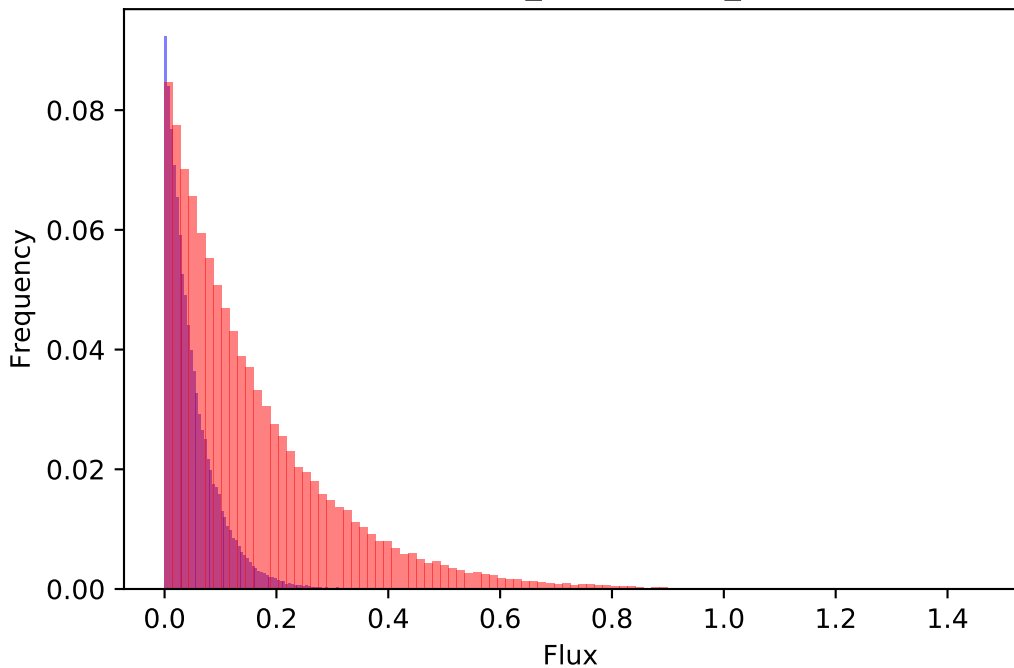
384 : NH4_c <=> NH4_m



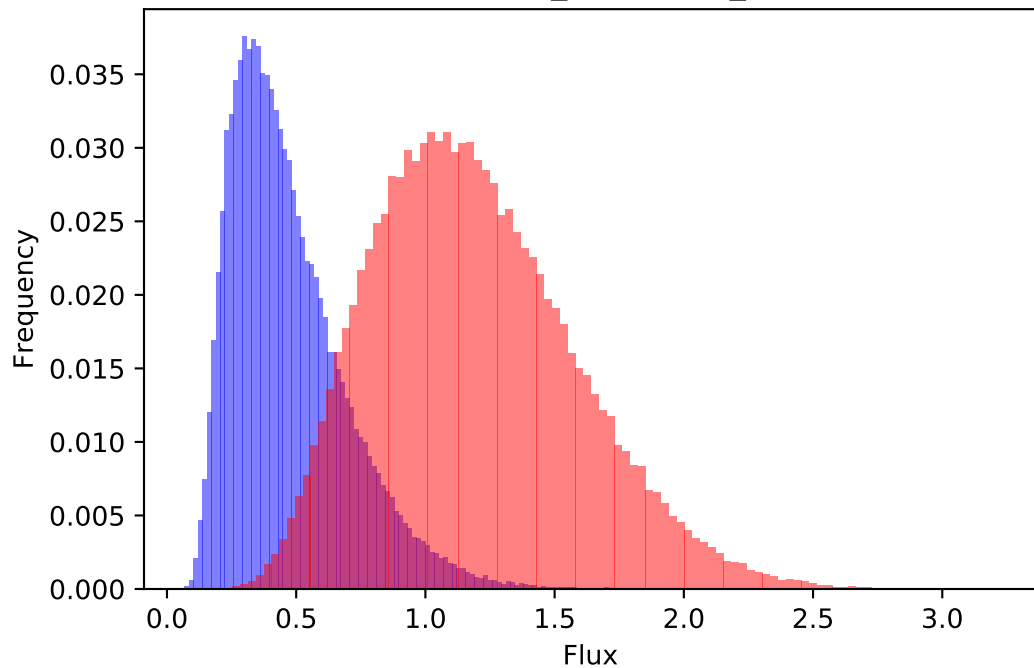
385 : H2S_c <=> H2S_h



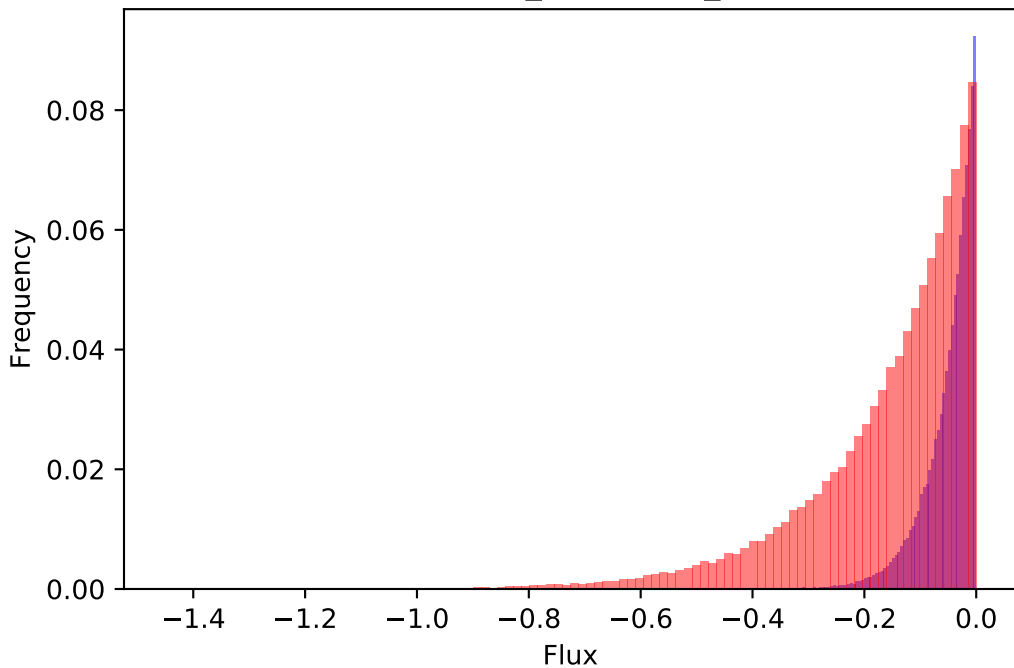
386 : H2S_c <=> H2S_m



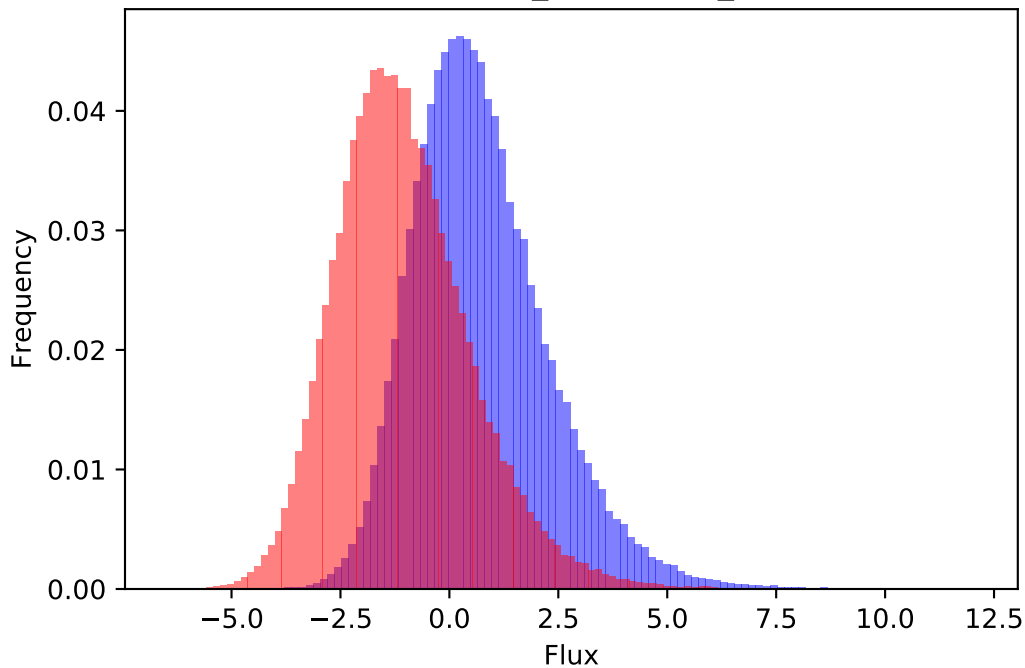
387 : AC_c \Leftrightarrow AC_h



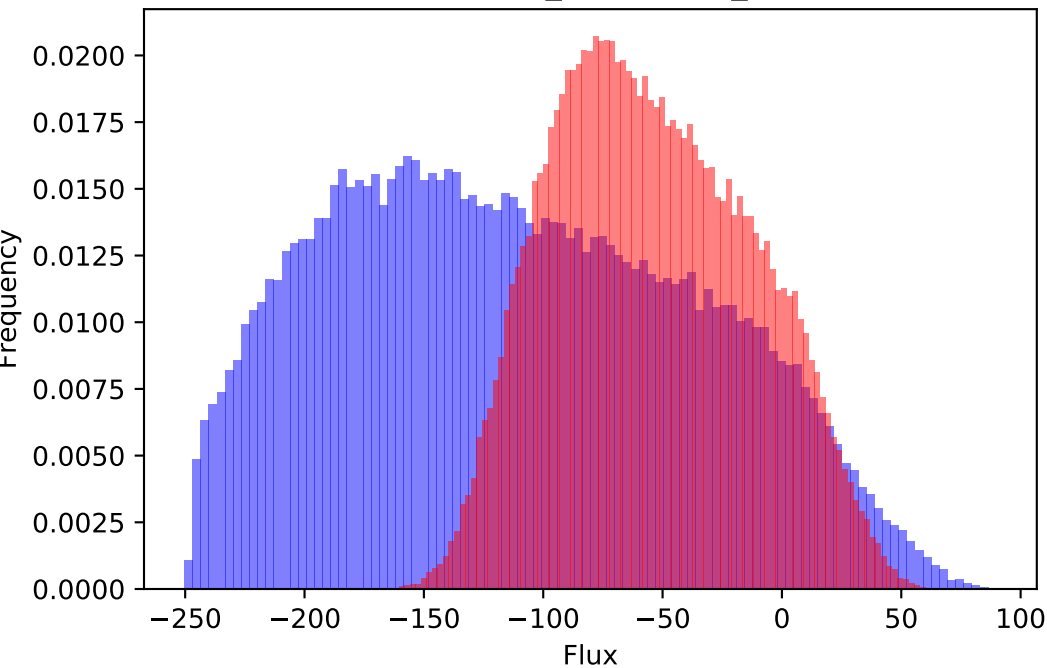
388 : AC_c \Leftrightarrow AC_m



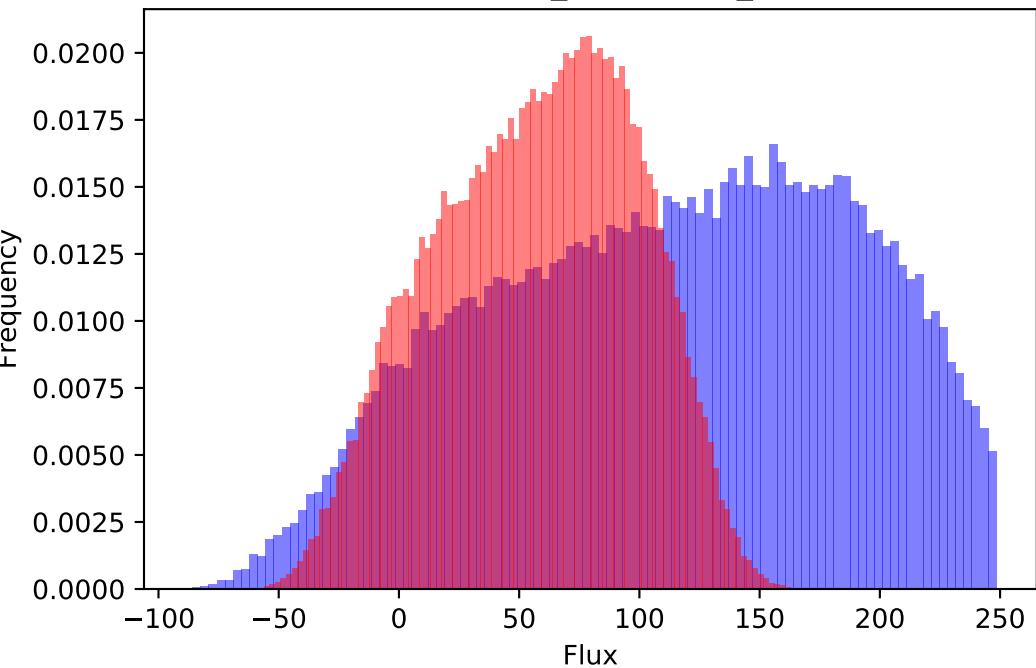
389 : Pyr_c <=> Pyr_h



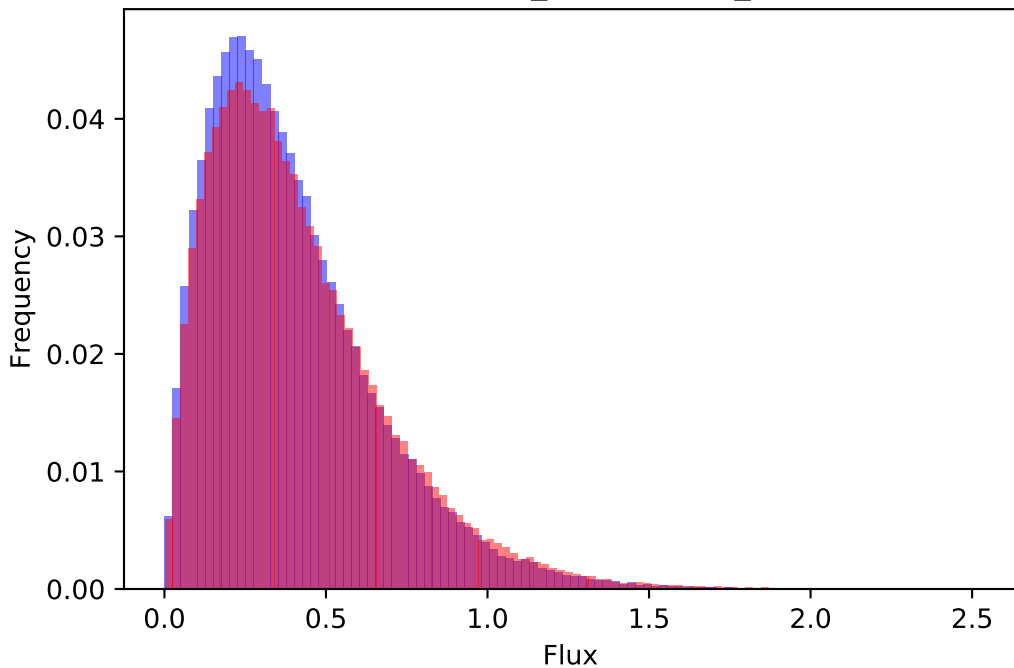
390 : Pyr_c <=> Pyr_m



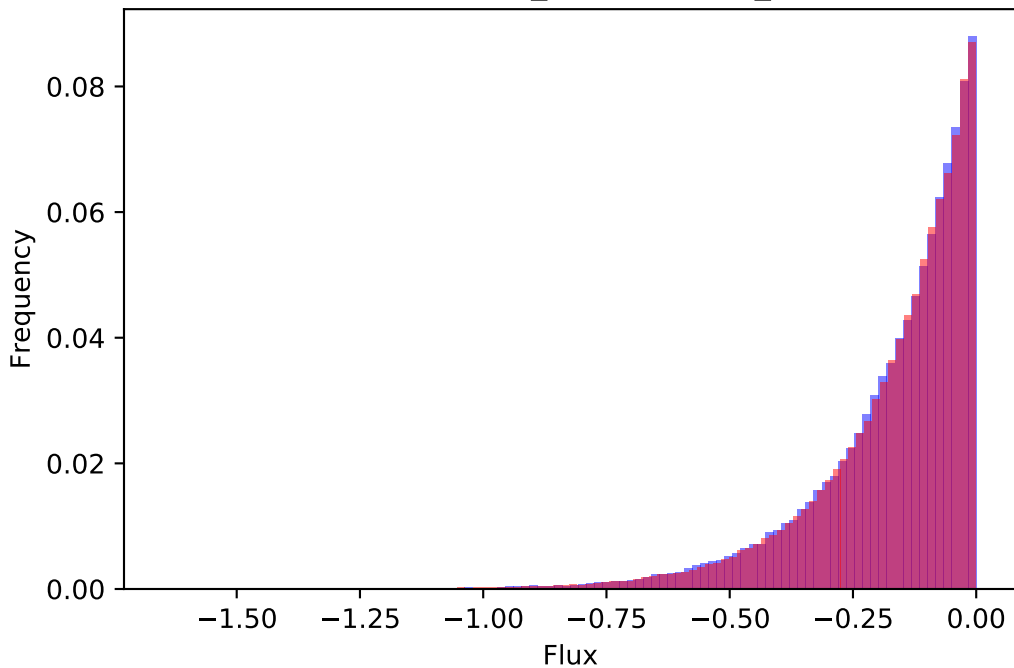
391 : Pyr_c <=> Pyr_p



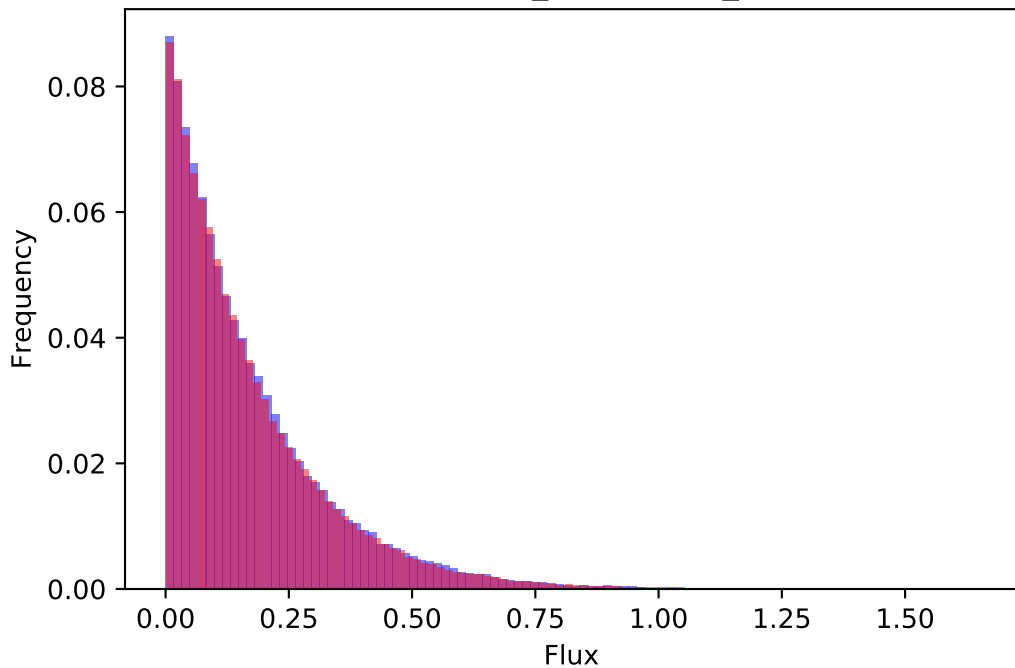
392 : GCA_c <=> GCA_p



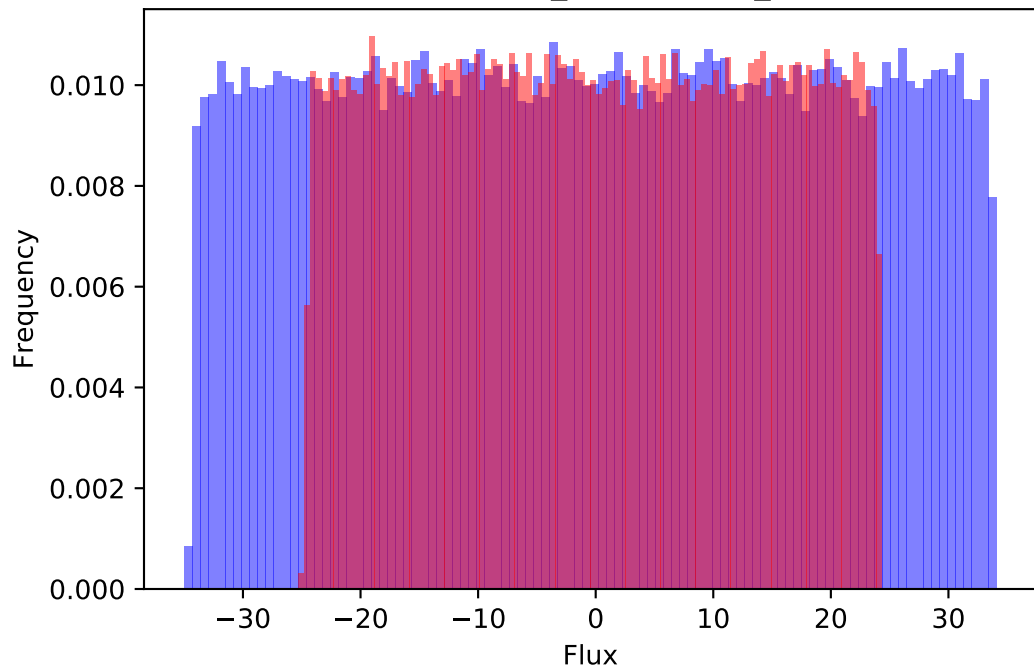
393 : GCEA_c \leq GCEA_p



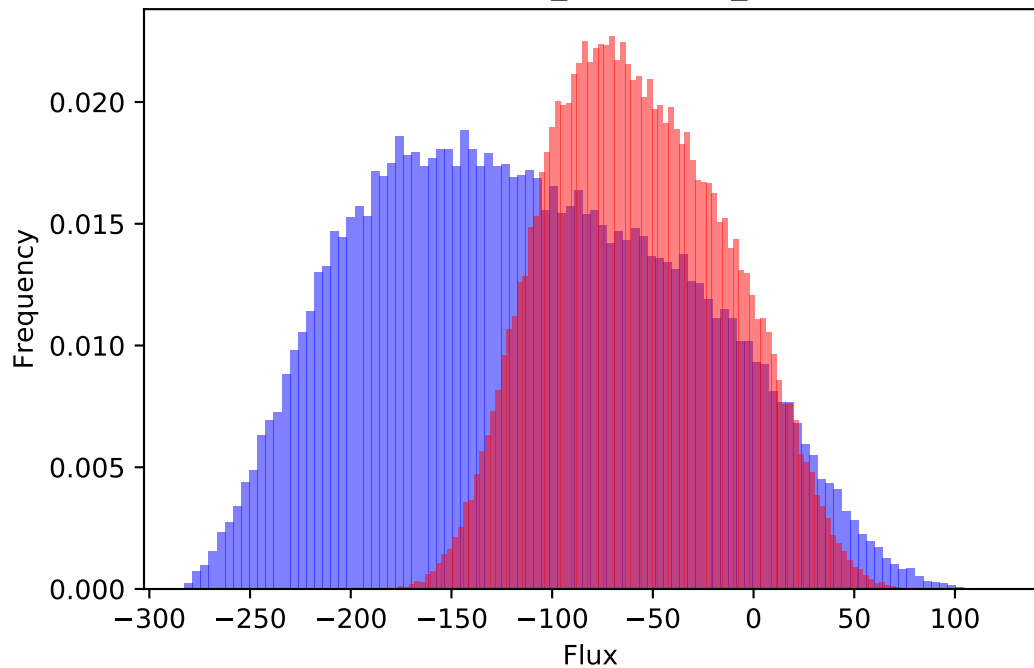
394 : Mal_c <=> Mal_p



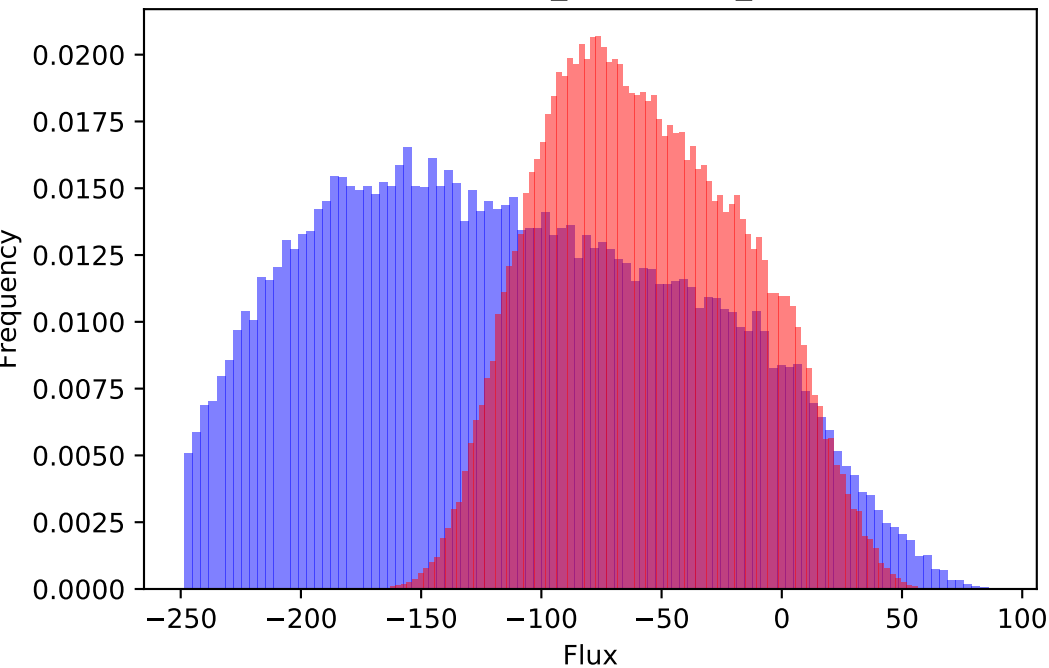
395 : OAA_c <=> OAA_p



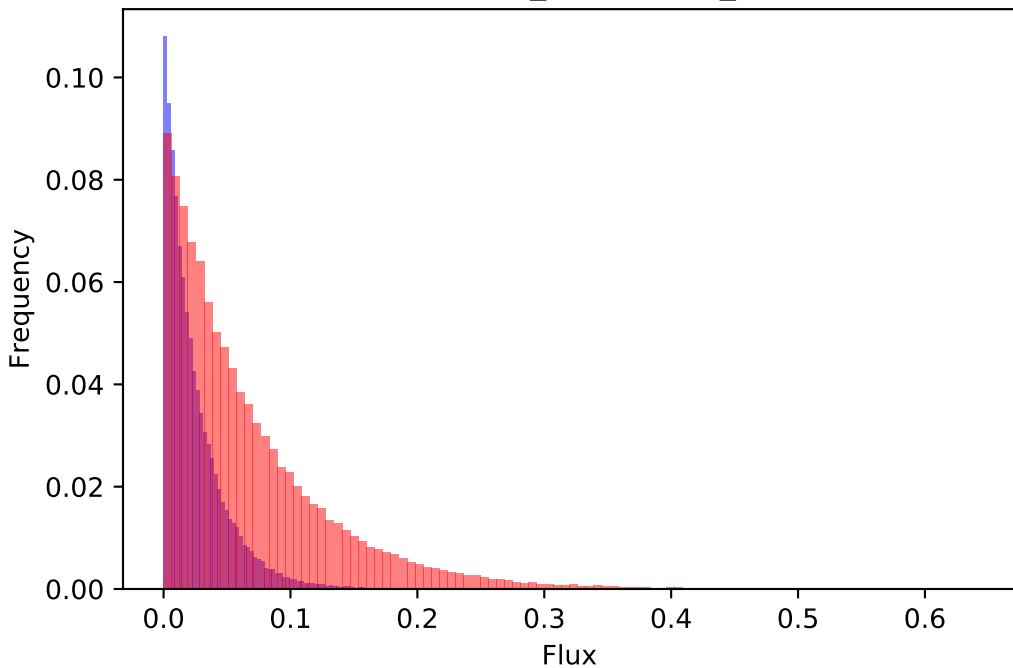
396 : KG_c <=> KG_p



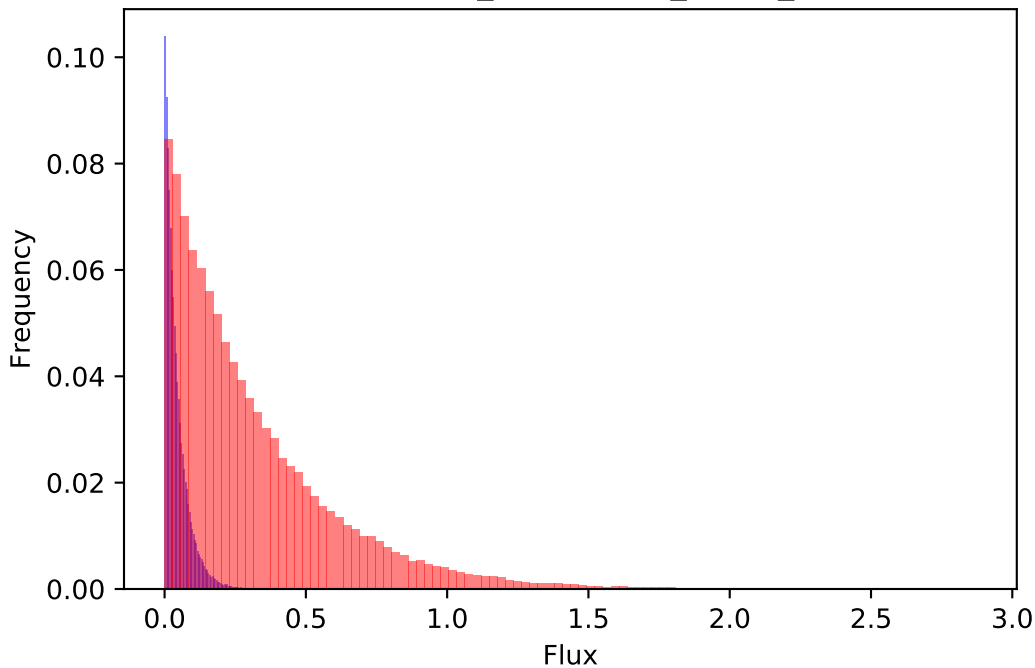
397 : Ala_c <=> Ala_p



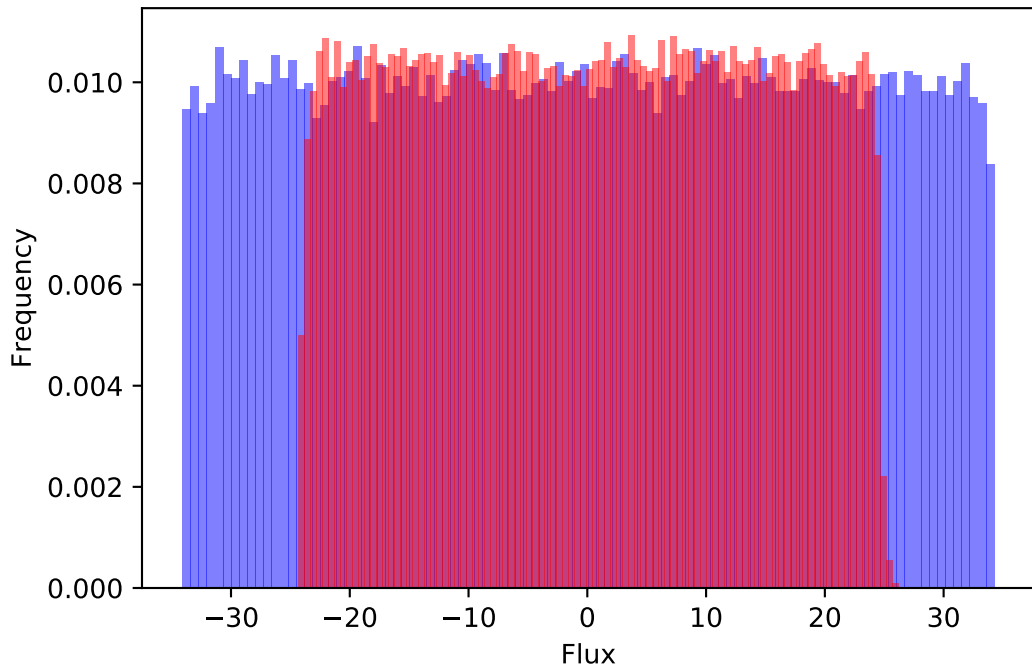
398 : Arg_c \Leftrightarrow Arg_p



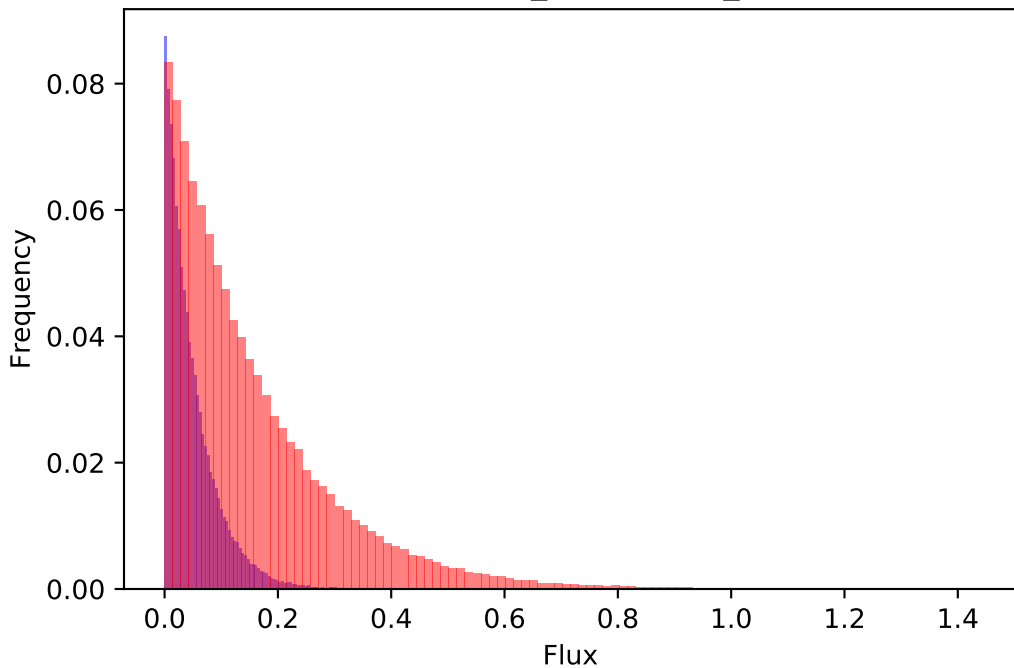
399 : Asn_c <=> Asn_p + H_p



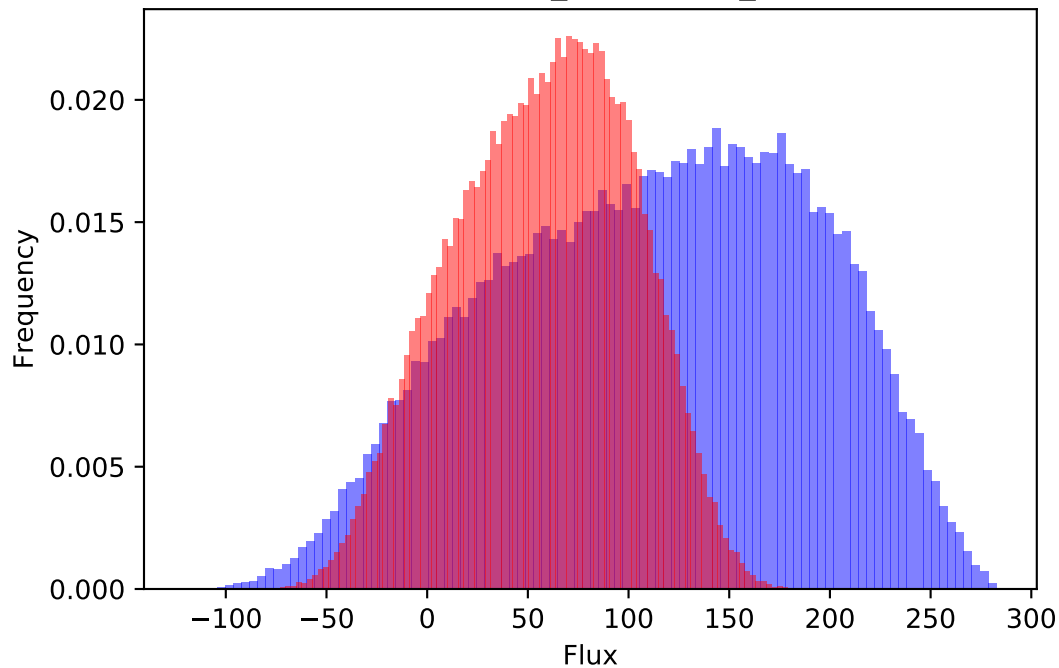
400 : Asp_c <=> Asp_p



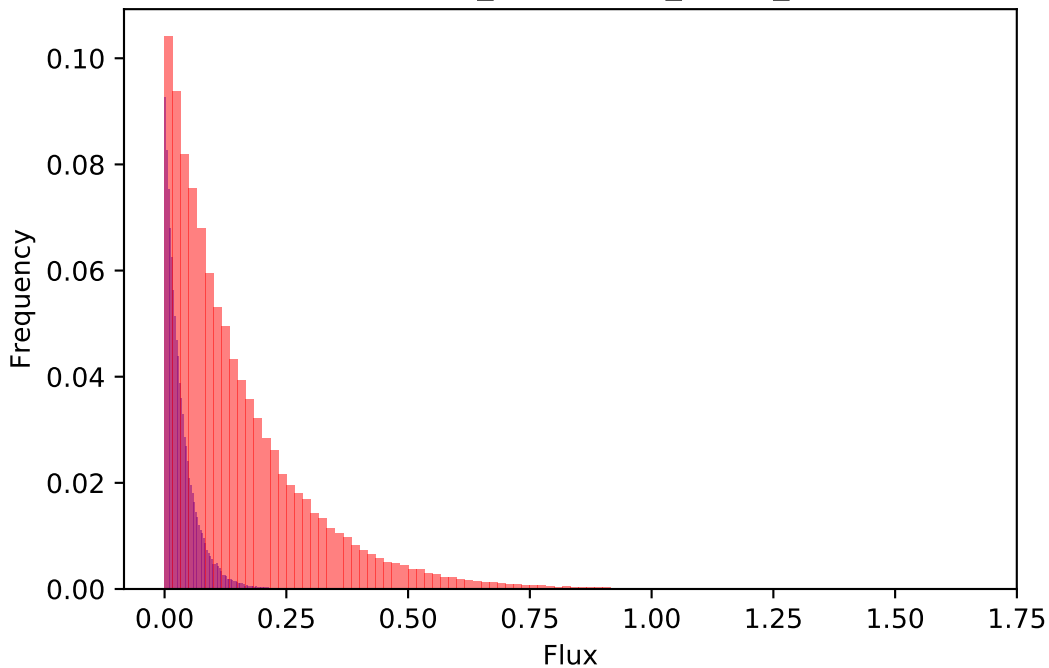
401 : Cys_c \rightleftharpoons Cys_p



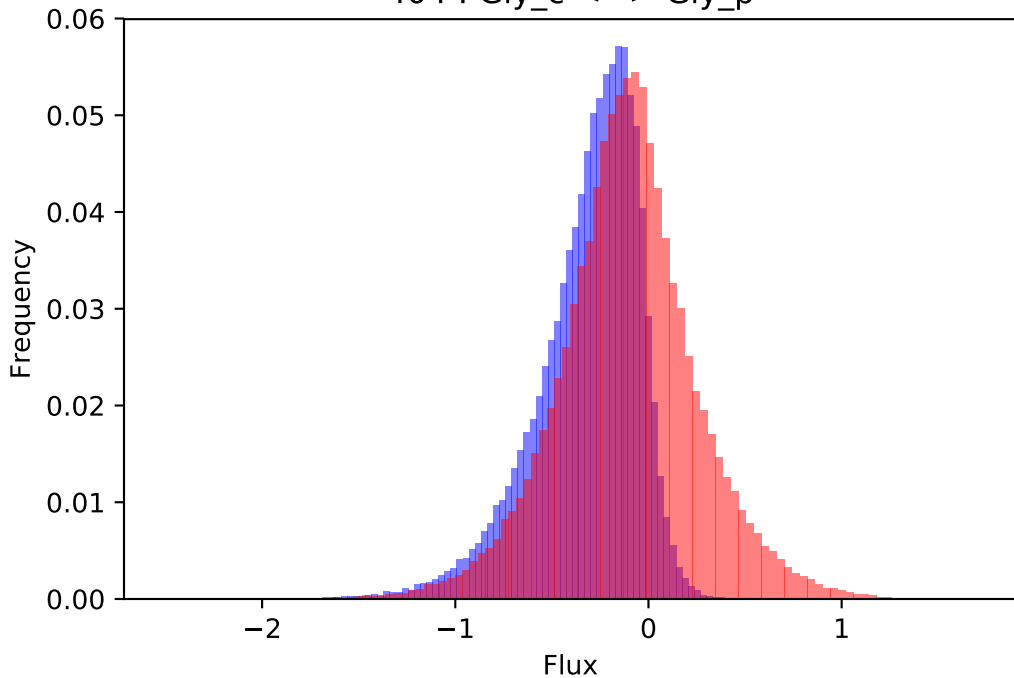
402 : Glu_c <=> Glu_p



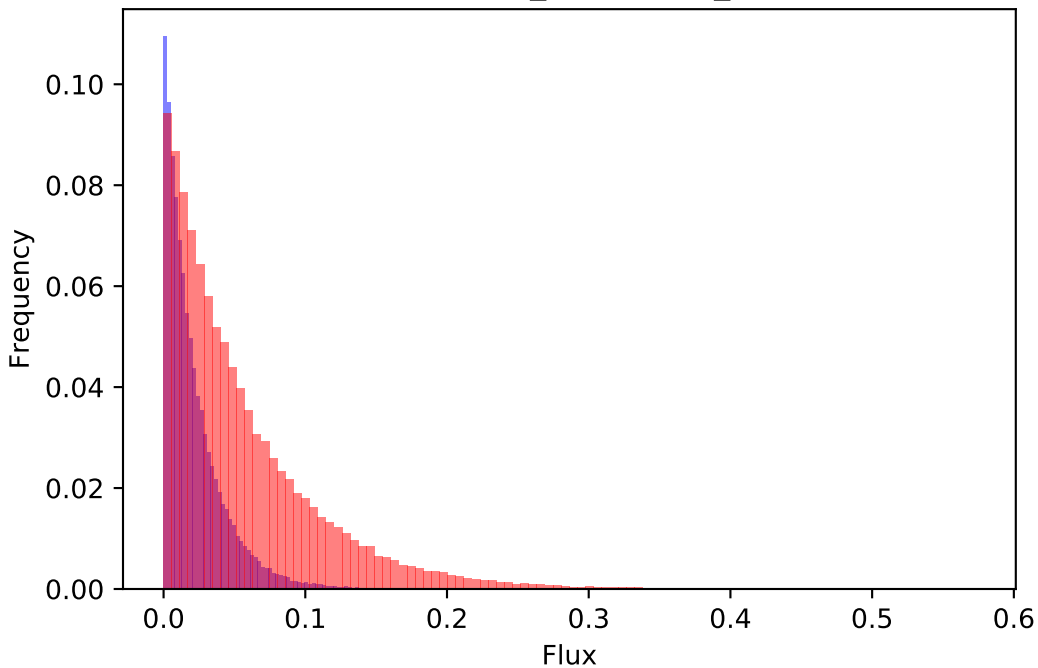
403 : $\text{Gln_c} \rightleftharpoons \text{Gln_p} + \text{H_p}$



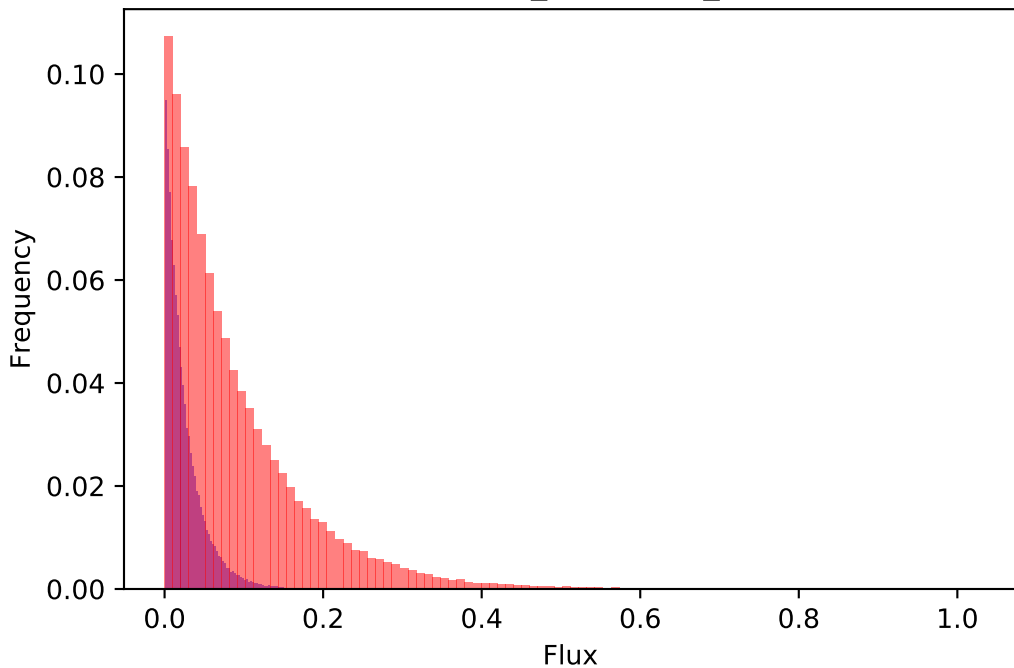
404 : Gly_c <=> Gly_p



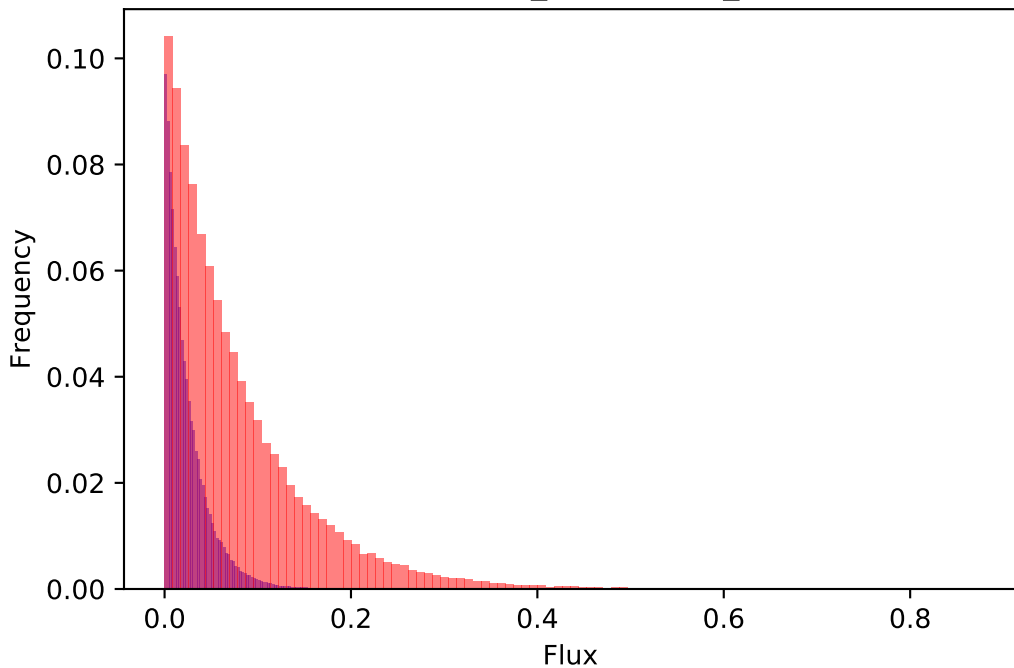
405 : His_c <=> His_p



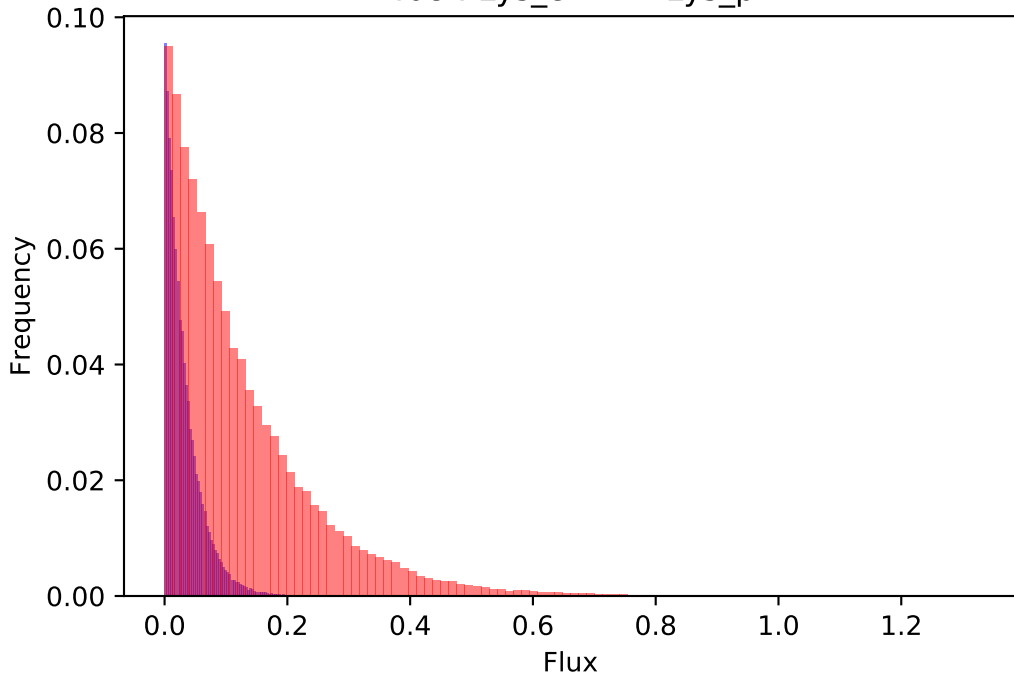
406 : lle_c <=> lle_p



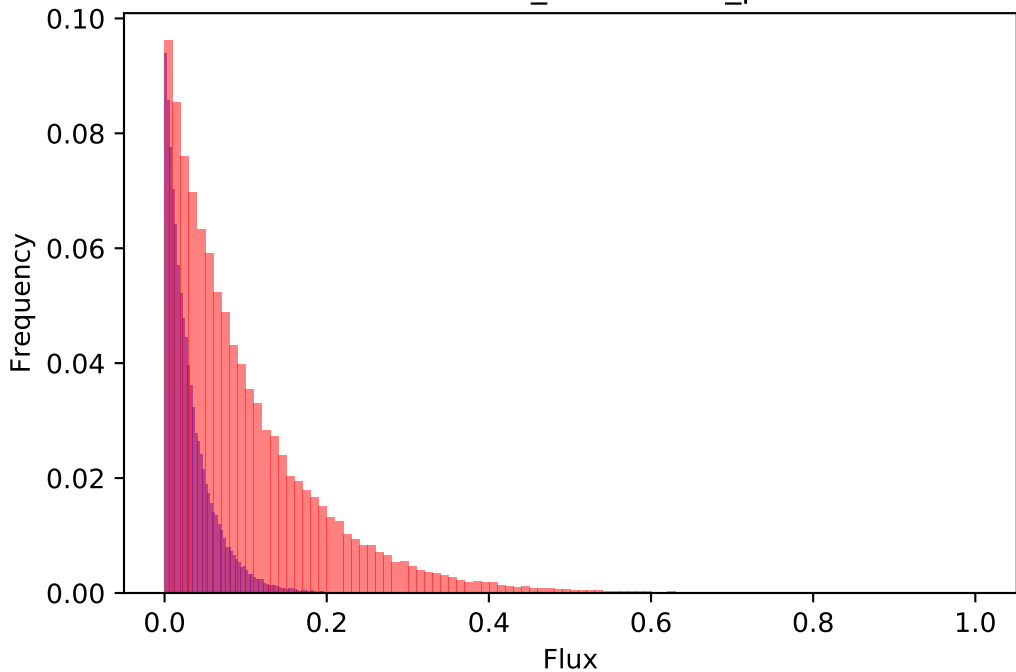
407 : Leu_c \rightleftharpoons Leu_p



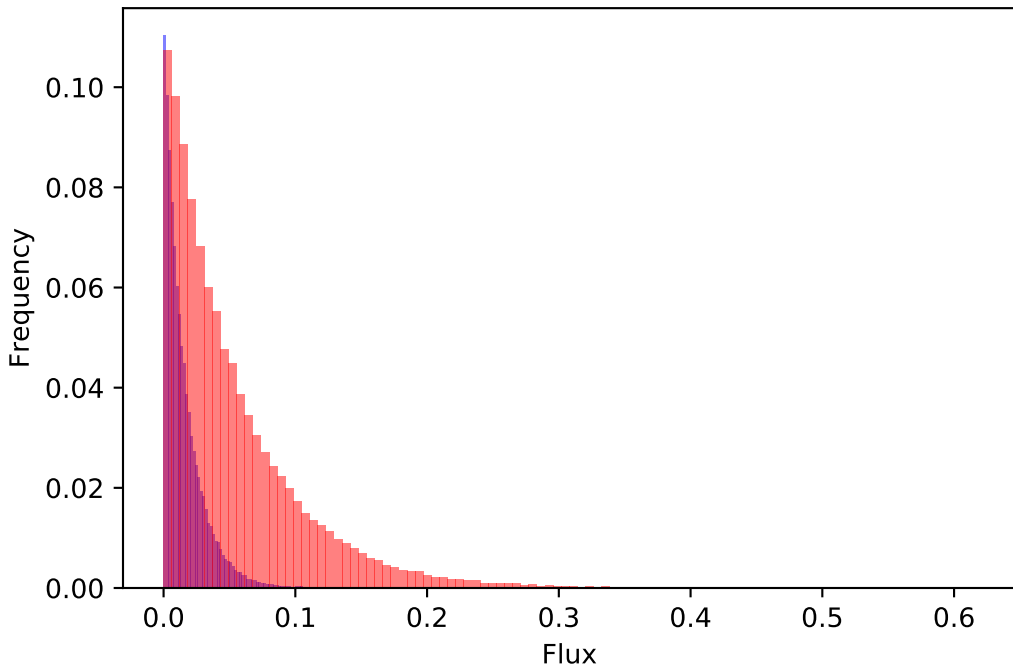
408 : Lys_c \rightleftharpoons Lys_p



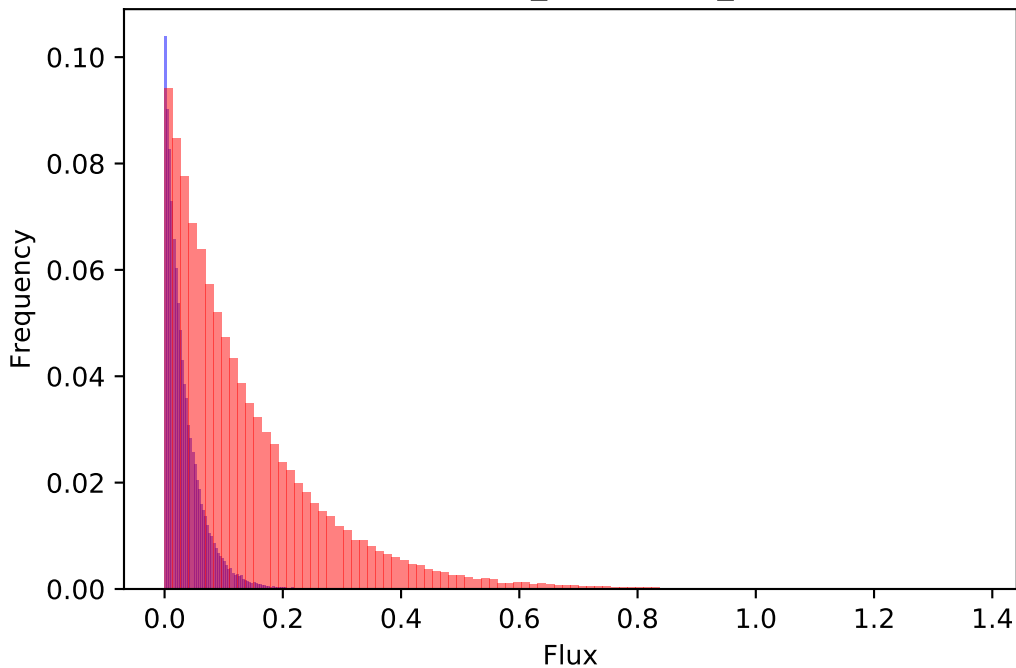
409 : Met_c \Leftrightarrow Met_p



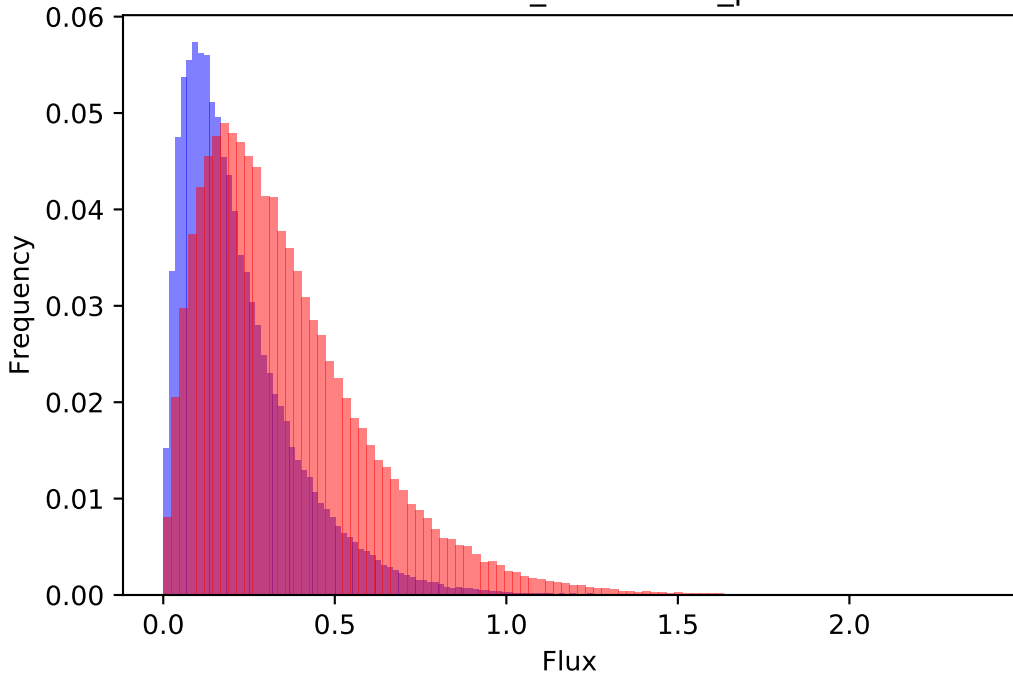
410 : Phe_c \rightleftharpoons Phe_p



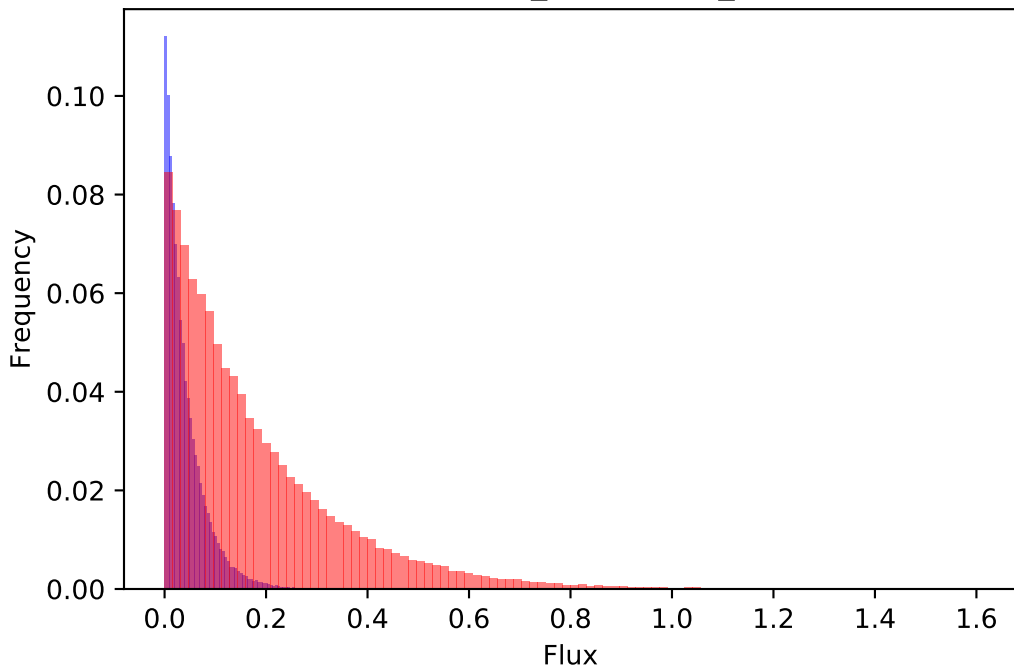
411 : Pro_c \rightleftharpoons Pro_p



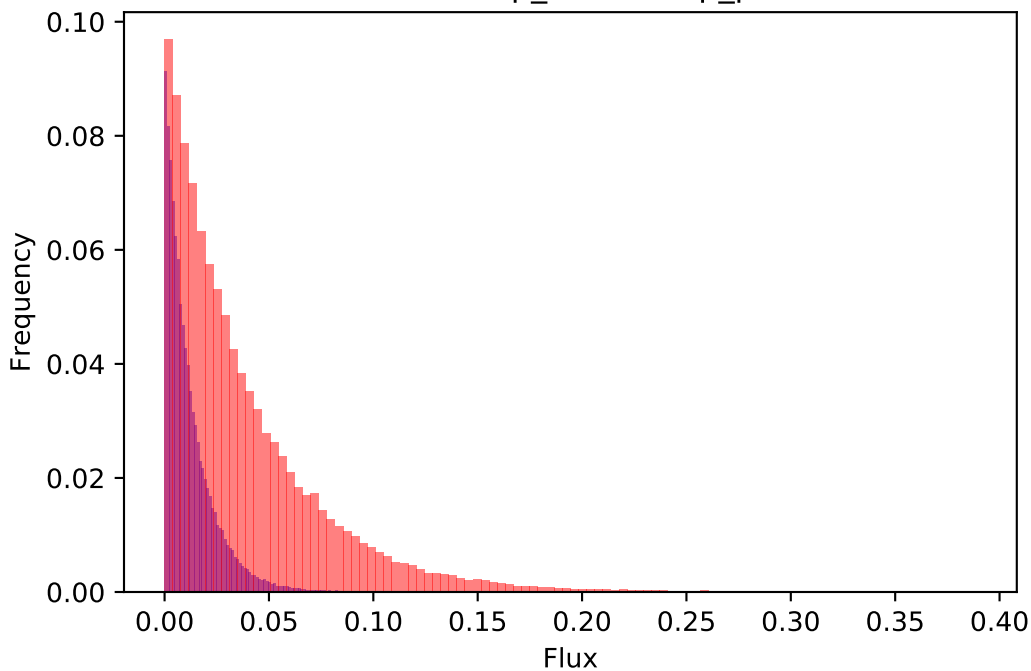
412 : Ser_c \leq Ser_p



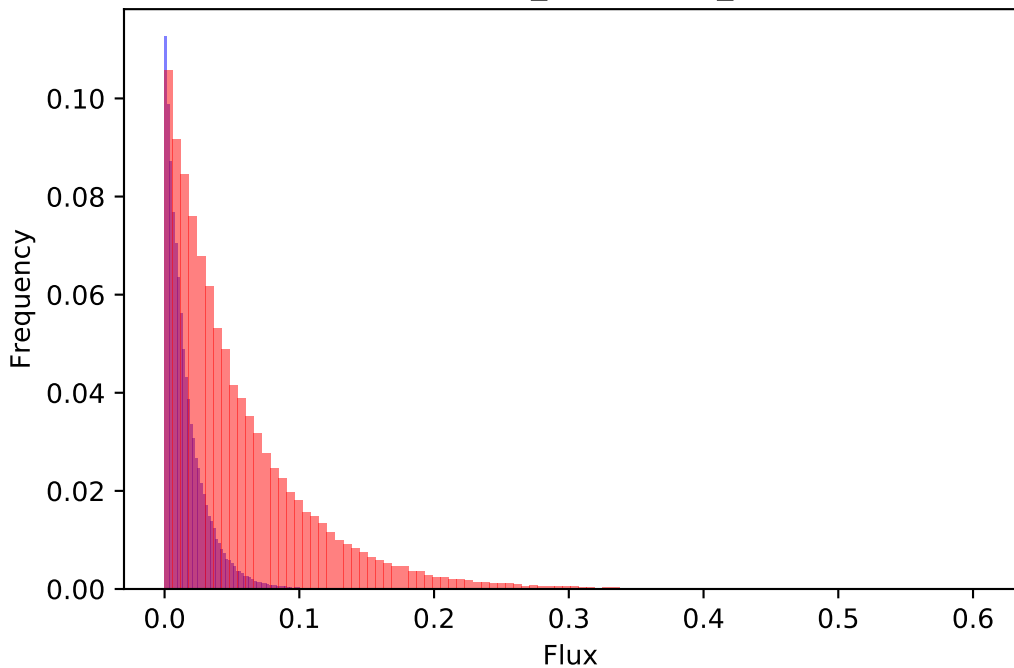
413 : Thr_c \leq Thr_p



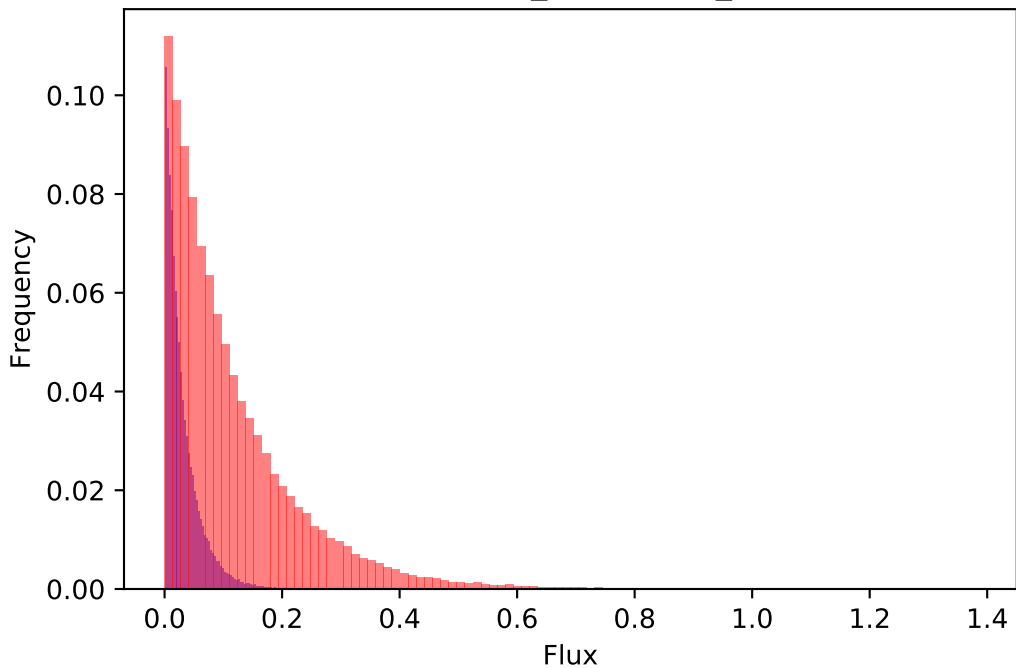
414 : Trp_c \Leftrightarrow Trp_p



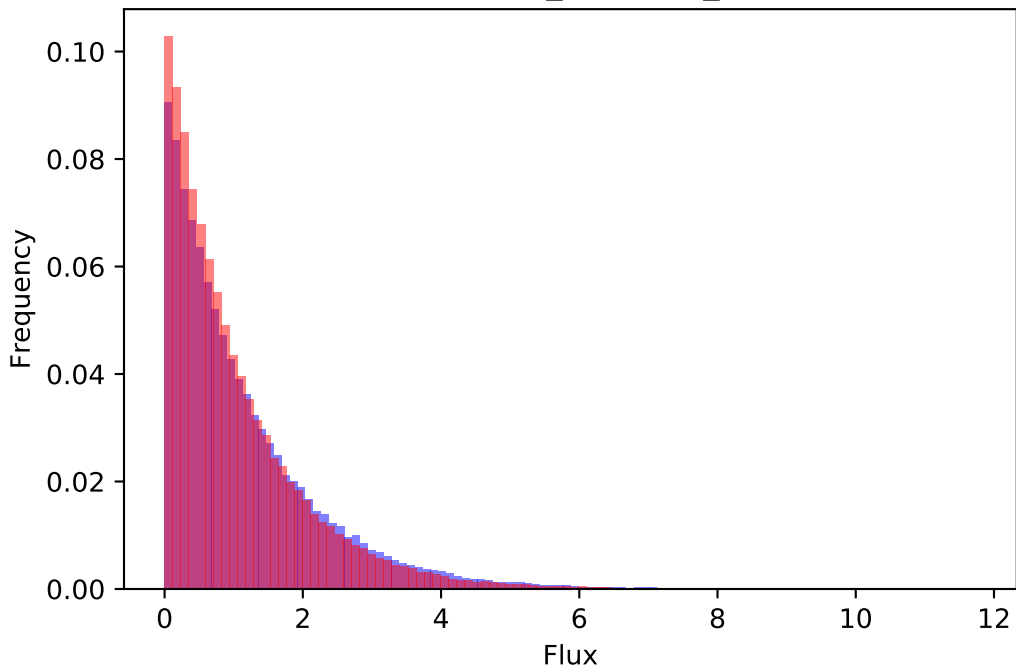
415 : Tyr_c \rightleftharpoons Tyr_p



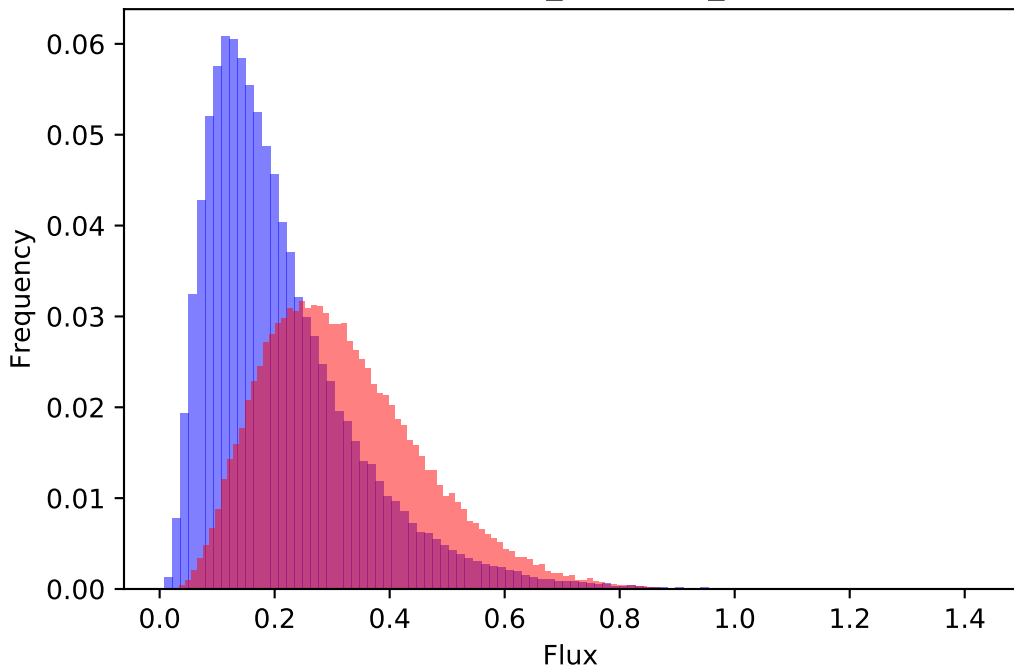
416 : Val_c \leq Val_p



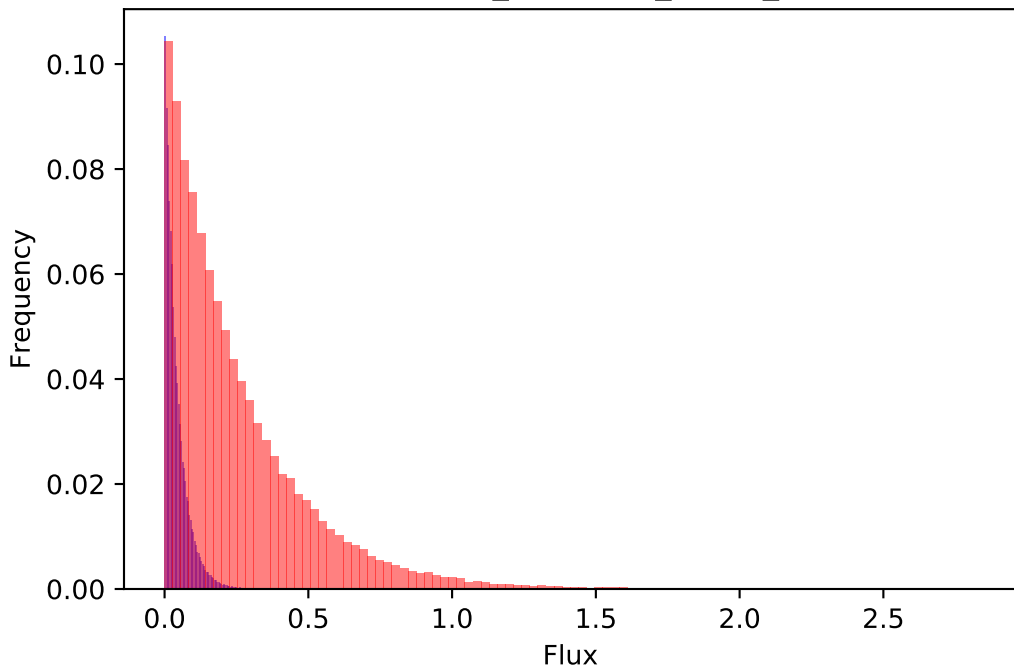
417 : Ala_h --> Ala_c



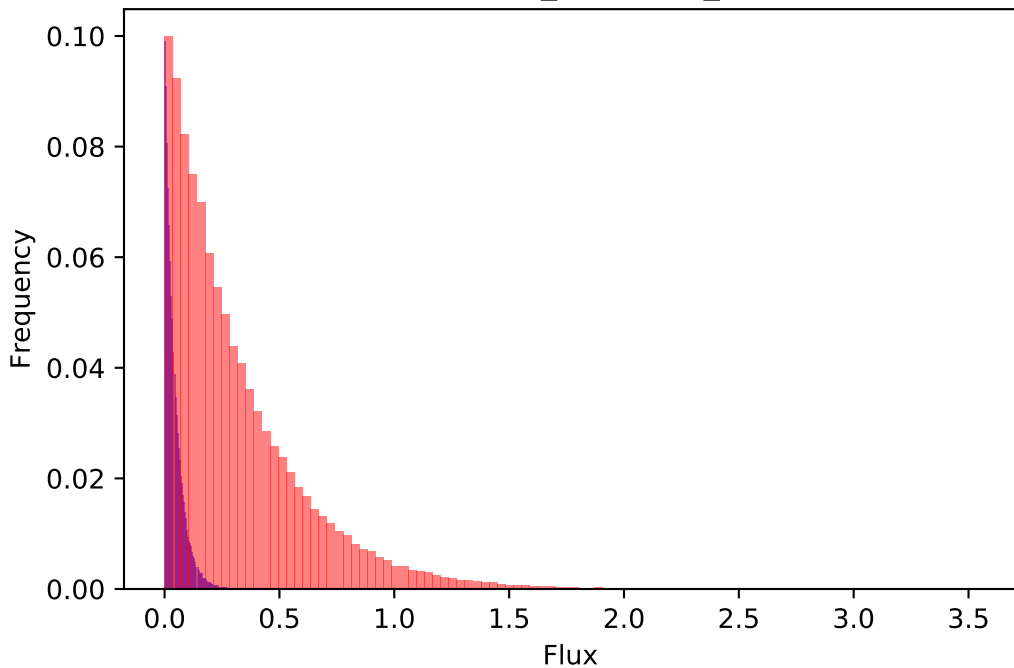
418 : Arg_h --> Arg_c



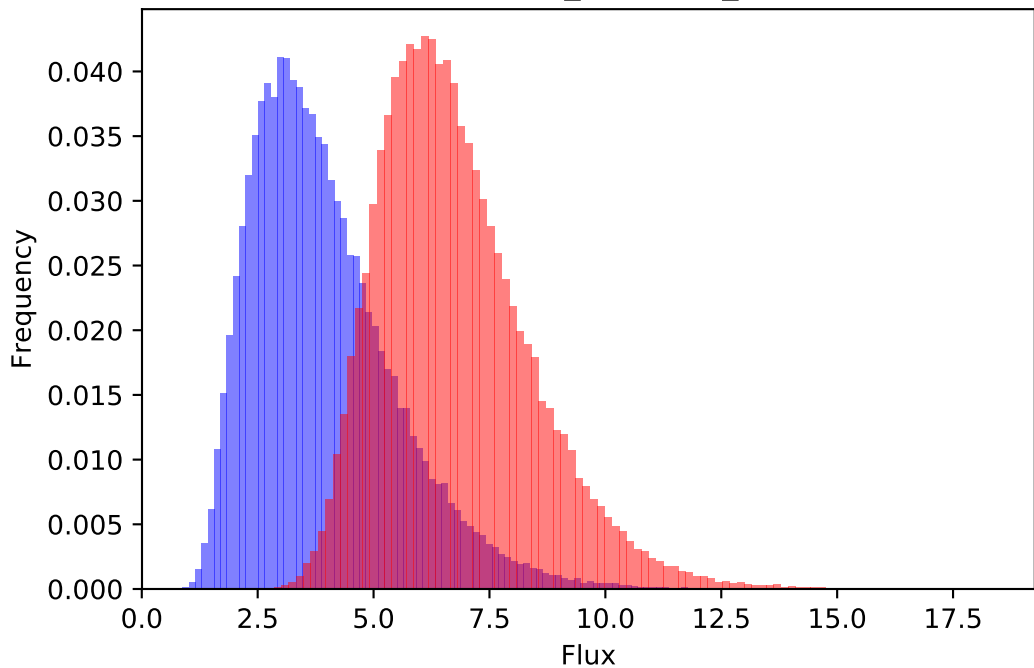
419 : Asn_c --> Asn_h + H_h



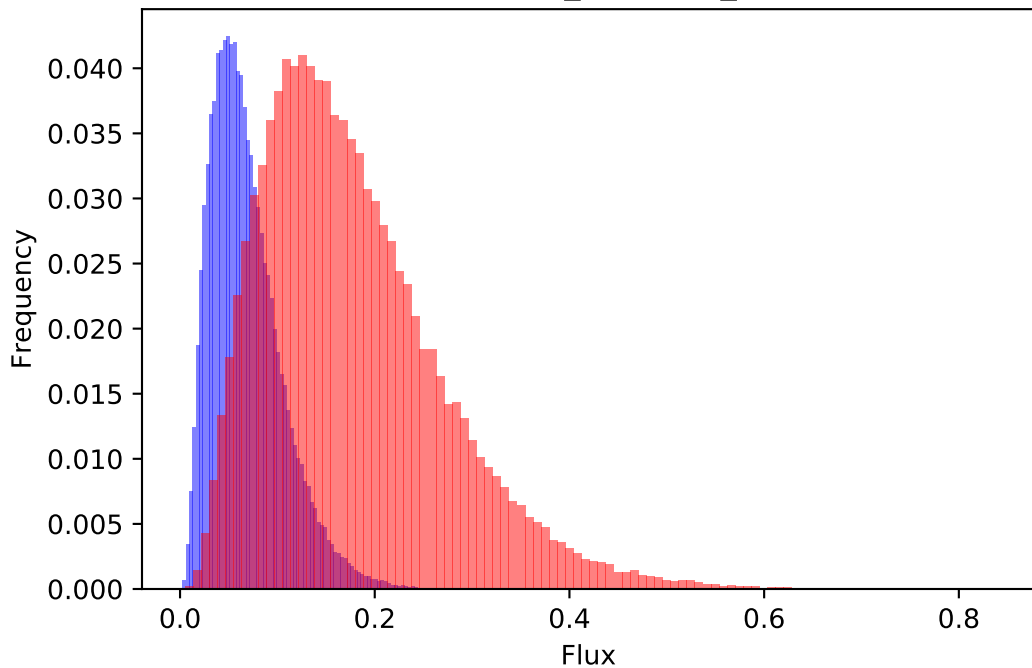
420 : Asn_c --> Asn_m



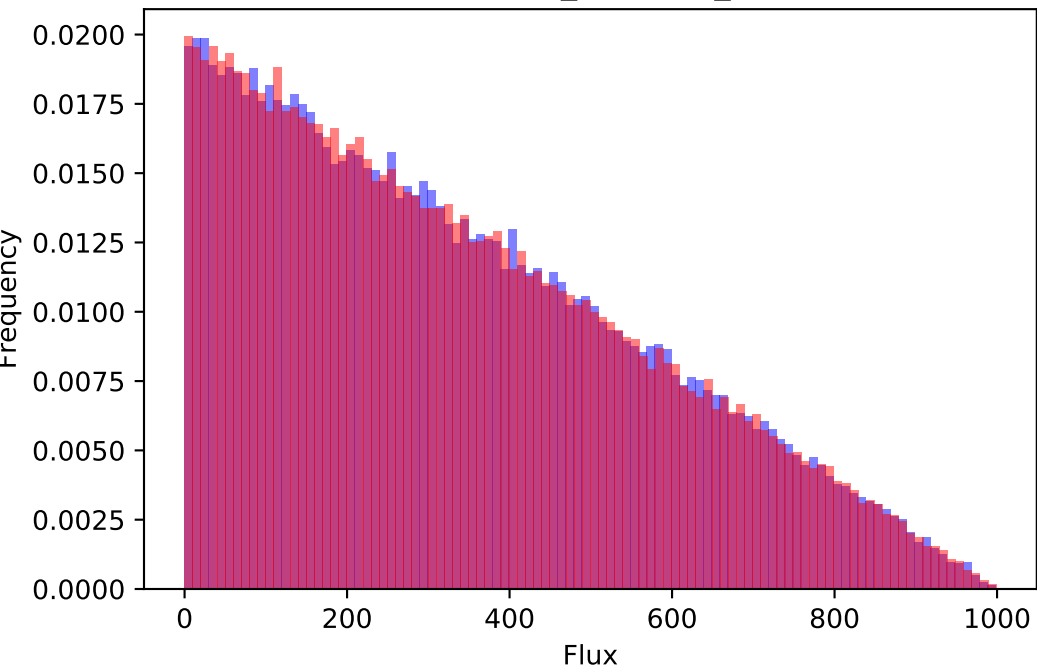
421 : Glu_c --> Glu_h



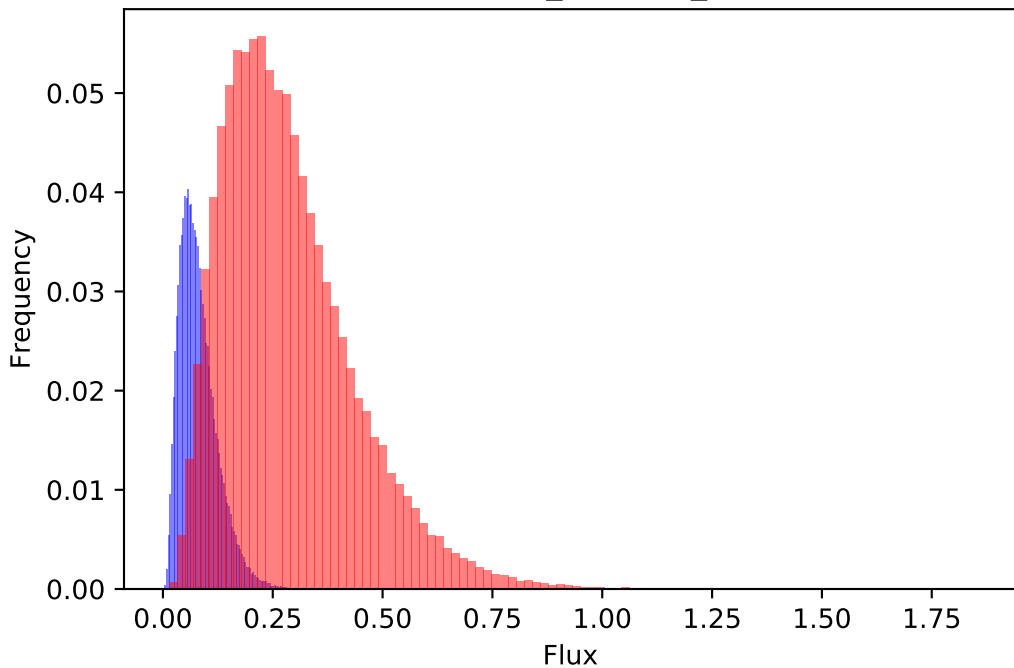
422 : His_h --> His_c



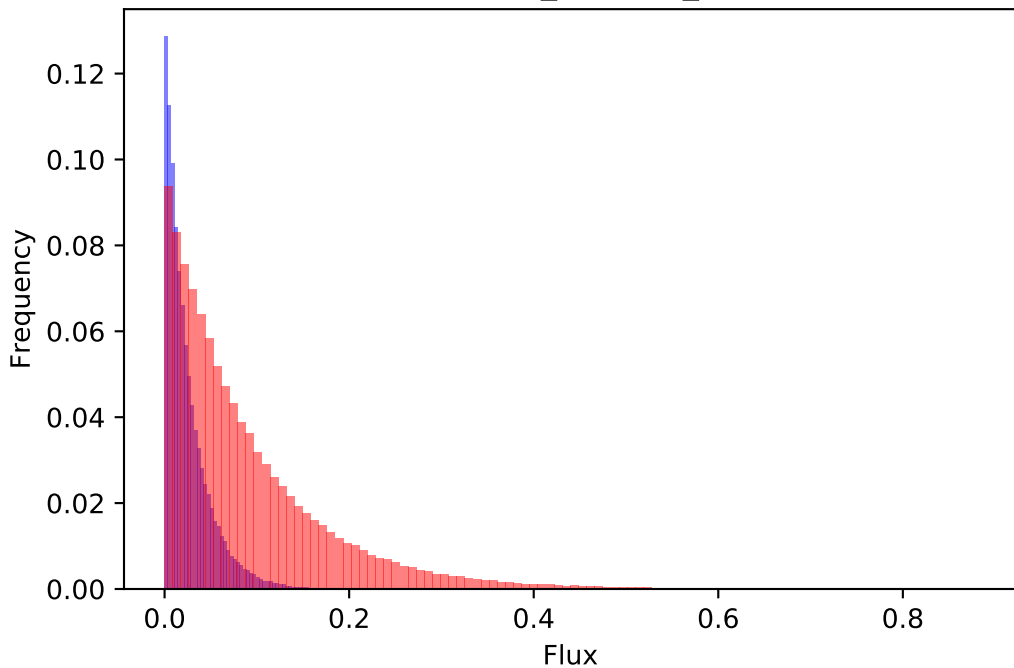
423 : His_c --> His_m



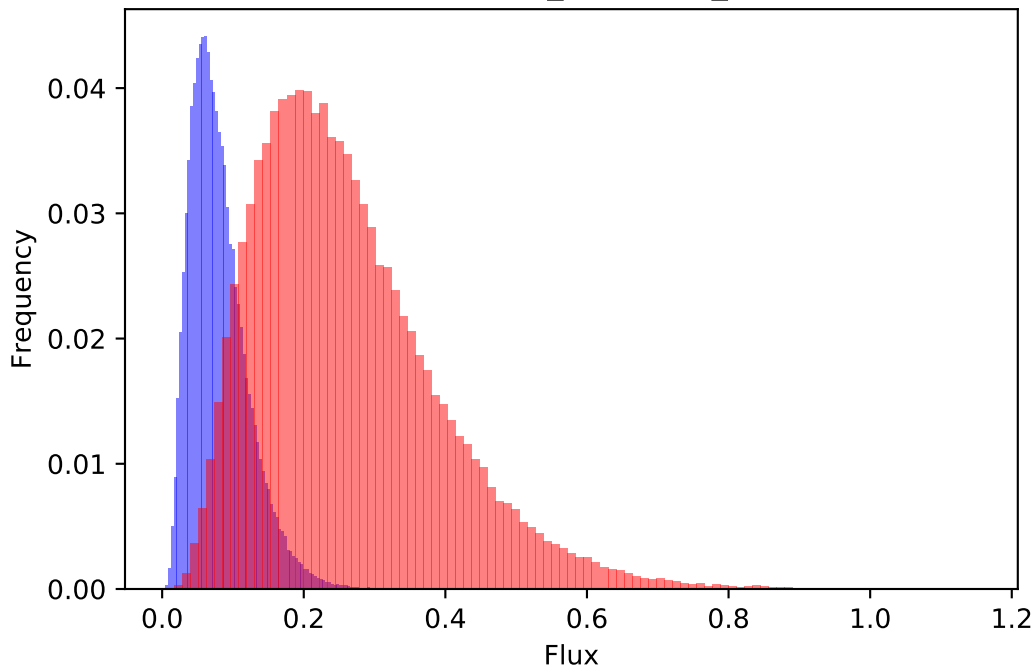
424 : Ile_h --> Ile_c



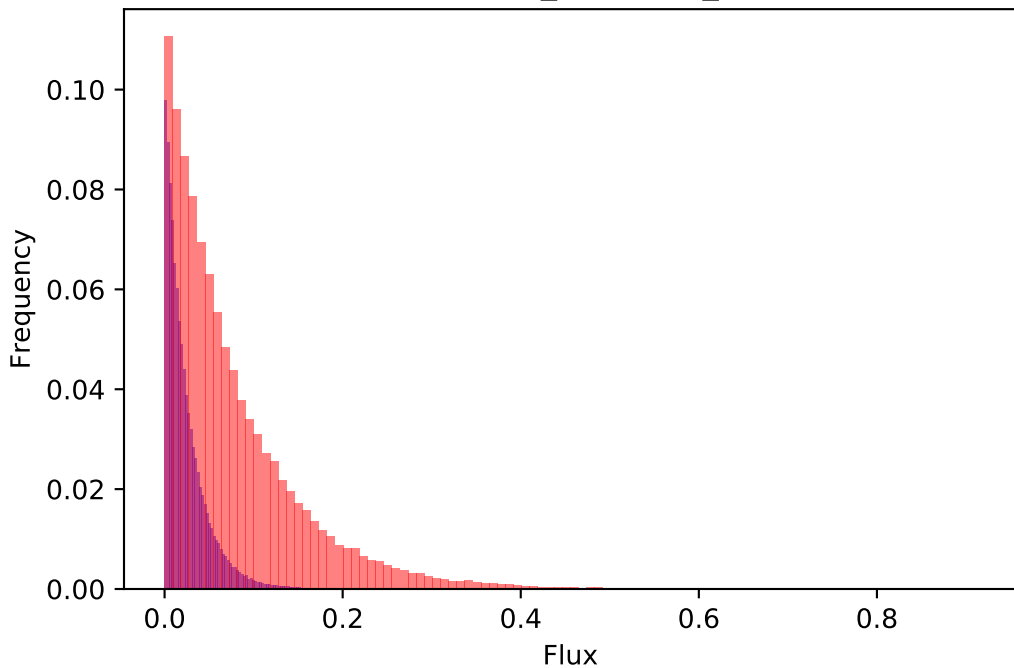
425 : lle_c --> lle_m



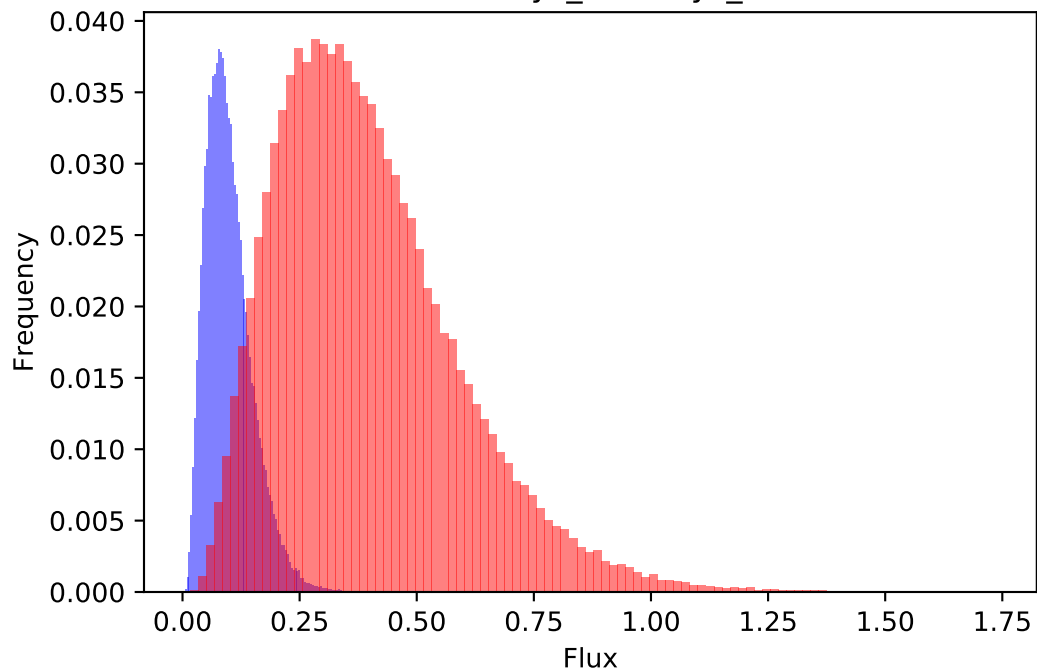
426 : Leu_h --> Leu_c



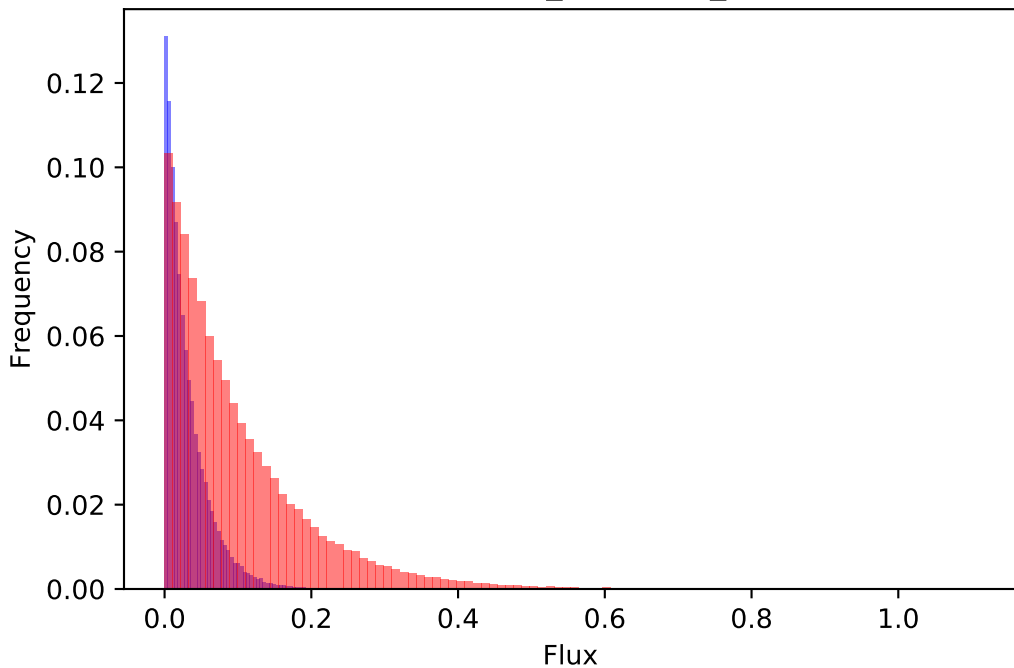
427 : Leu_c --> Leu_m



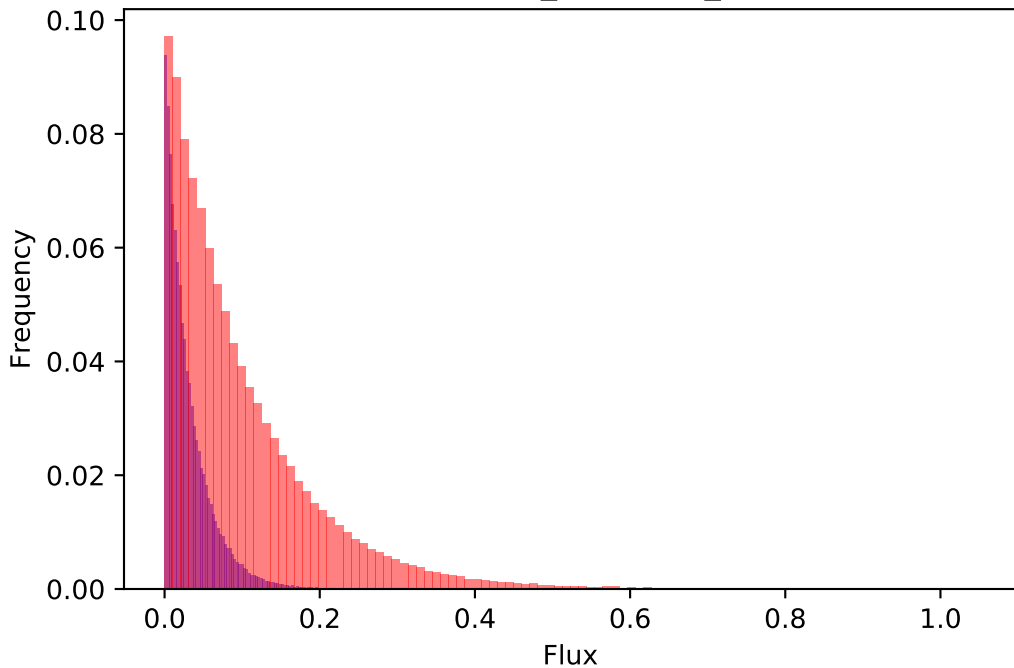
428 : Lys_h --> Lys_c



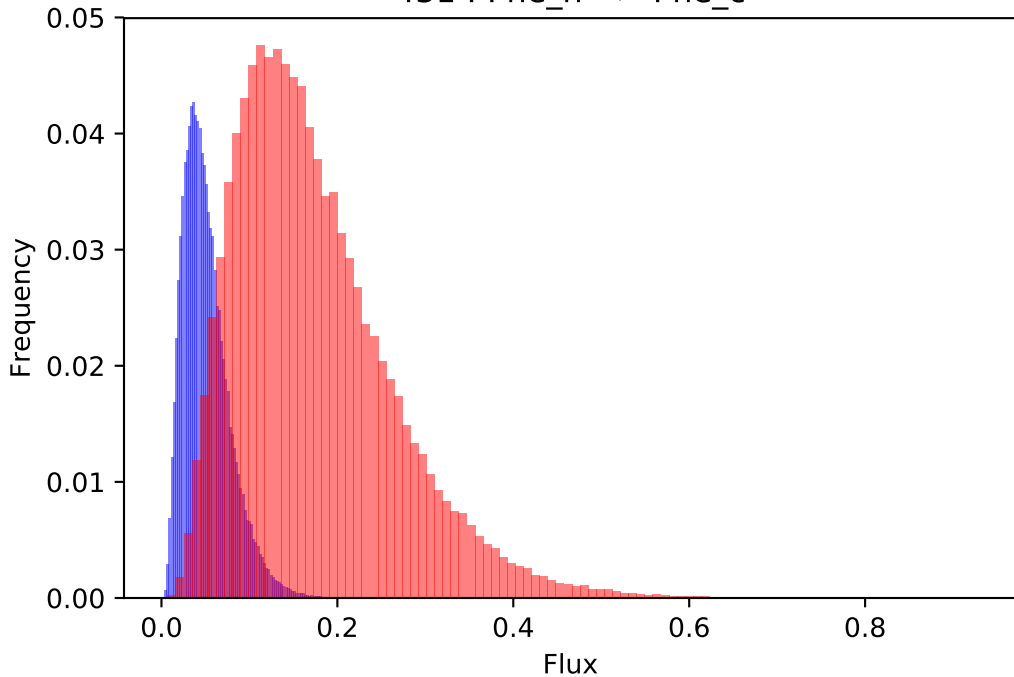
429 : Met_c --> Met_h



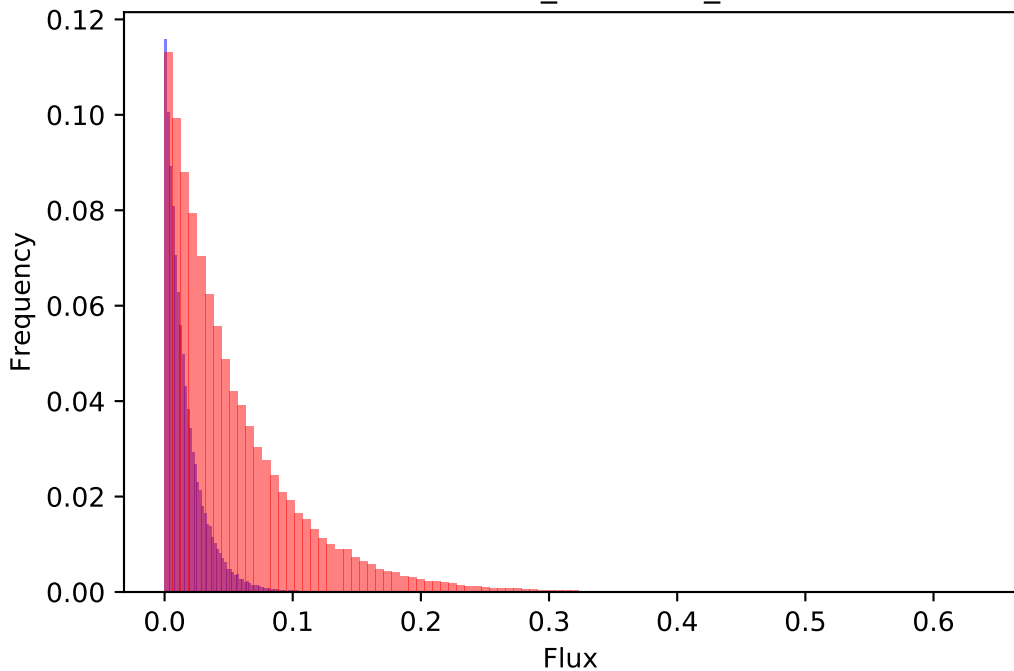
430 : Met_c --> Met_m



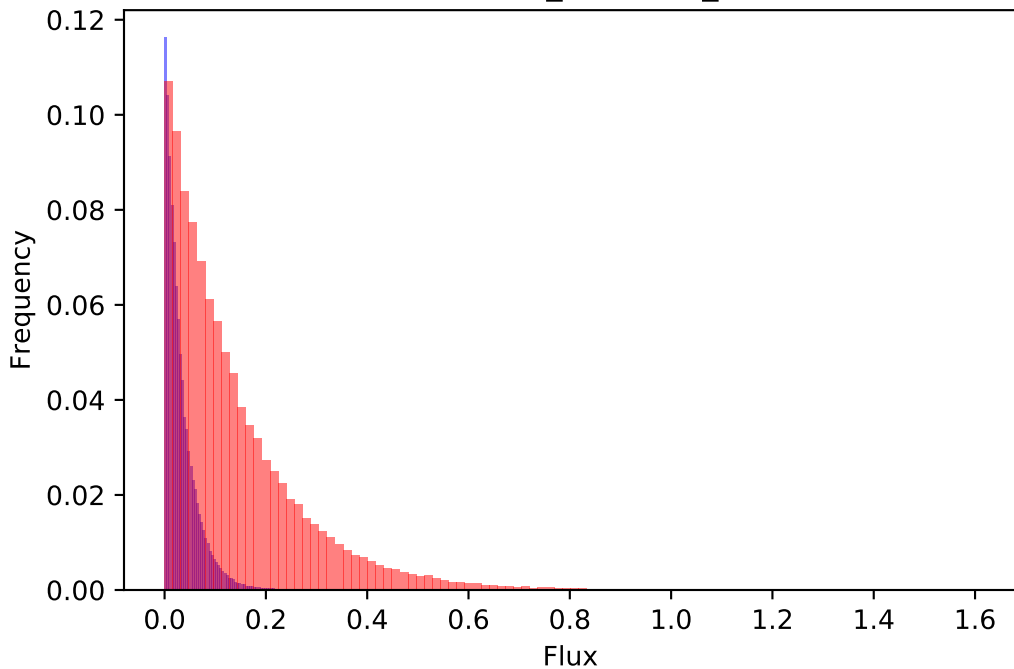
431 : Phe_h --> Phe_c



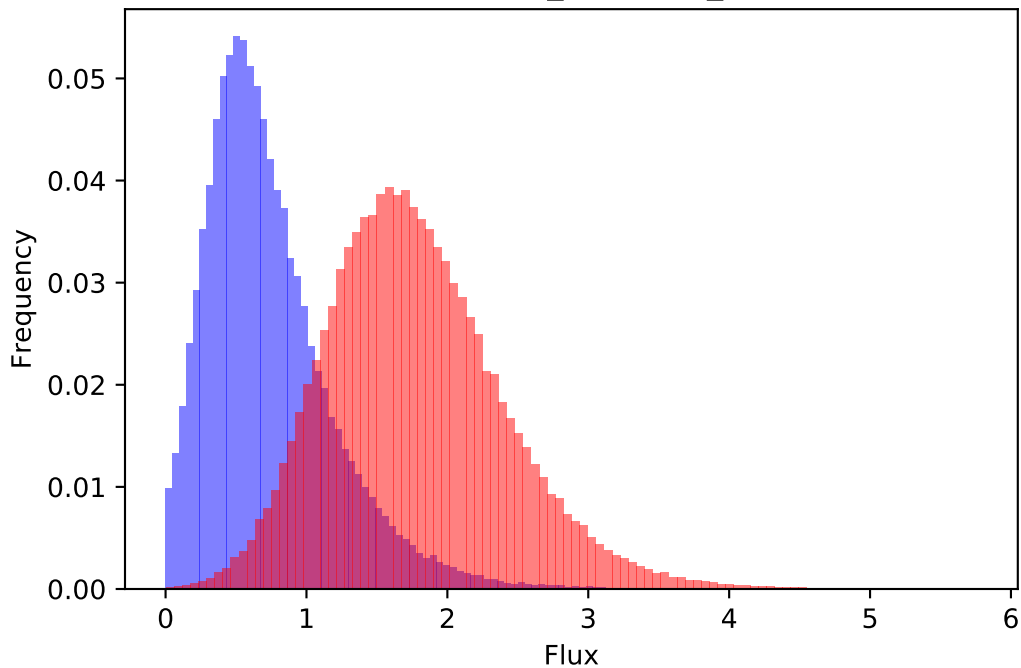
432 : Phe_c --> Phe_m



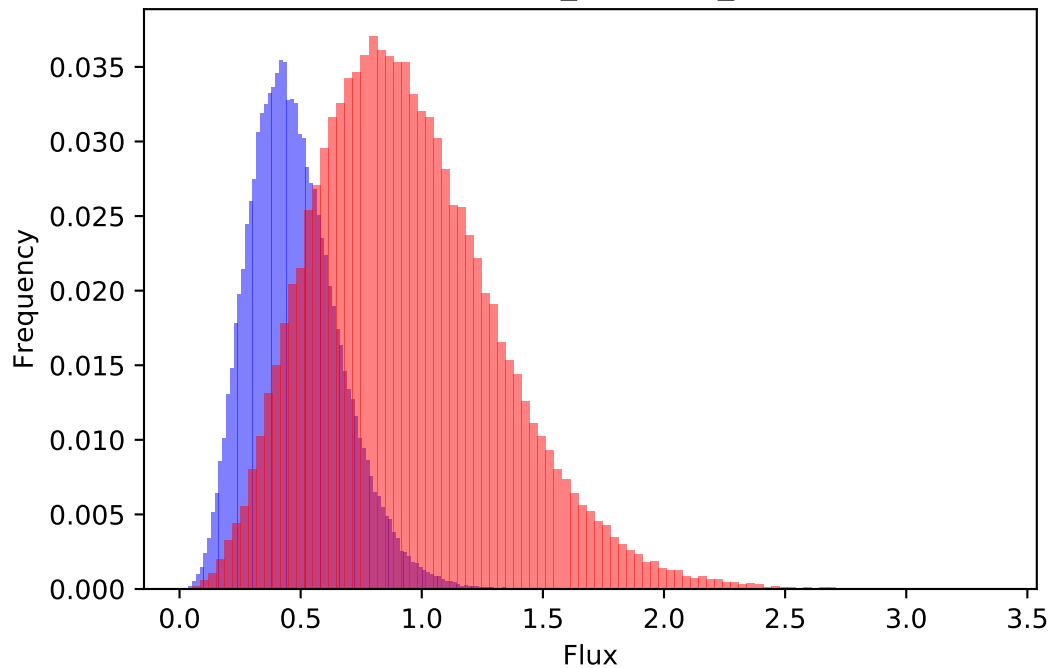
433 : Pro_c --> Pro_h



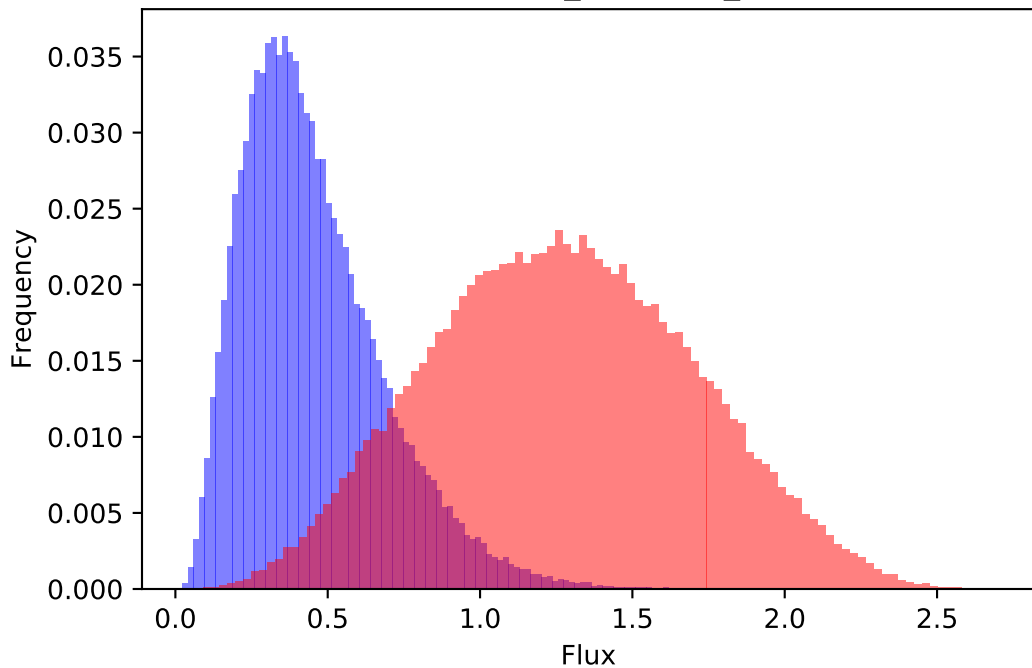
434 : Ser_h --> Ser_c



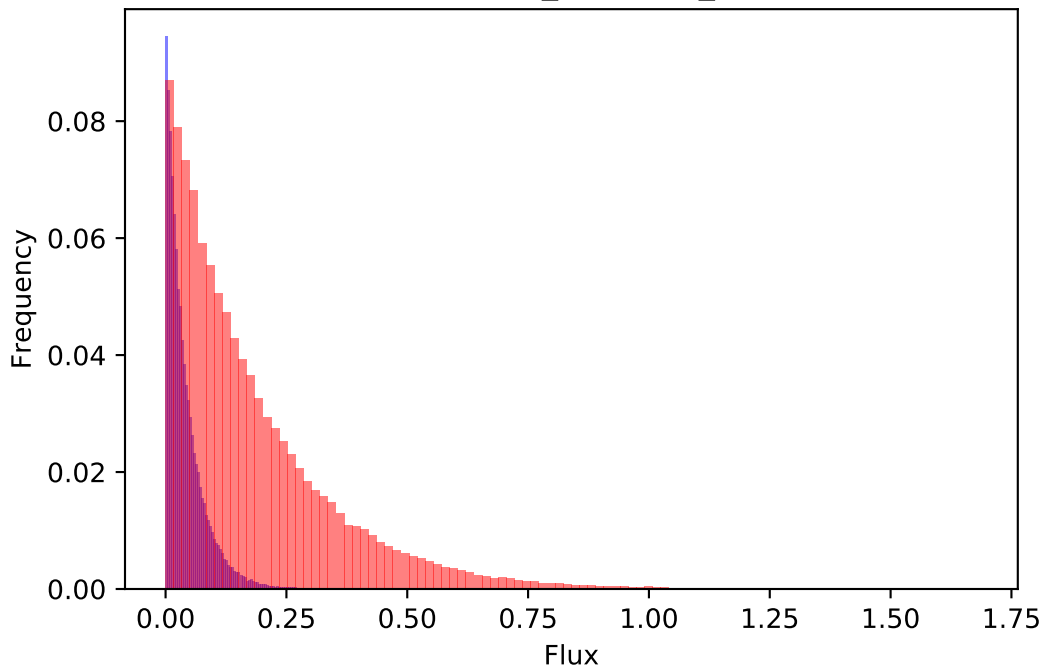
435 : Ser_c --> Ser_m



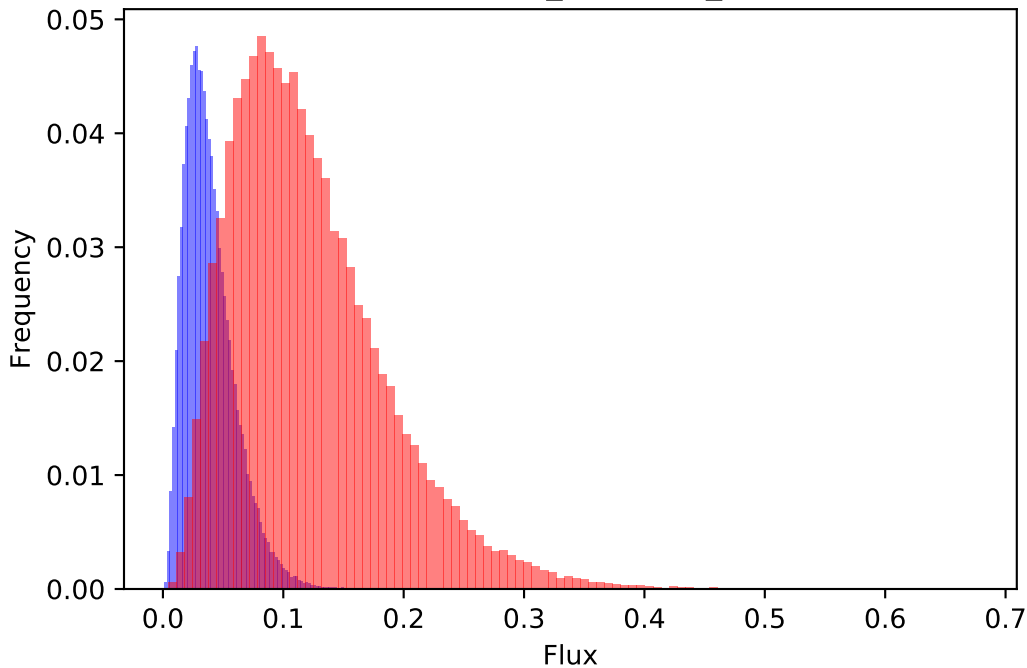
436 : Thr_h --> Thr_c



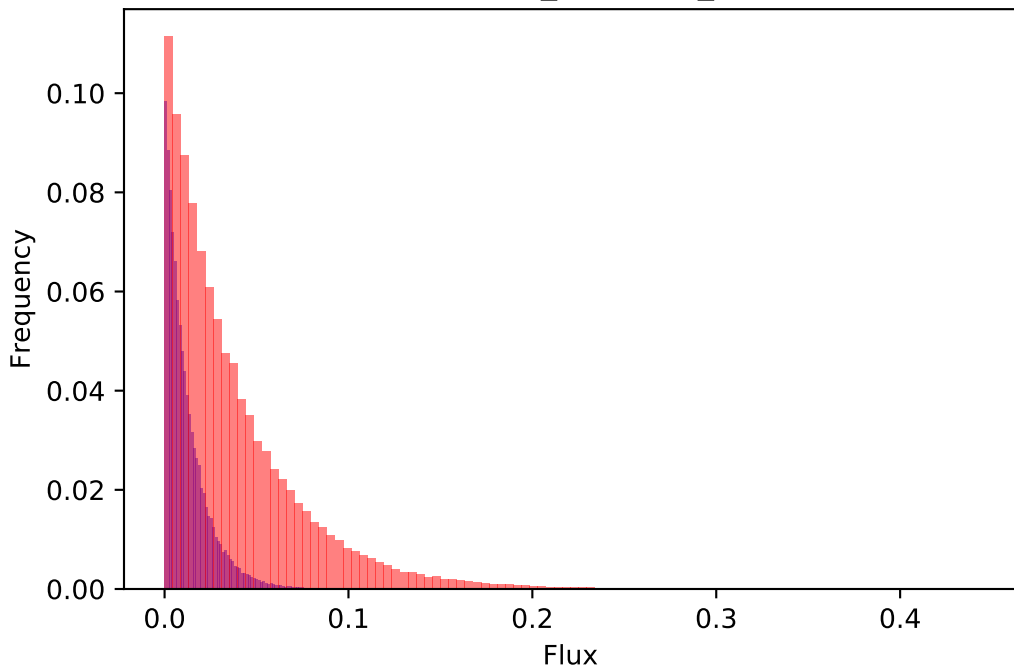
437 : Thr_c --> Thr_m



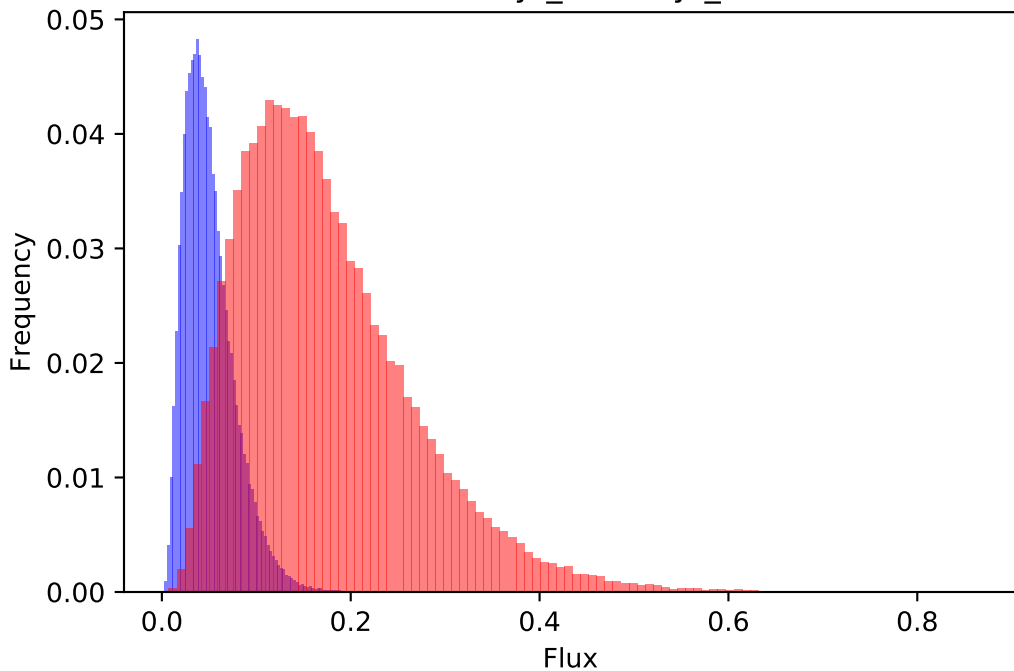
438 : Trp_h --> Trp_c



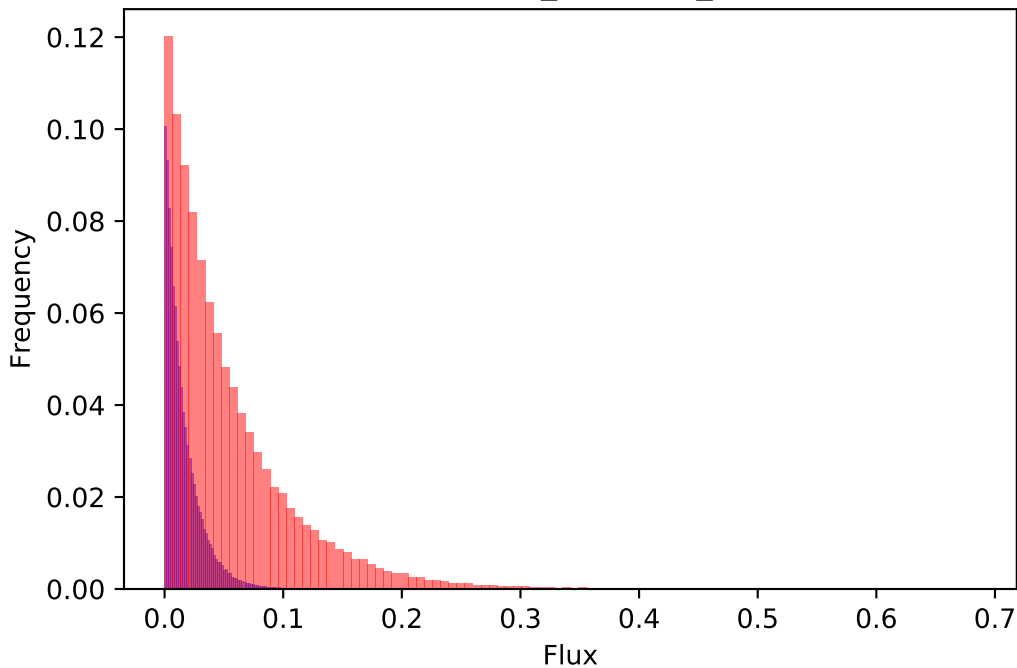
439 : Trp_c --> Trp_m



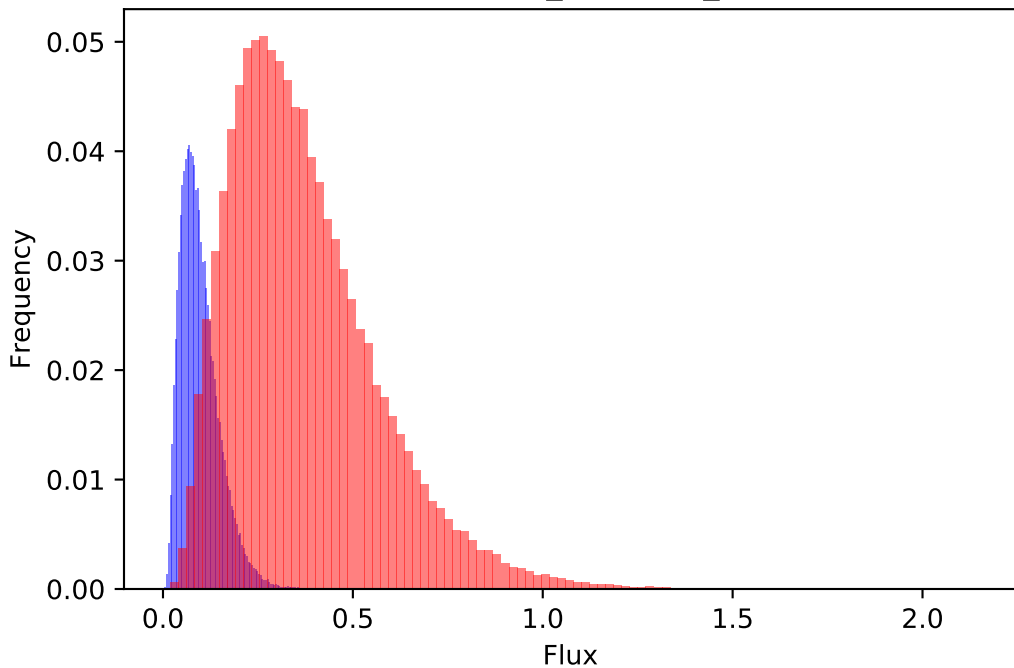
440 : Tyr_h --> Tyr_c



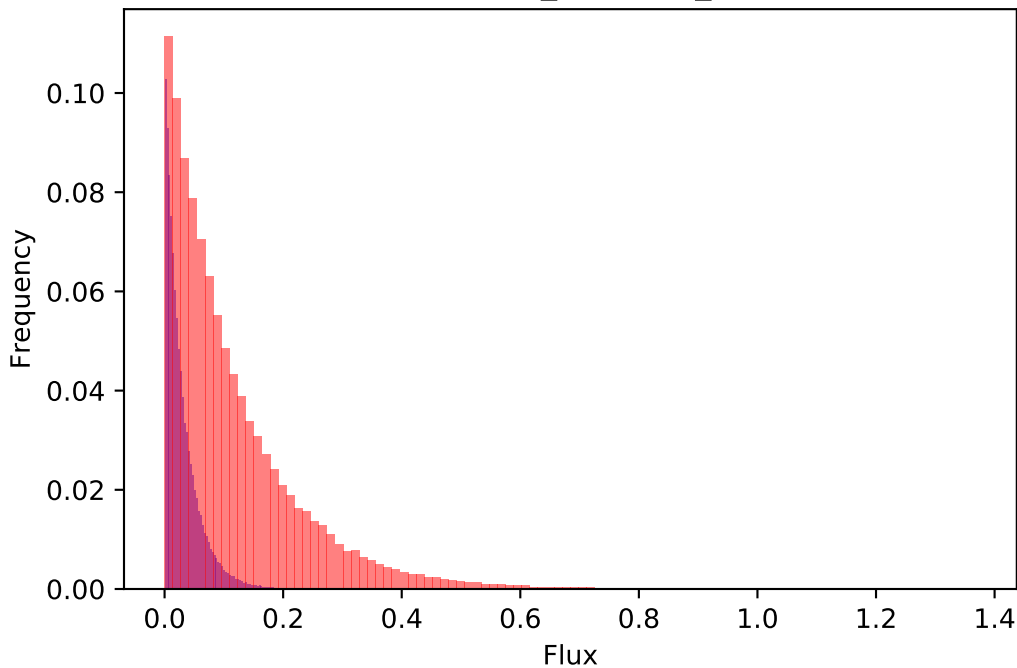
441 : Tyr_c --> Tyr_m



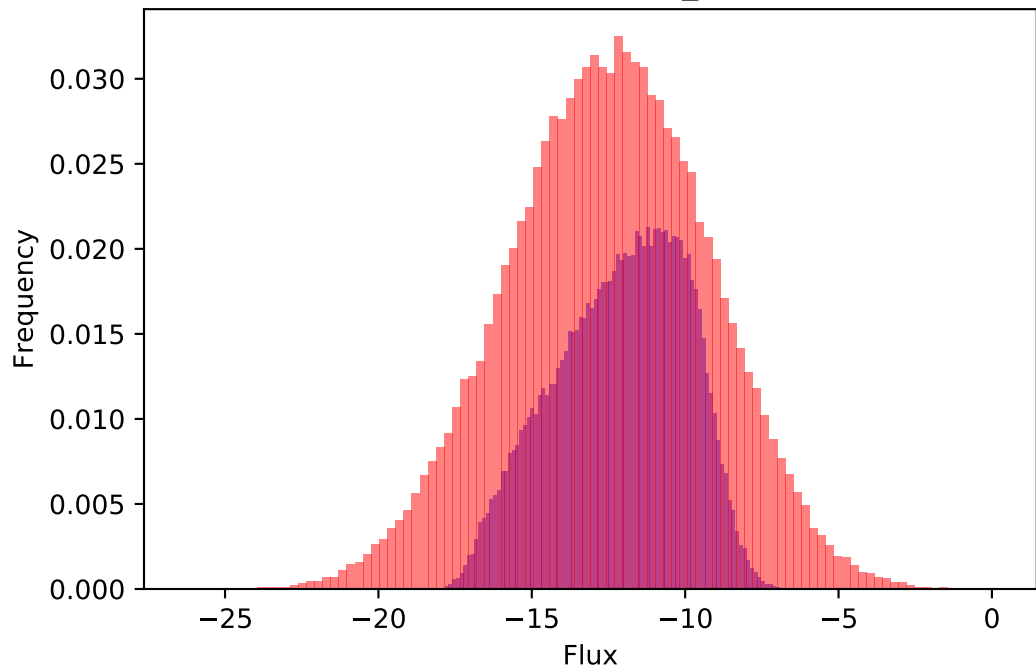
442 : Val_h --> Val_c



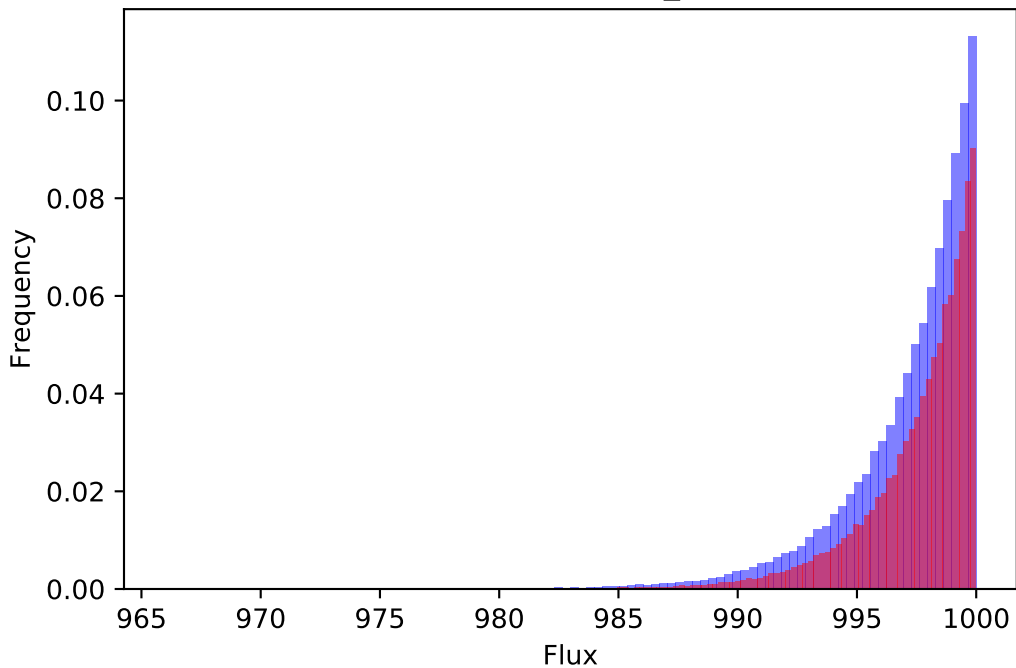
443 : Val_c --> Val_m



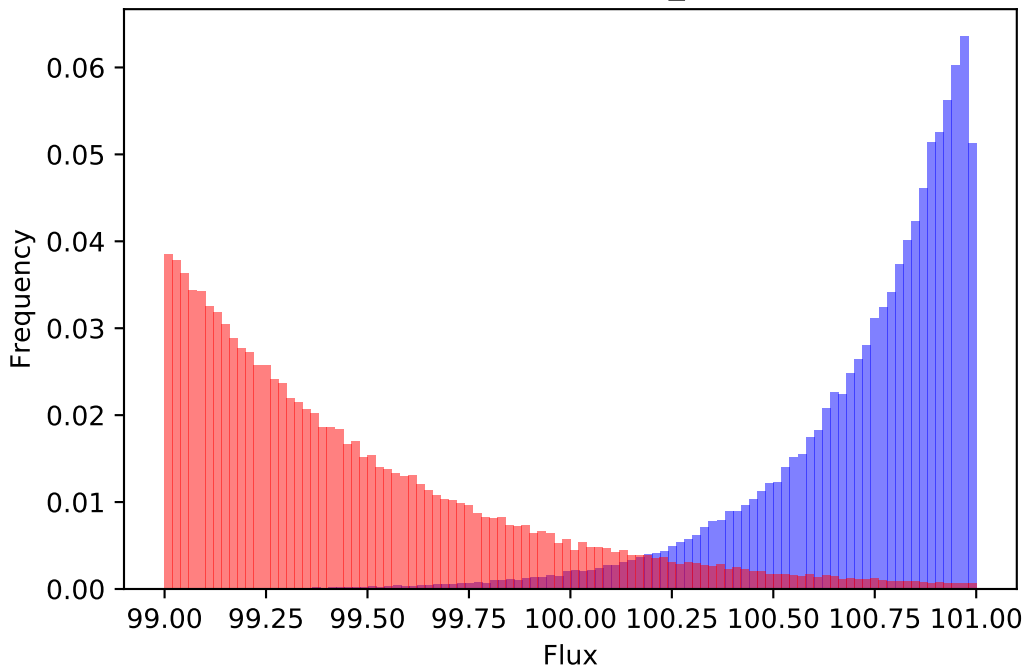
444 : \leq \Rightarrow H_c



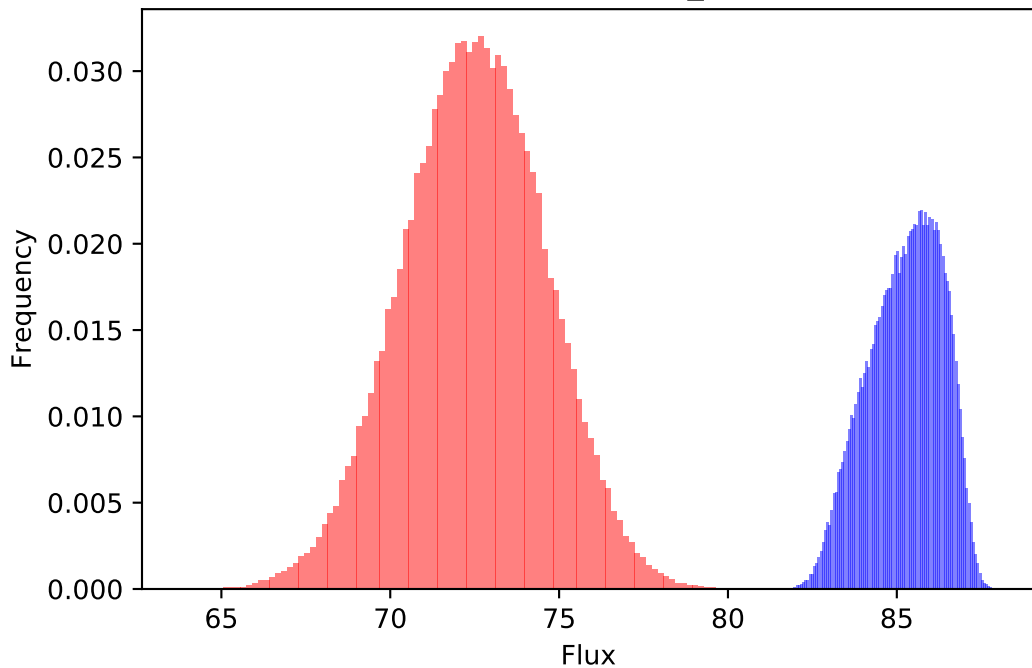
445 : --> hnu_h



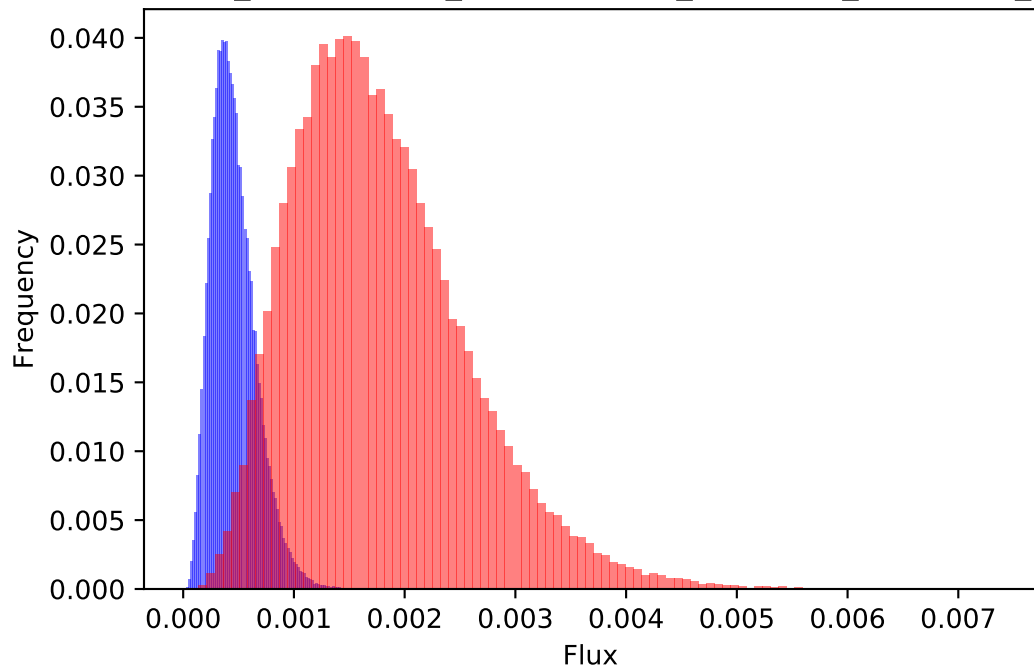
446 : --> CO2_c



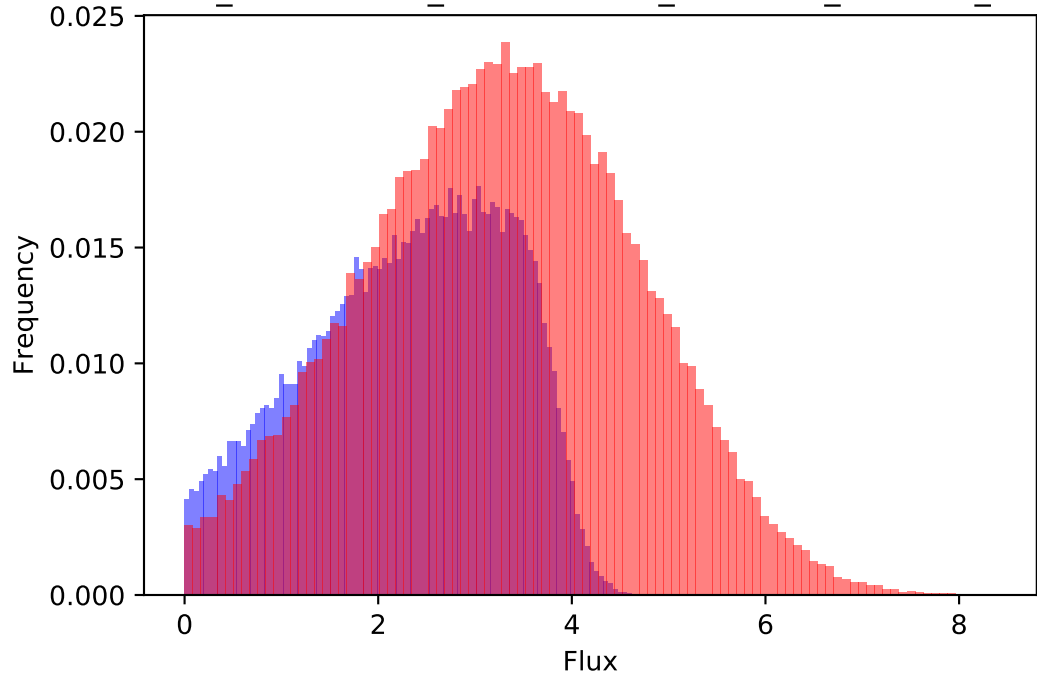
447 : --> H2O_c



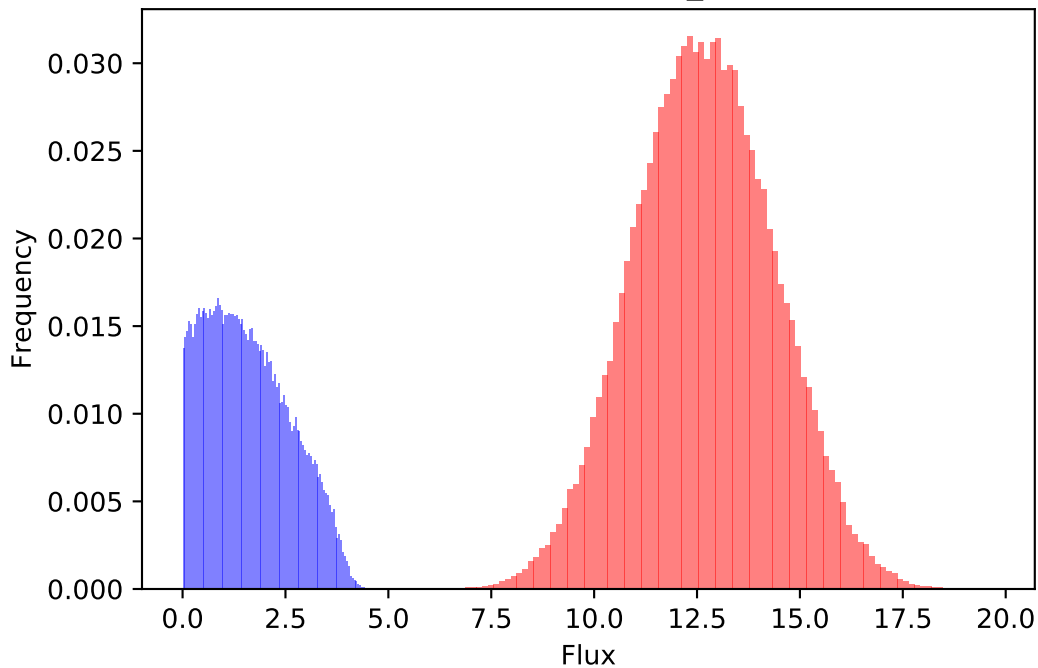
448 : 3.0 ATP_c + 3.0 H2O_c --> 3.0 ADP_c + 2.0 H_h + 3.0 Pi_c + Pi_h



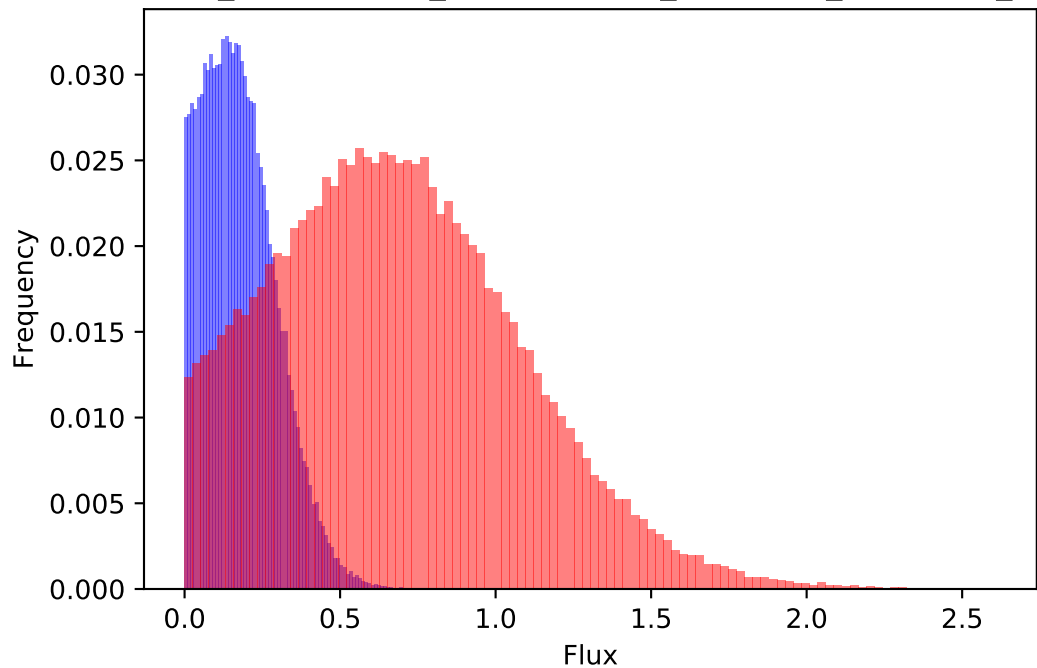
449 : 2.0 ATP_c + 2.0 H2O_c --> 2.0 ADP_c + 2.0 H_c + NO3_c + 2.0 Pi_c



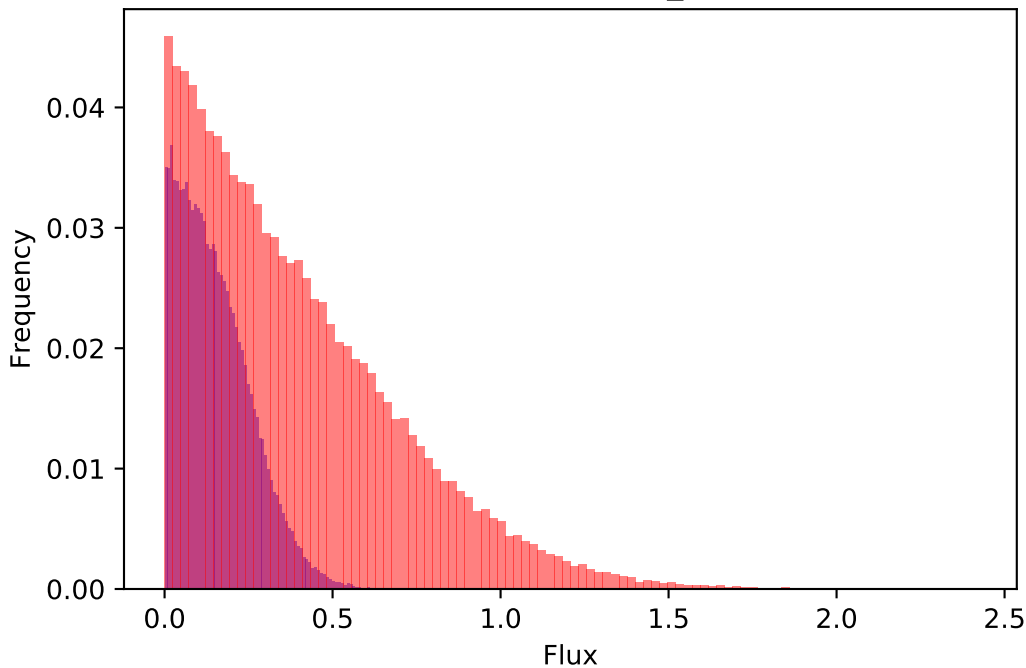
450 : --> NH4_c



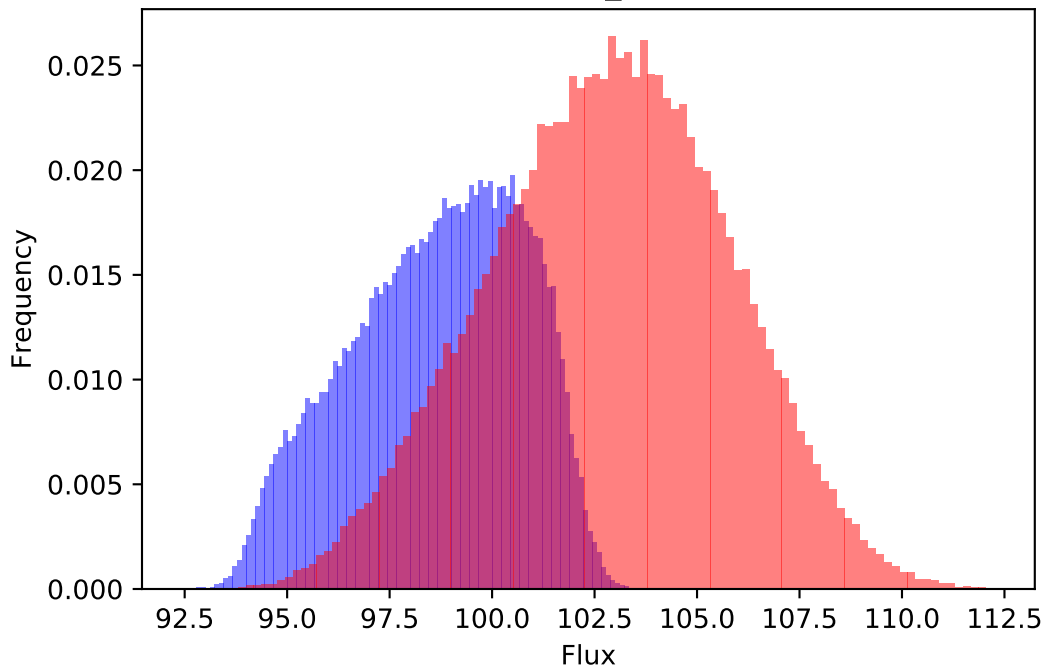
451 : 3.0 ATP_c + 3.0 H2O_c --> 3.0 ADP_c + 3.0 H_c + 3.0 Pi_c + SO4_c



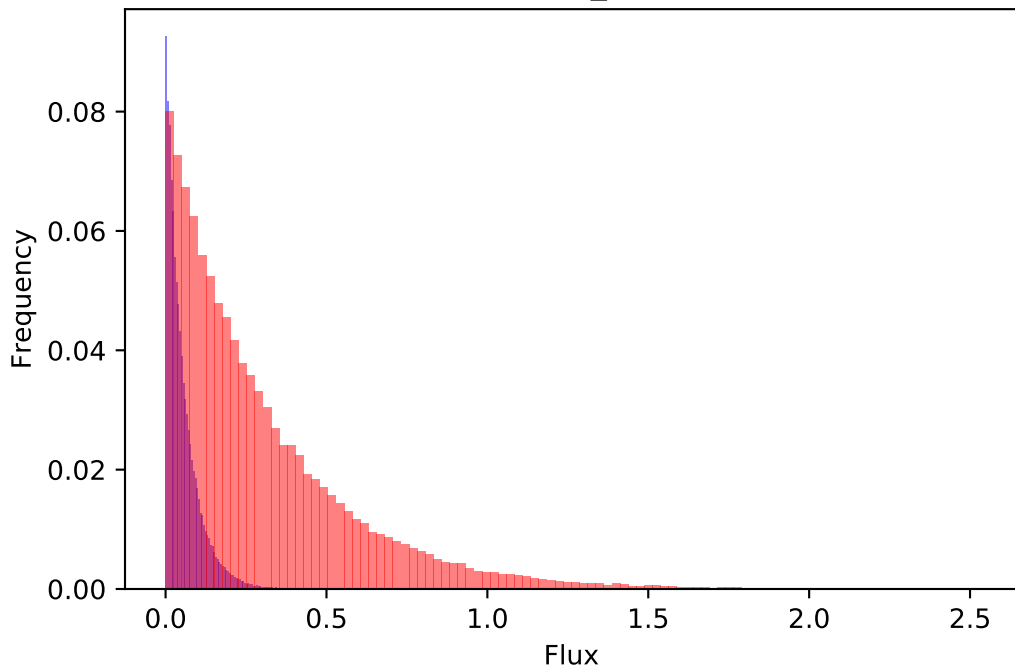
452 : --> H2S_c



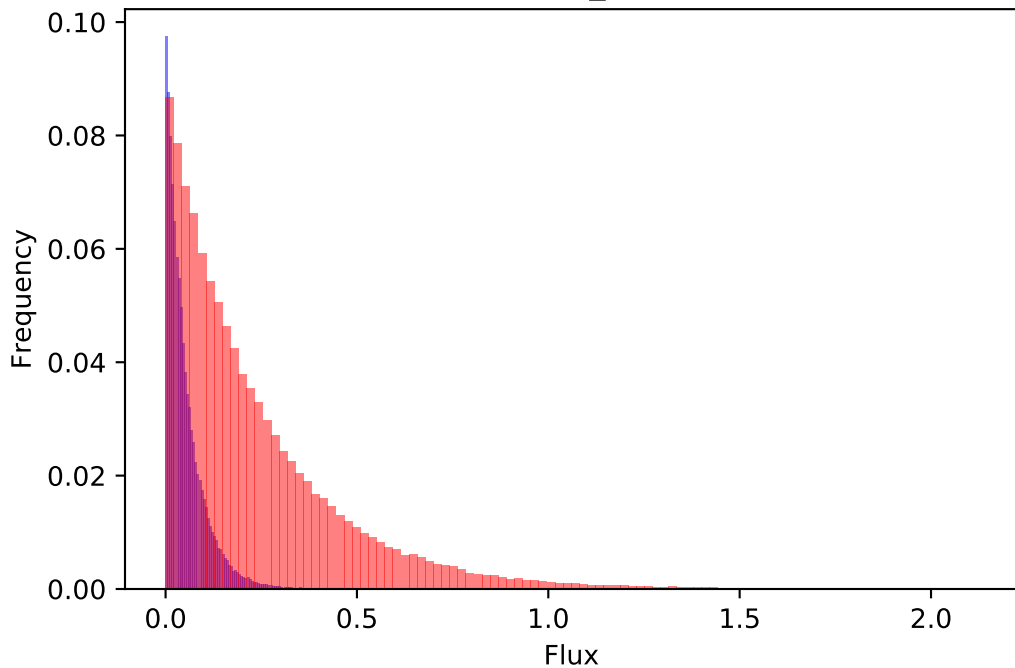
453 : O2_c -->



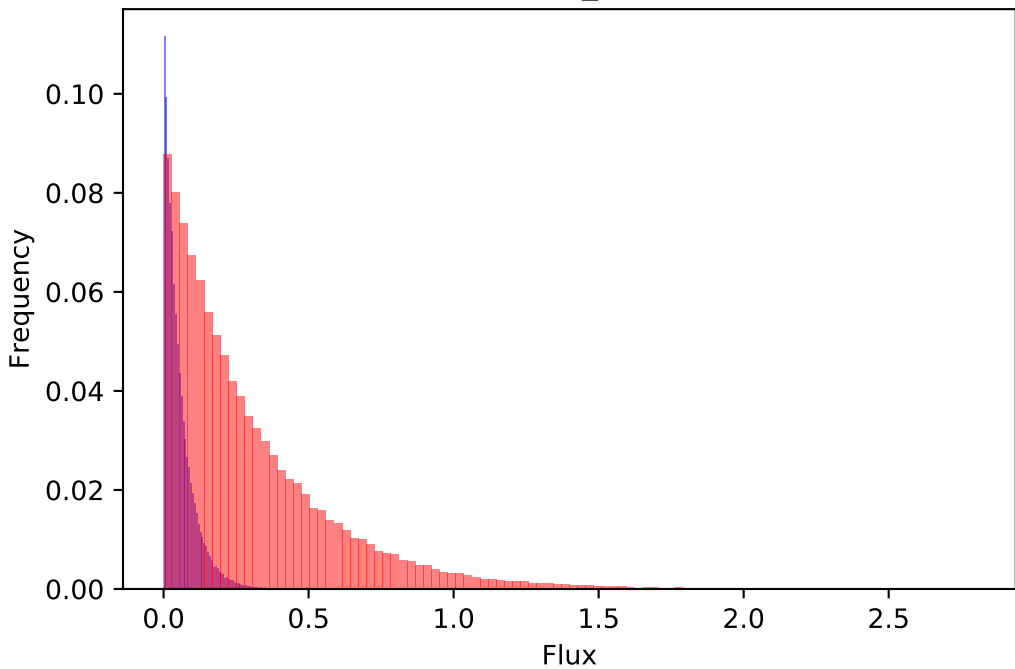
454 : Ala_c -->



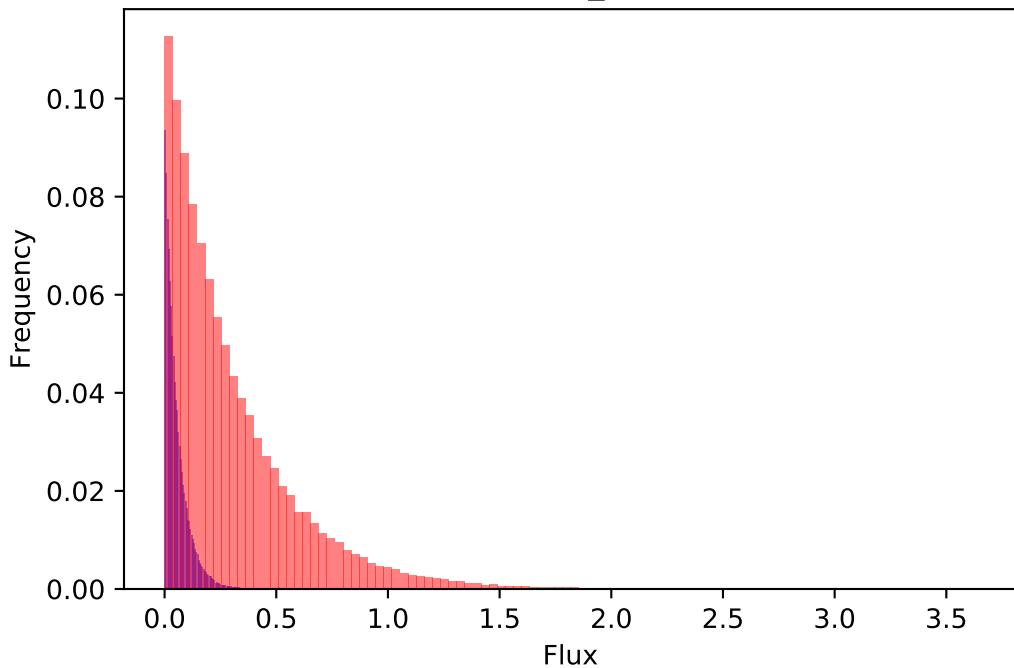
455 : Ala_h -->



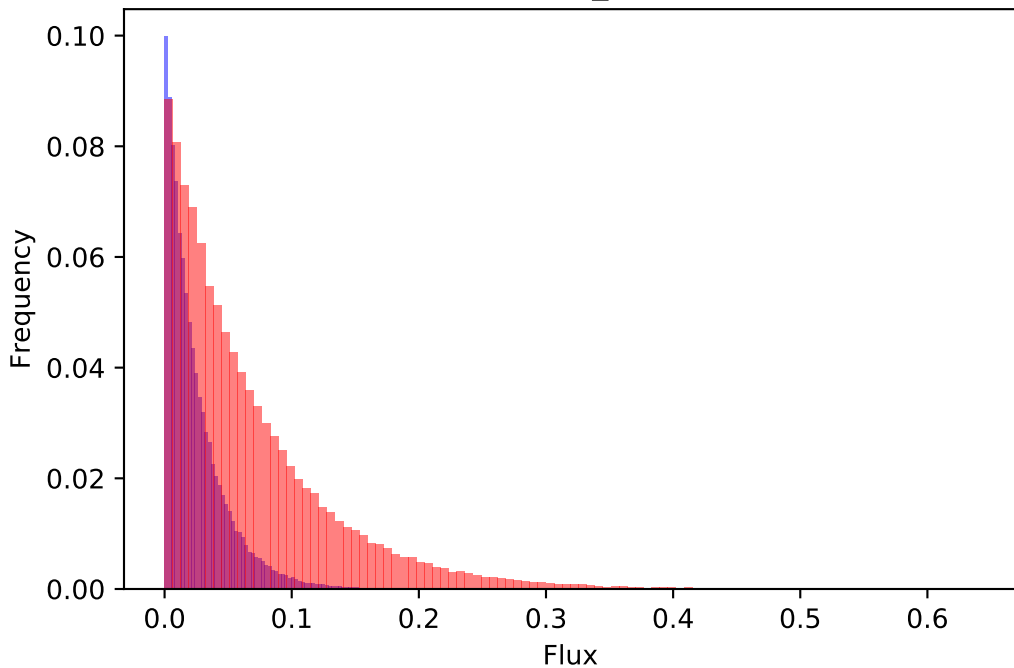
456 : Ala_m -->



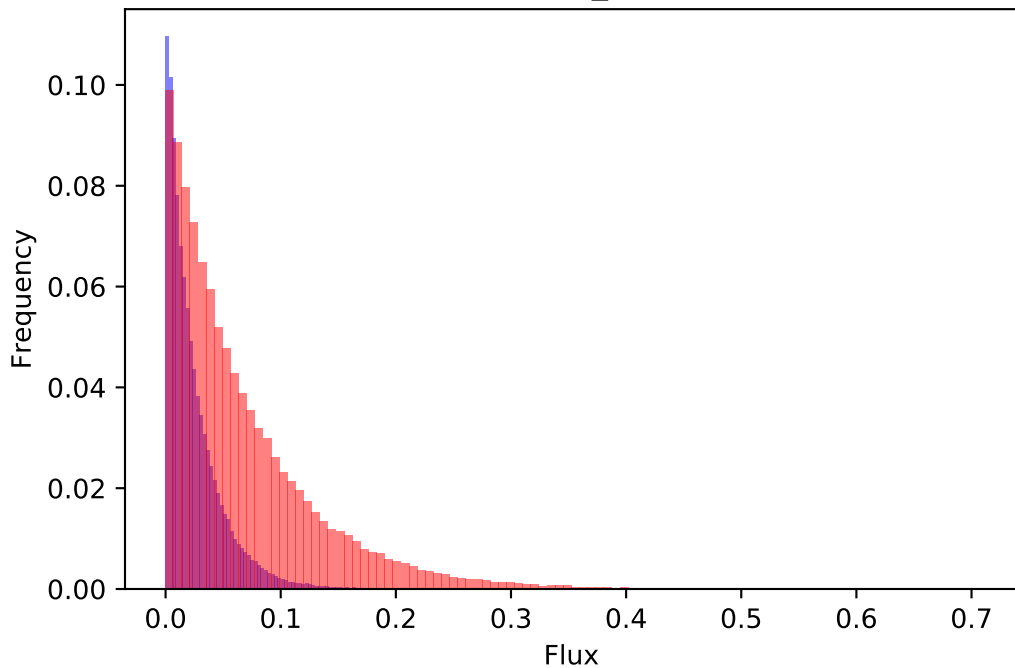
457 : Ala_p -->



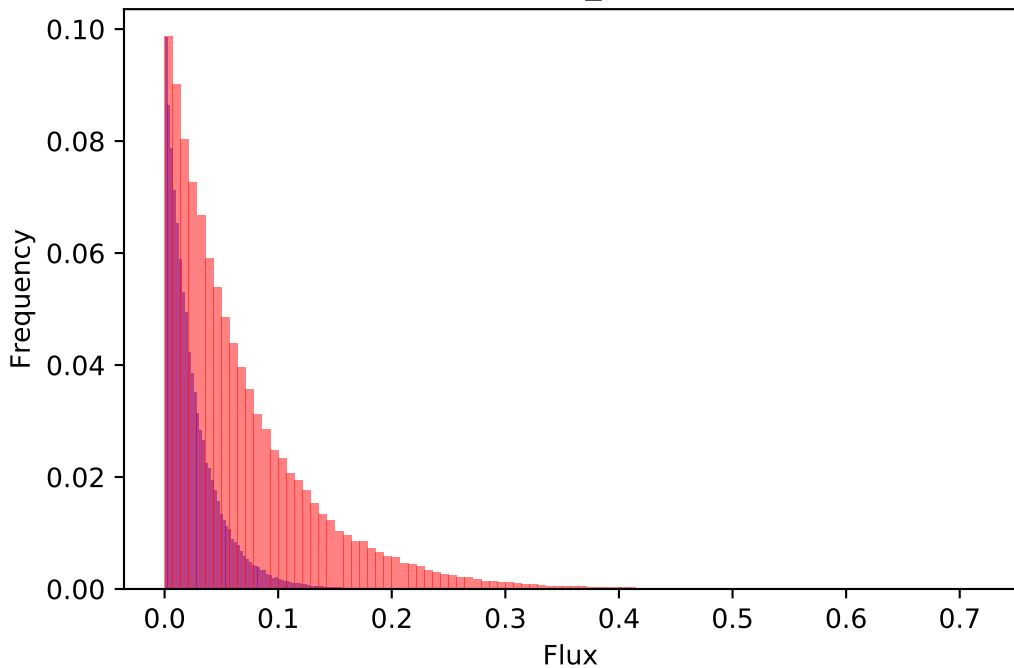
458 : Arg_c -->



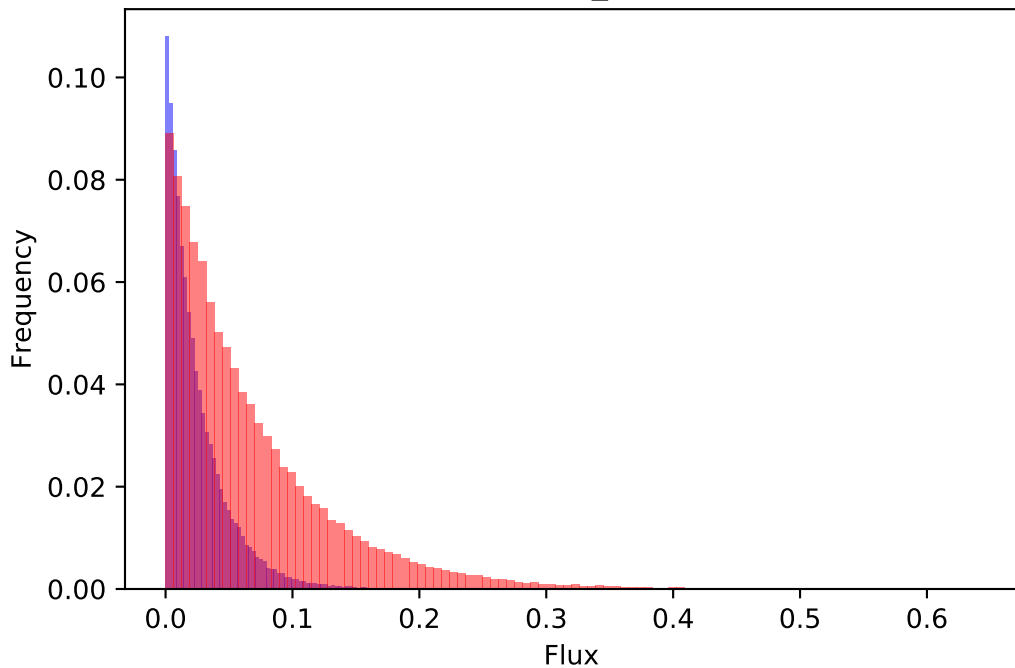
459 : Arg_h -->



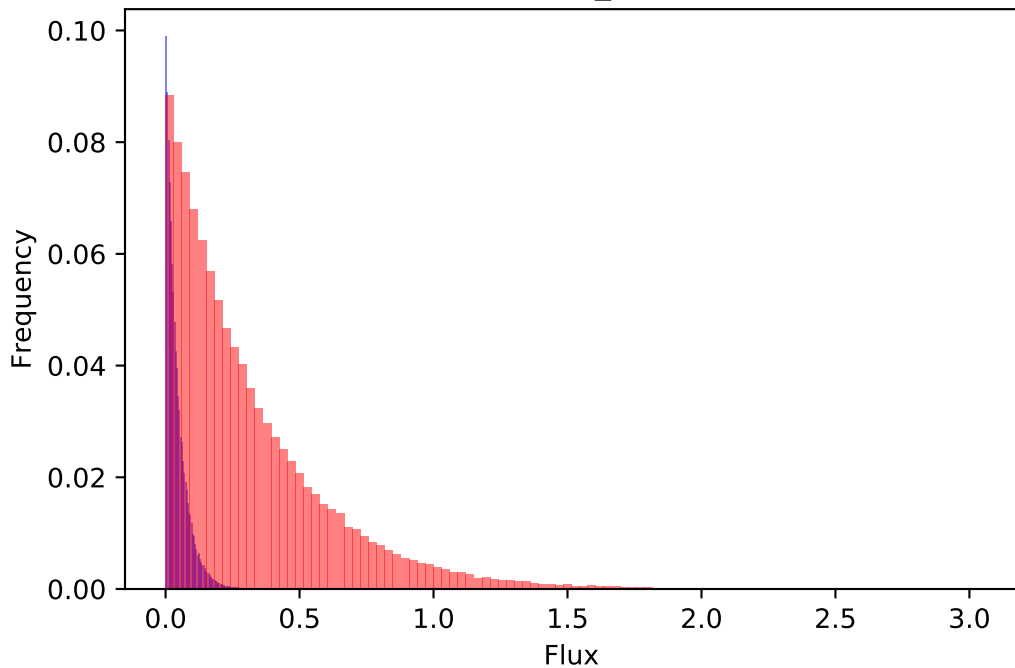
460 : Arg_m -->



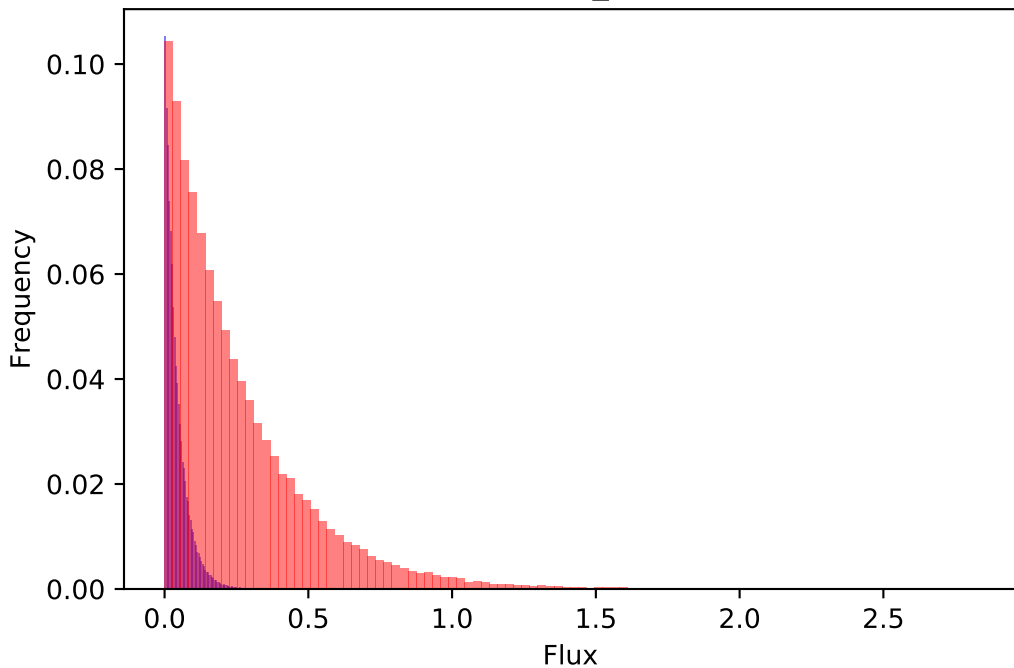
461 : Arg_p -->



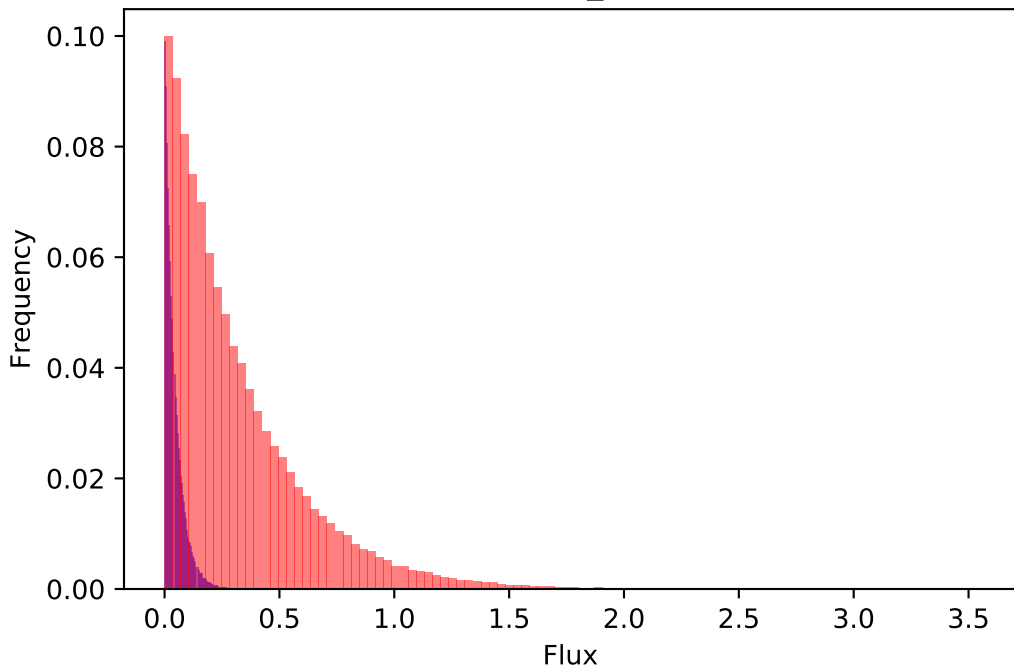
462 : Asn_c -->



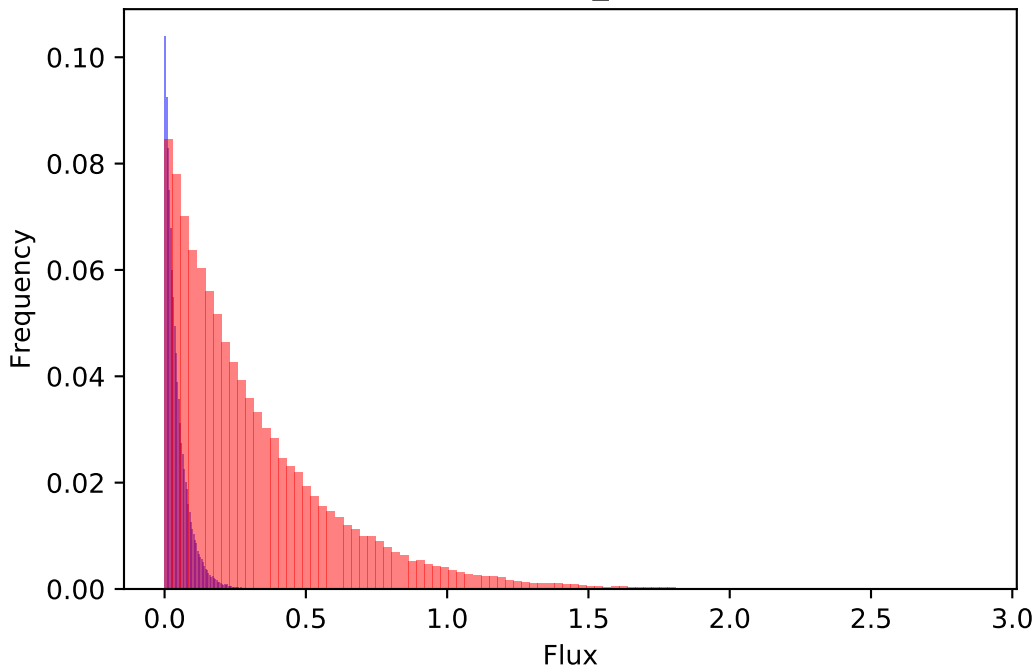
463 : Asn_h -->



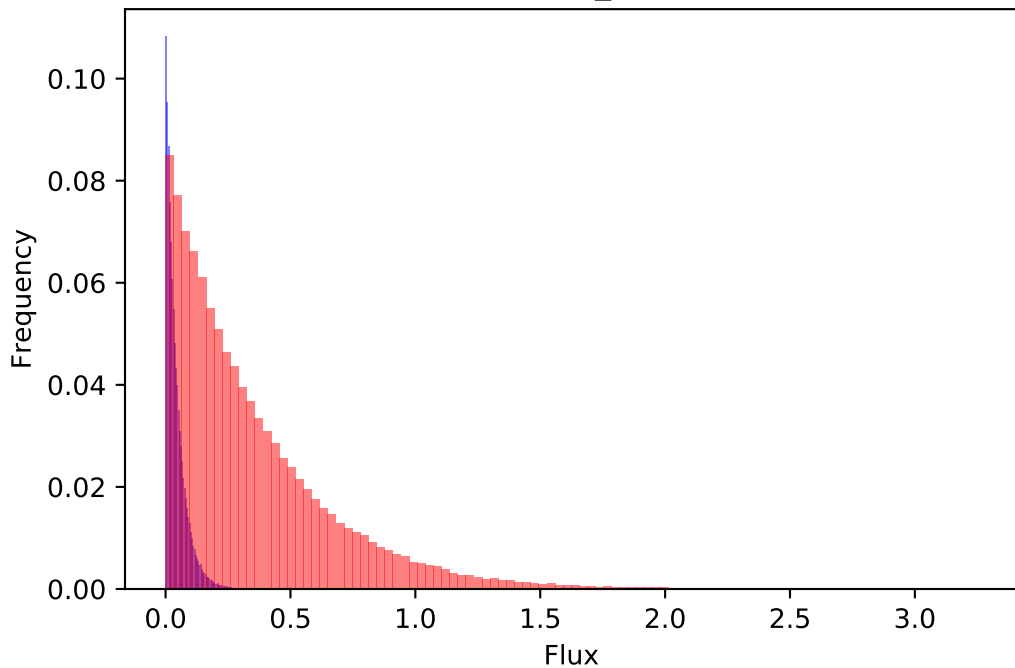
464 : Asn_m -->



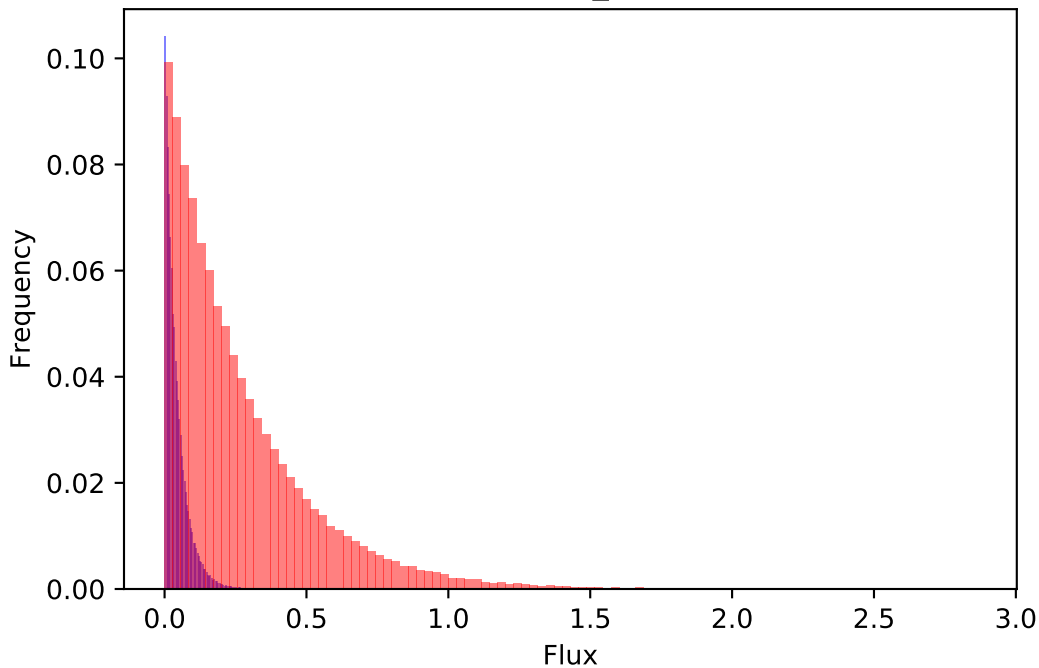
465 : Asn_p -->



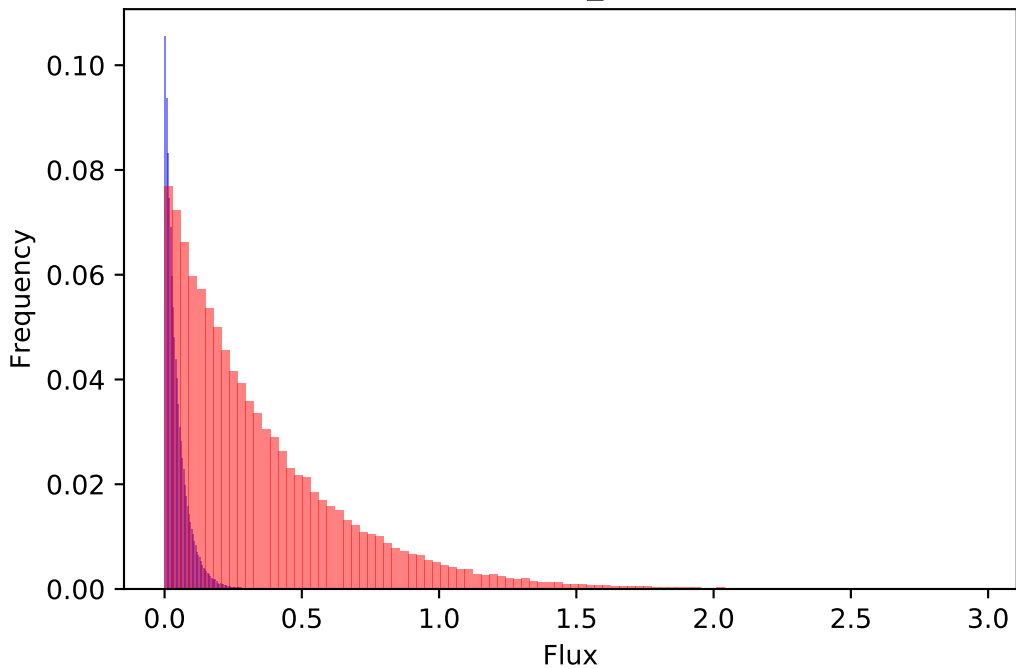
466 : Asp_c -->



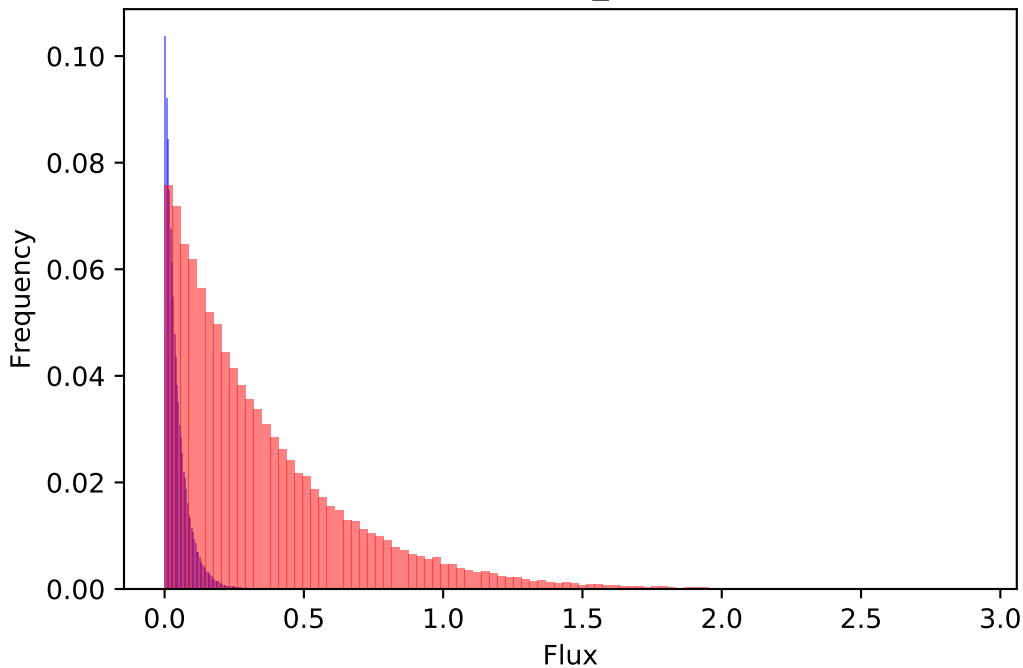
467 : Asp_h -->



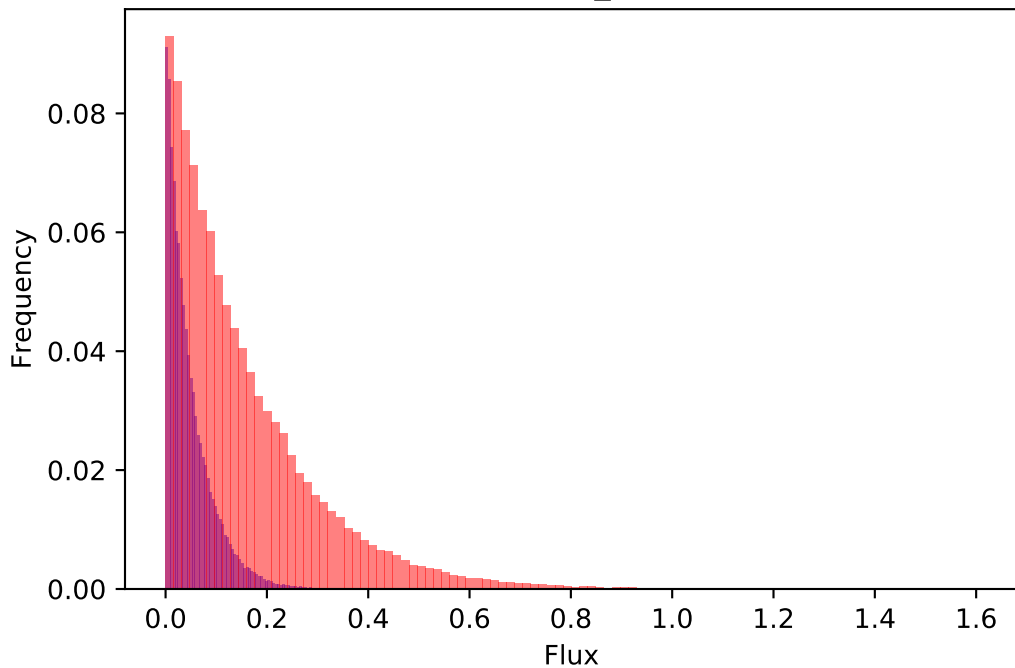
468 : Asp_m -->



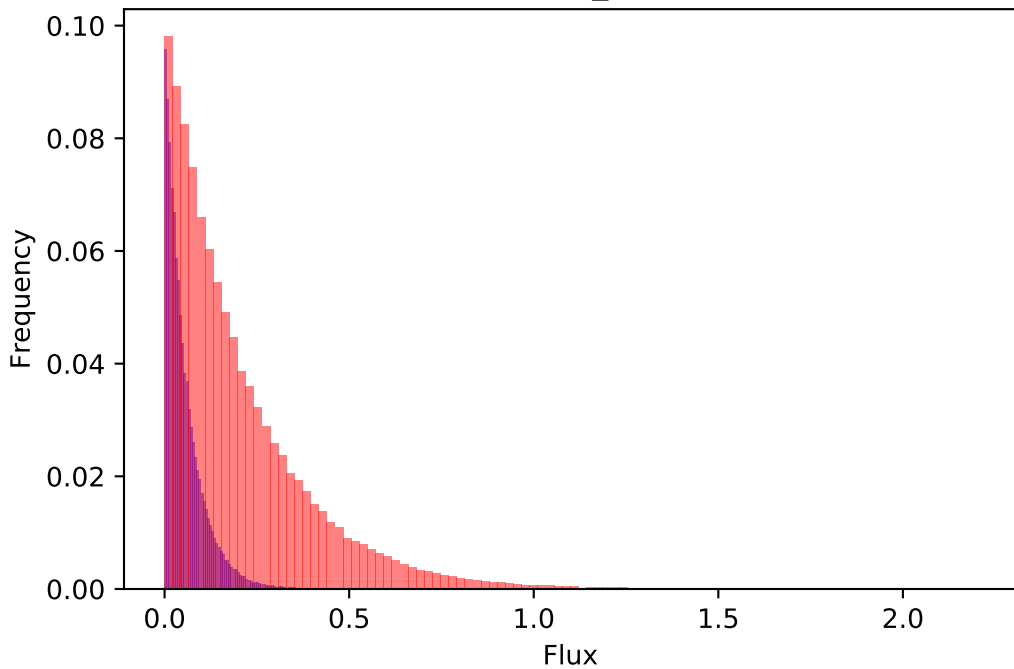
469 : Asp_p -->



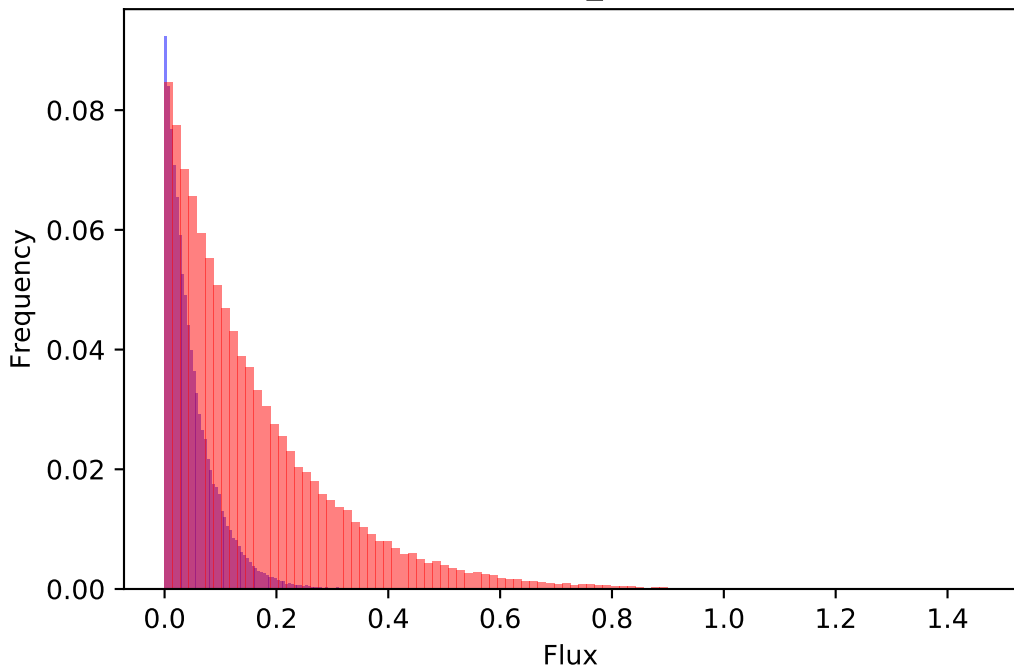
470 : Cys_c -->



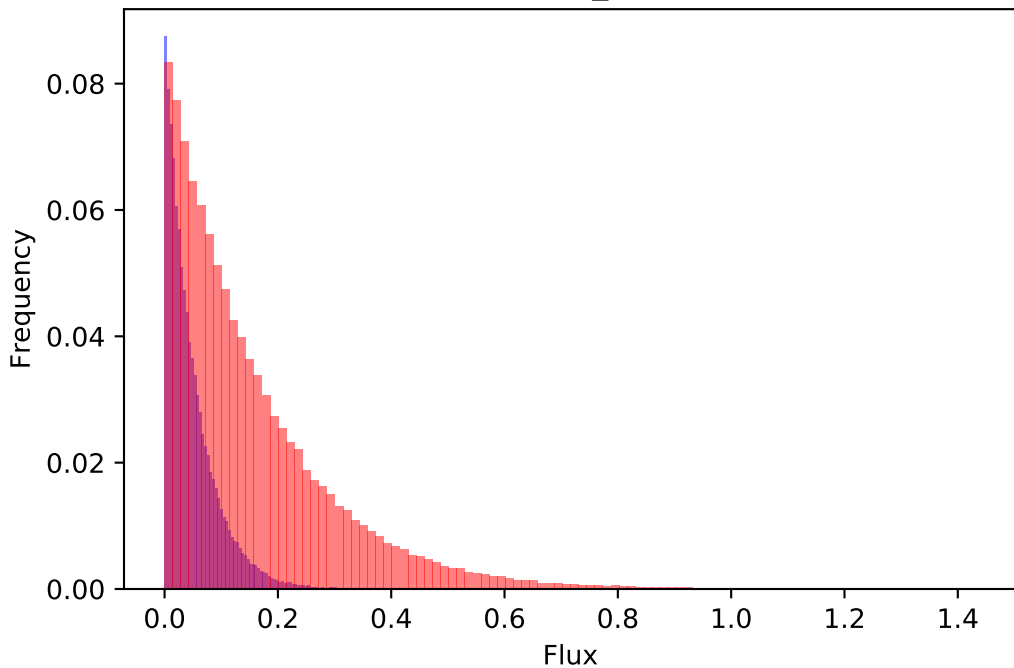
471 : Cys_h -->



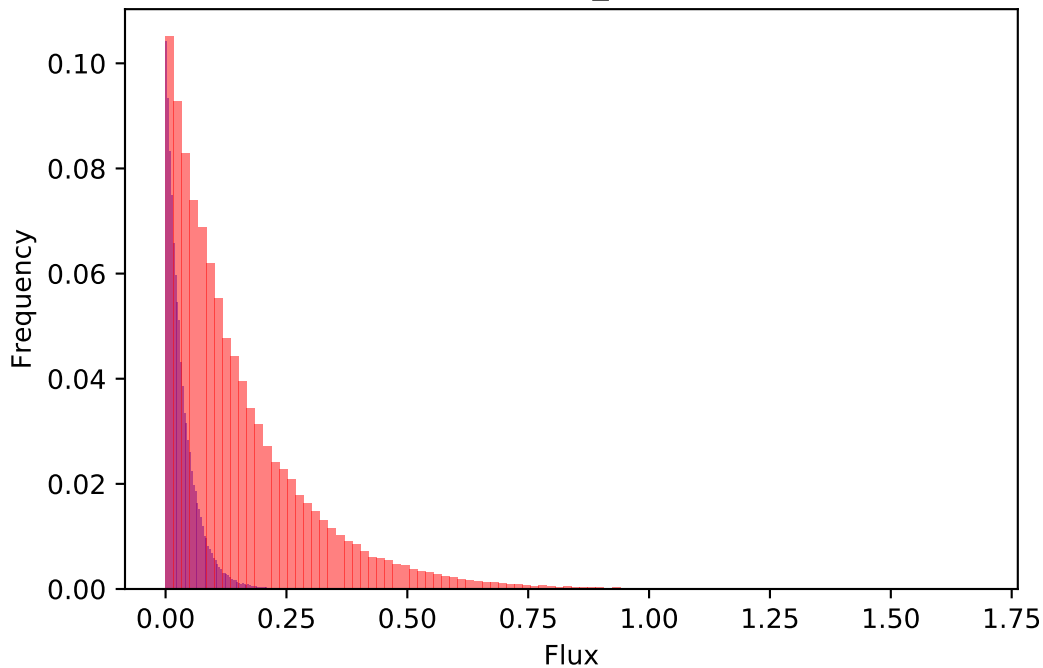
472 : Cys_m -->



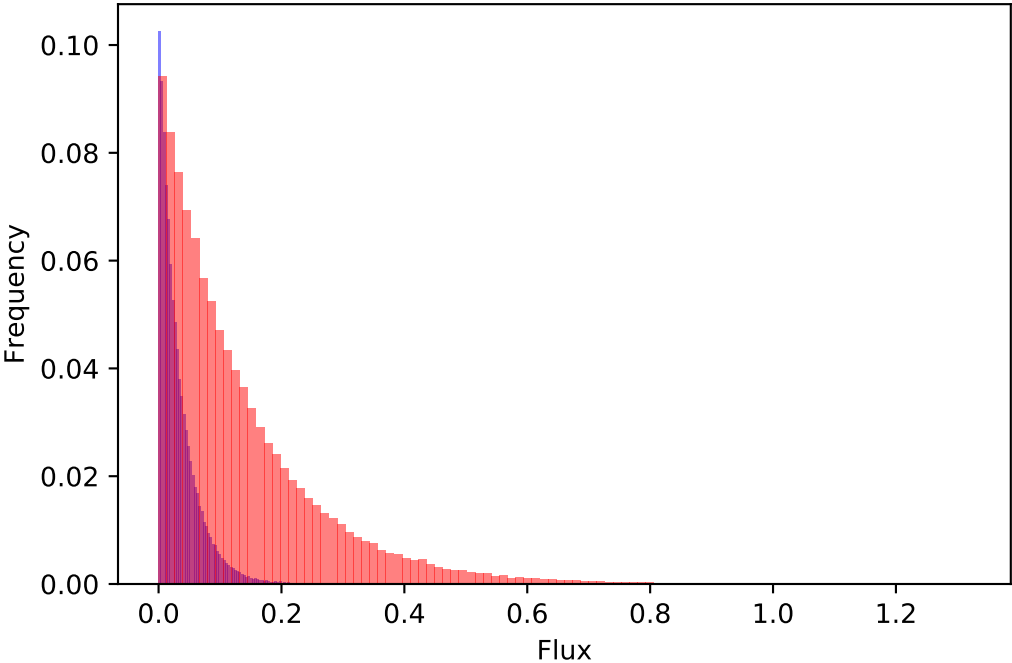
473 : Cys_p -->



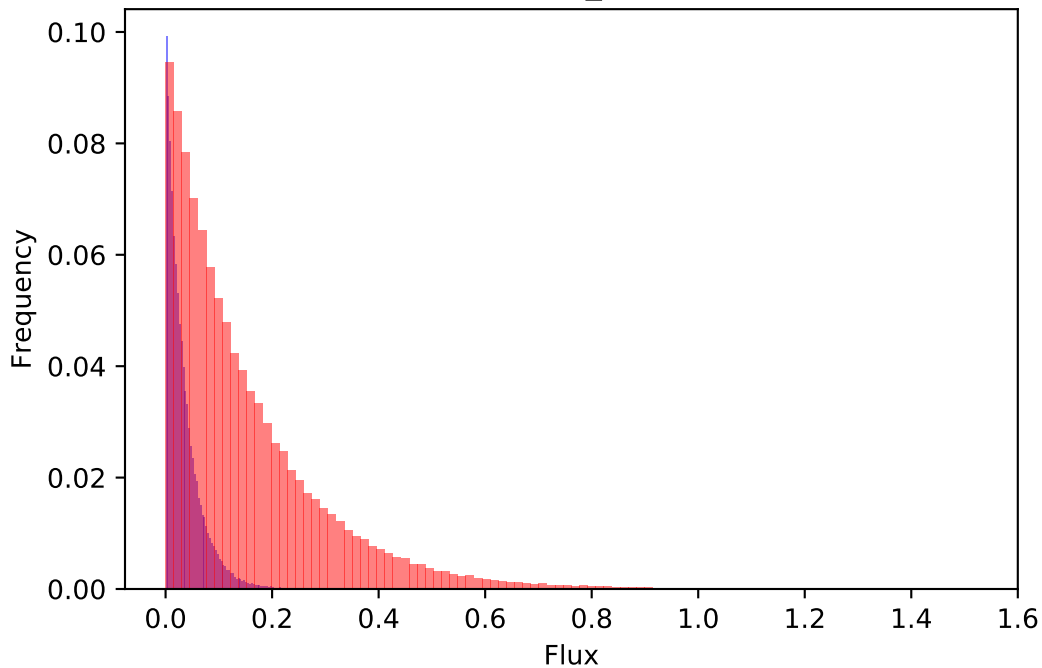
474 : Gln_c -->



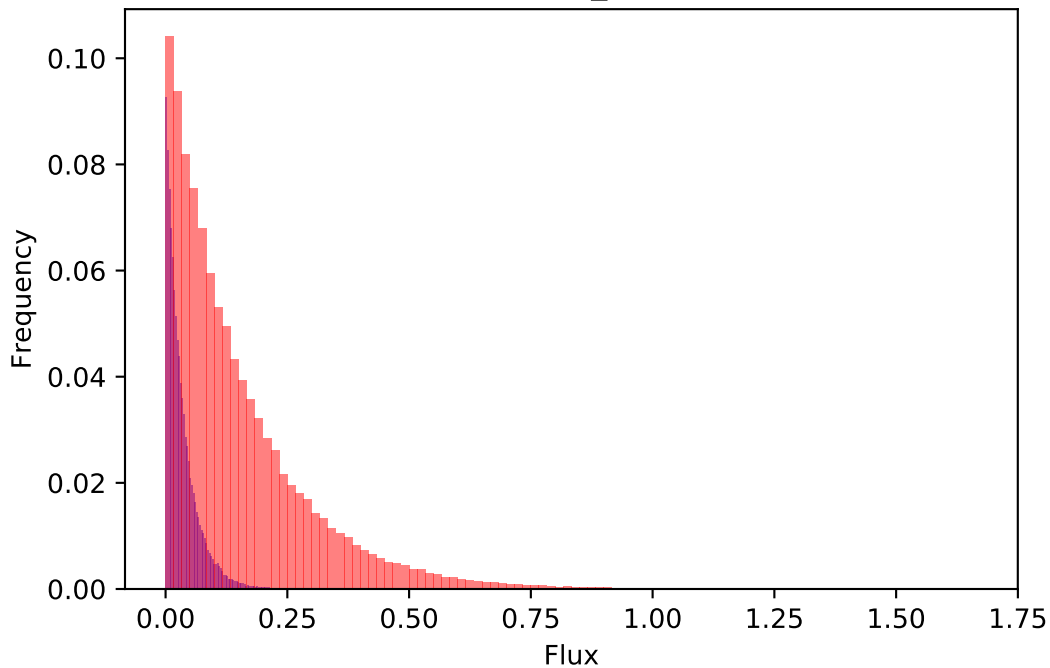
475 : Gln_h -->



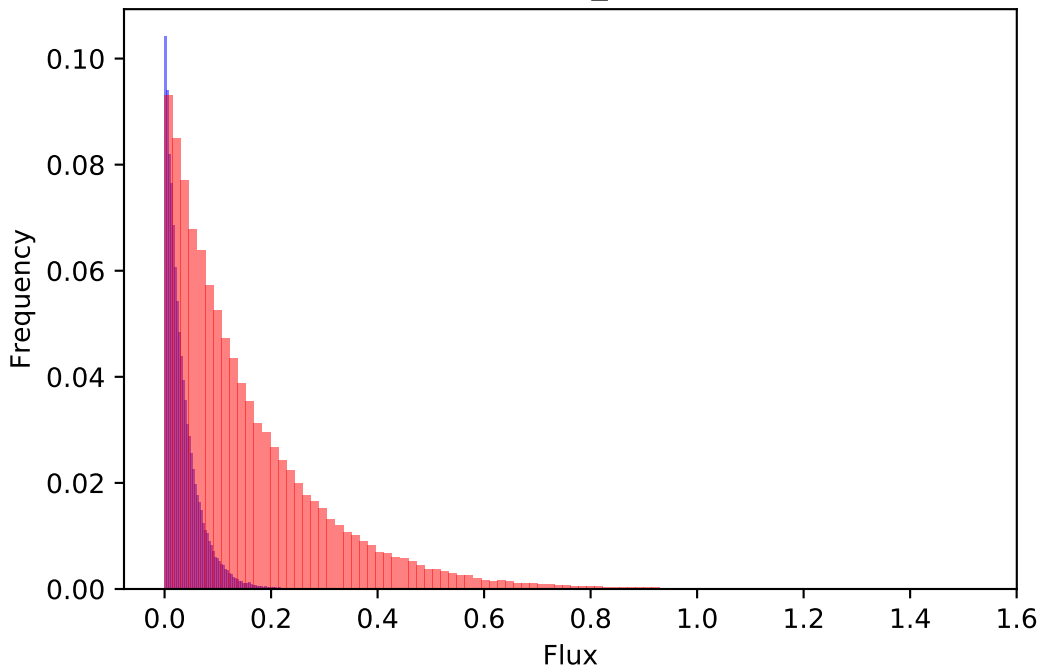
476 : Gln_m -->



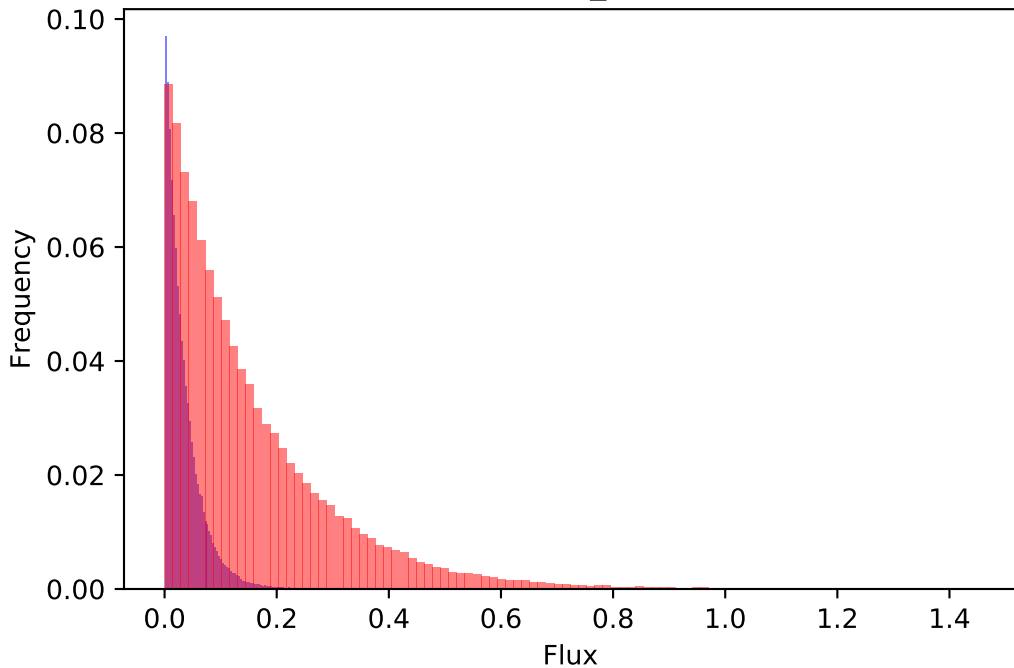
477 : Gln_p -->



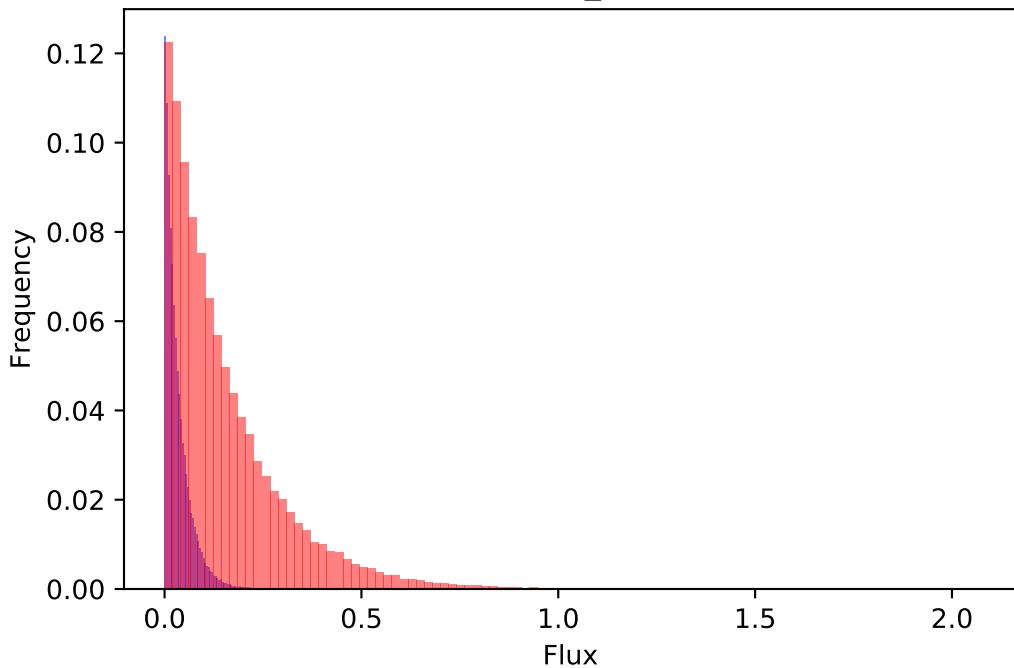
478 : Glu_c -->



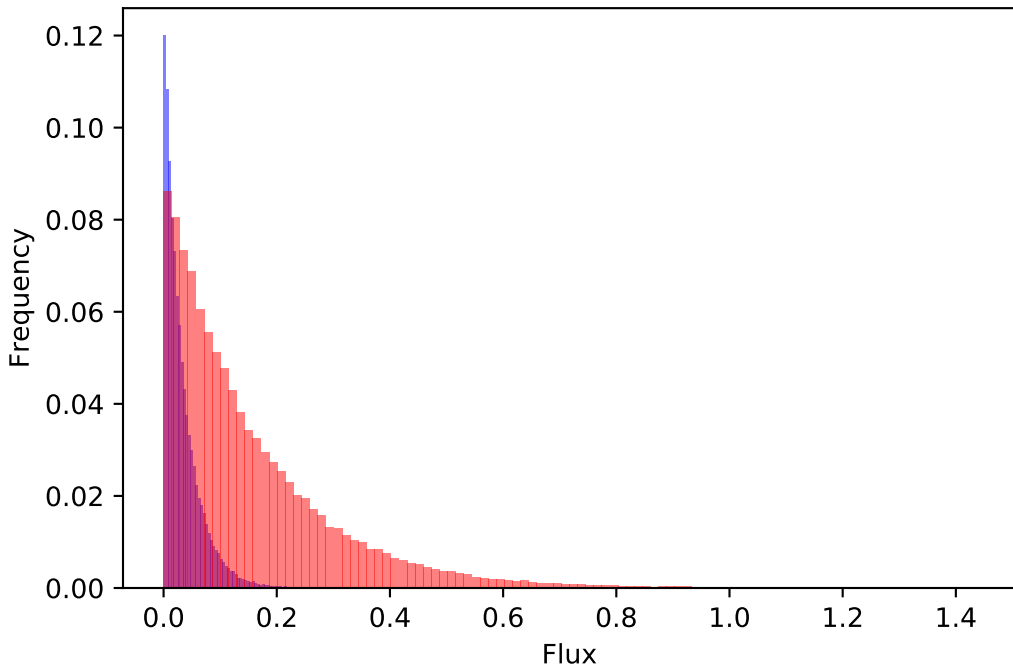
479 : Glu_h -->



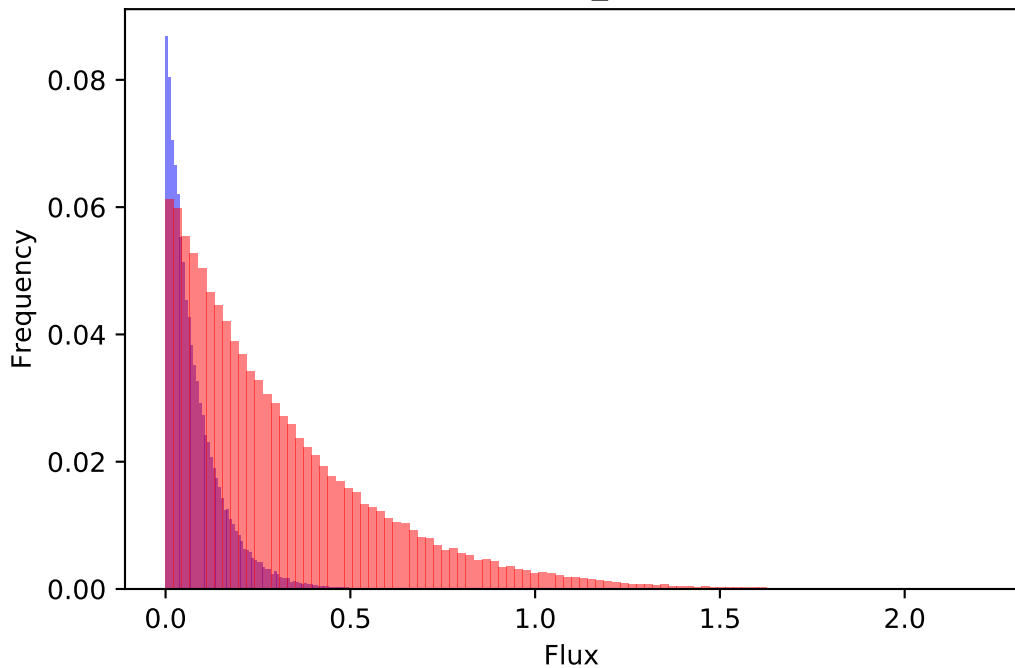
480 : Glu_m -->



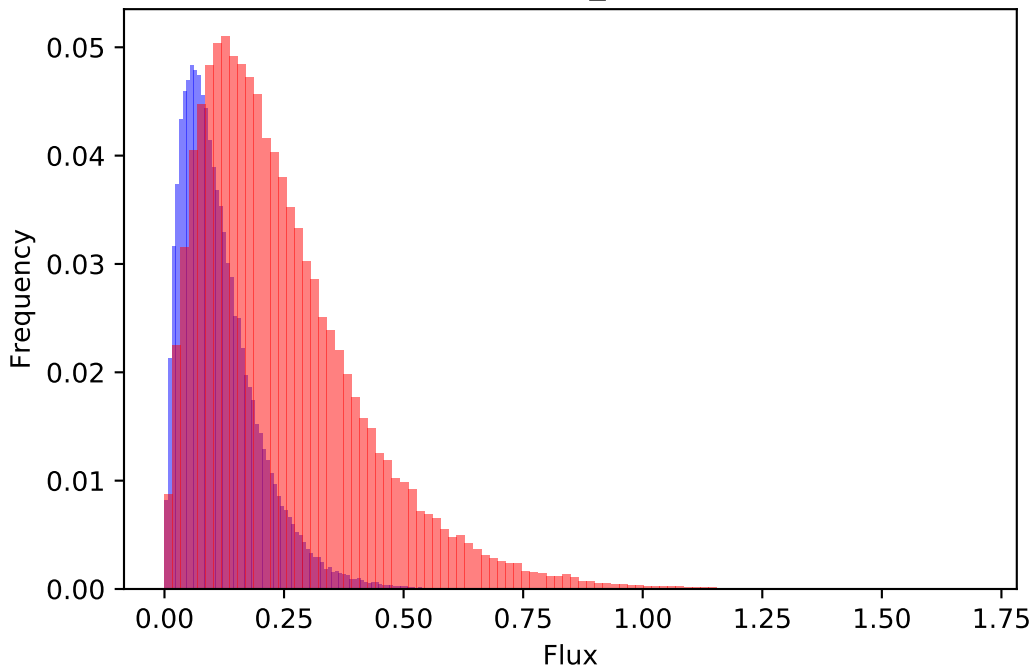
481 : Glu_p -->



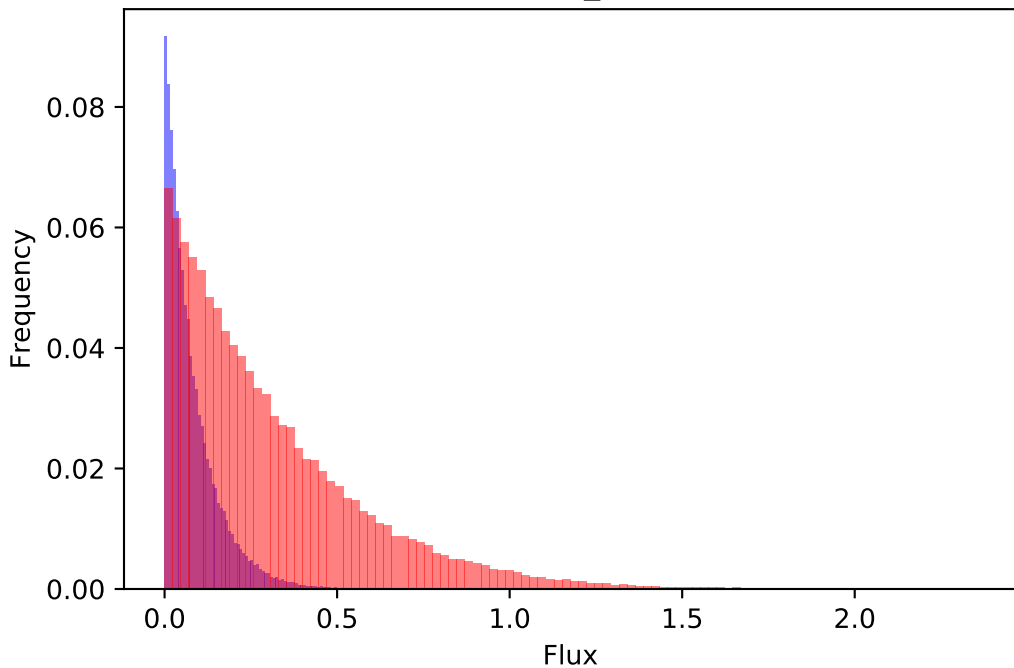
482 : Gly_c -->



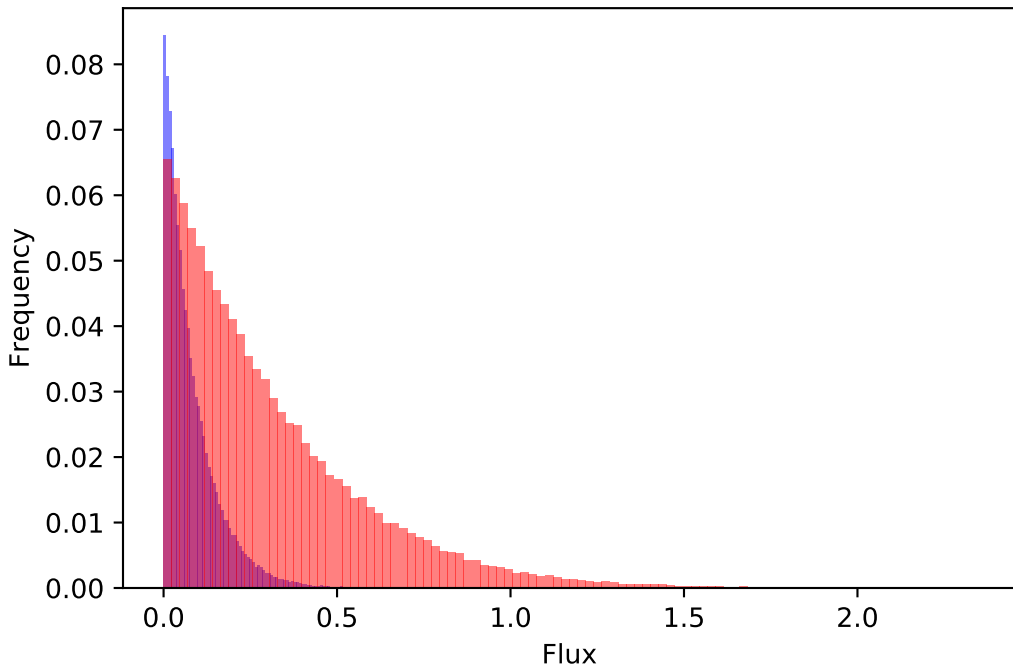
483 : Gly_h -->



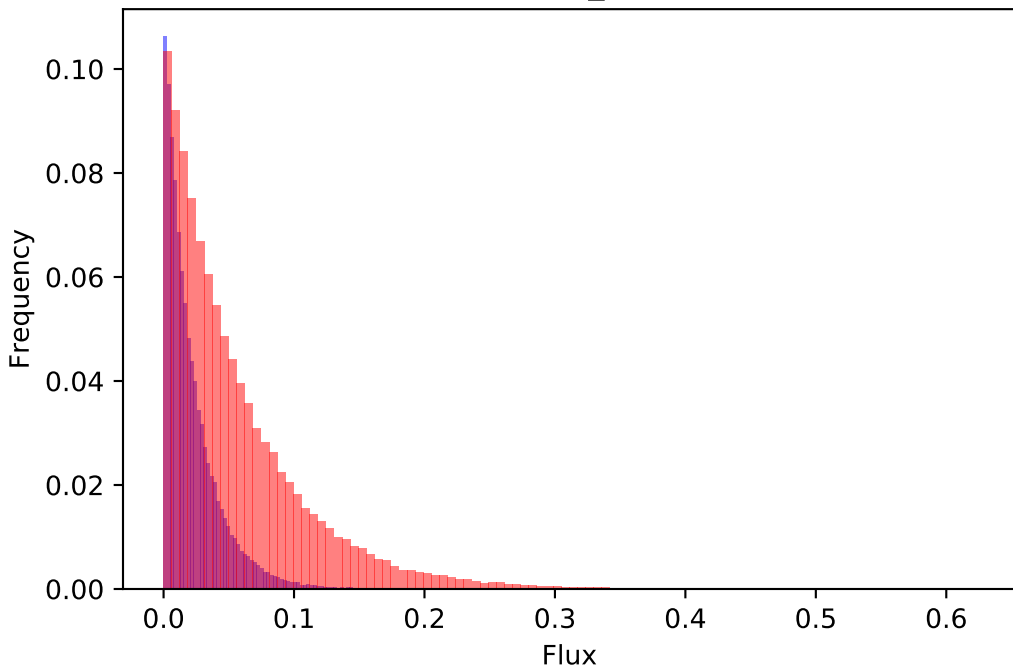
484 : Gly_m -->



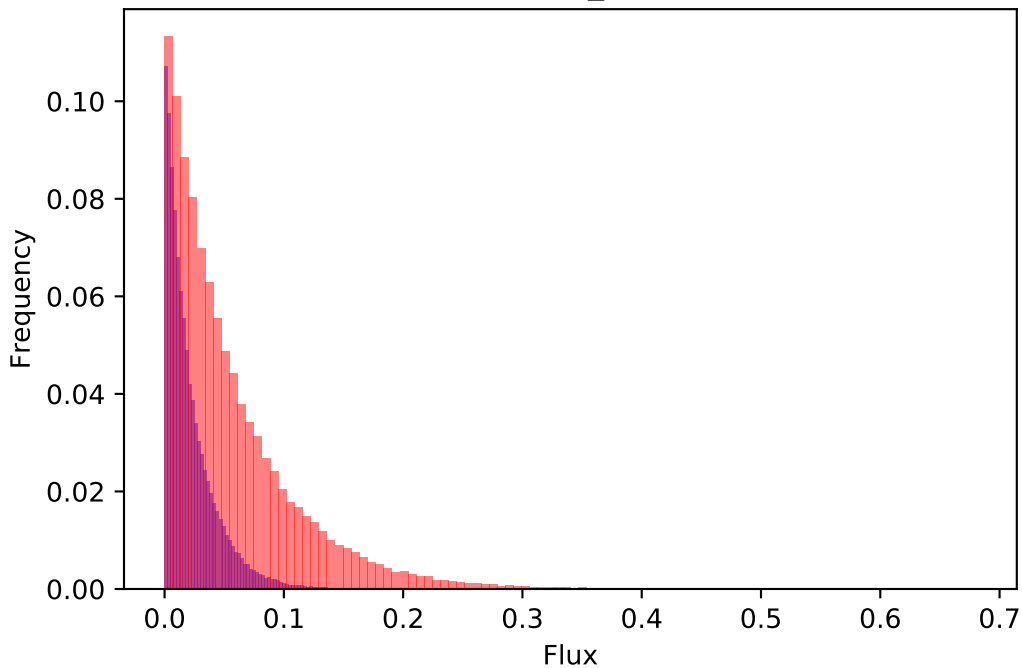
485 : Gly_p -->



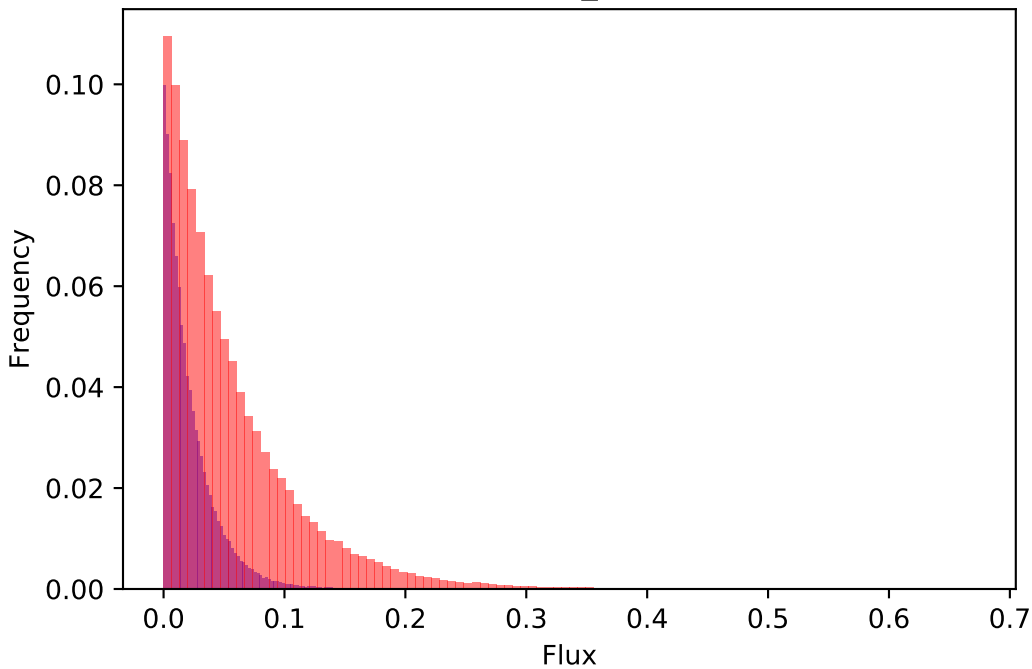
486 : His_c -->



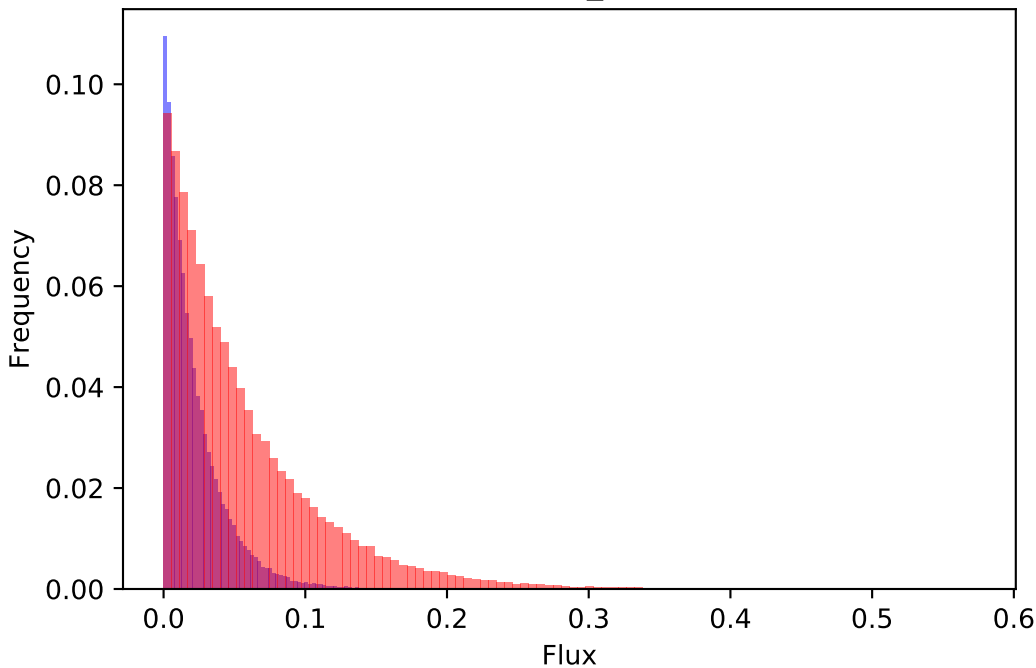
487 : His_h -->



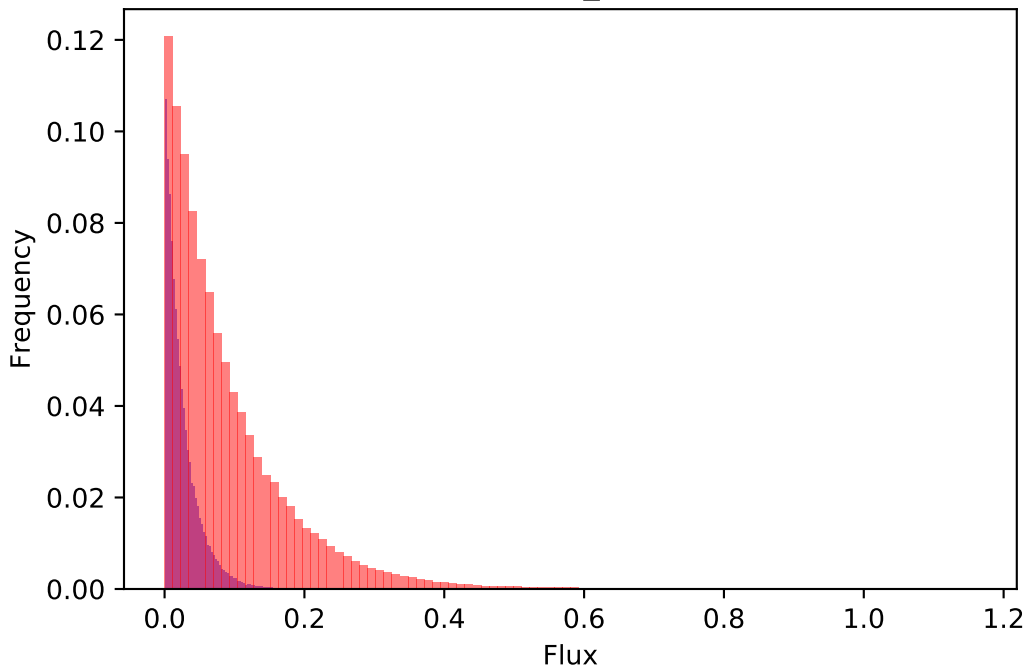
488 : His_m -->



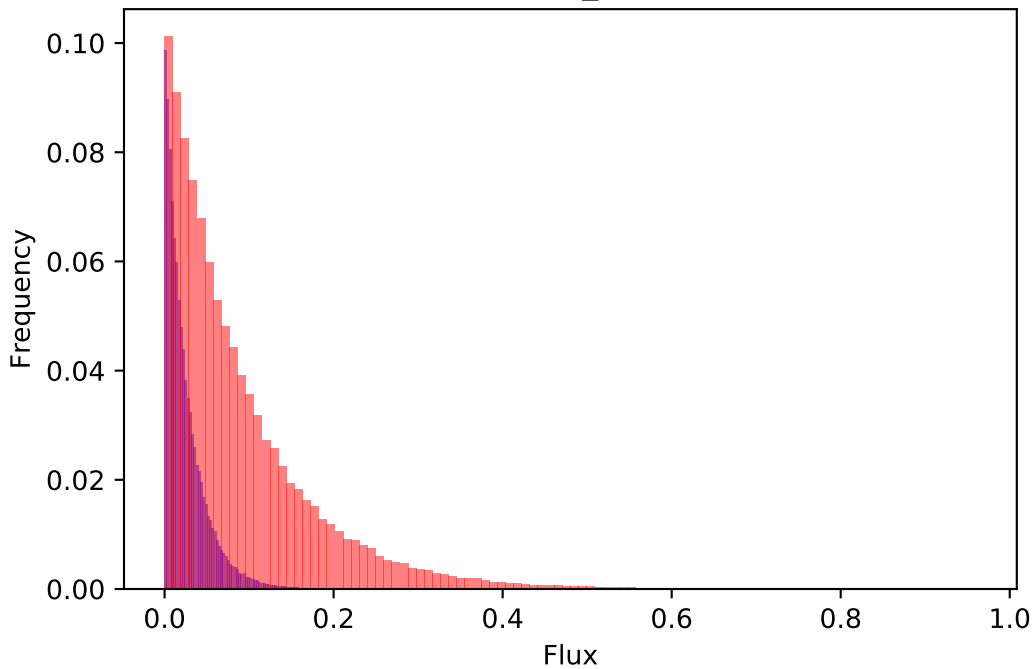
489 : His_p -->



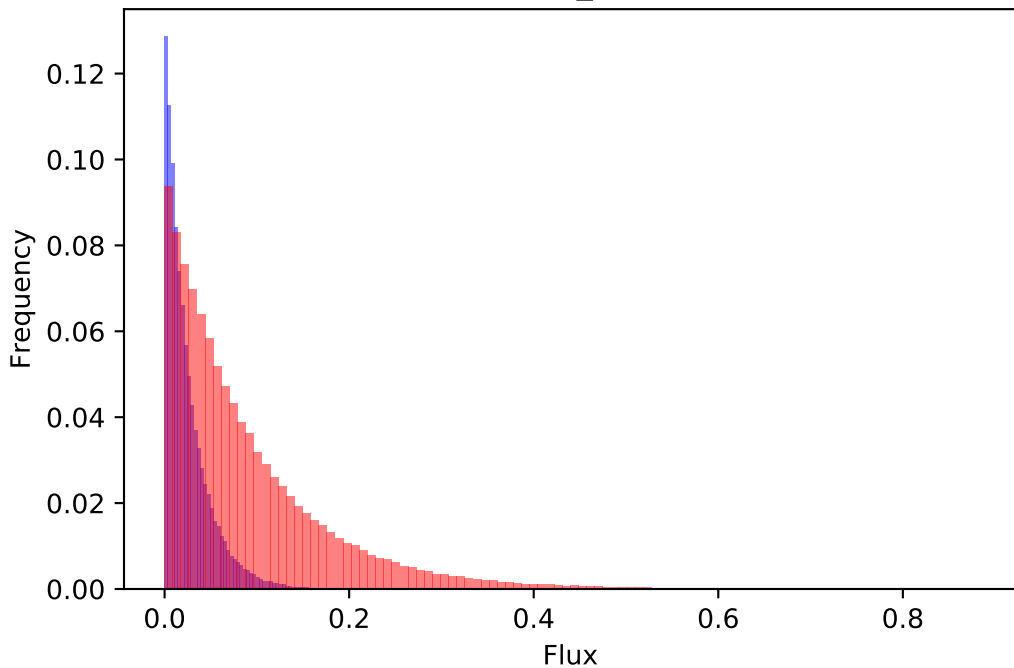
490 : lle_c -->



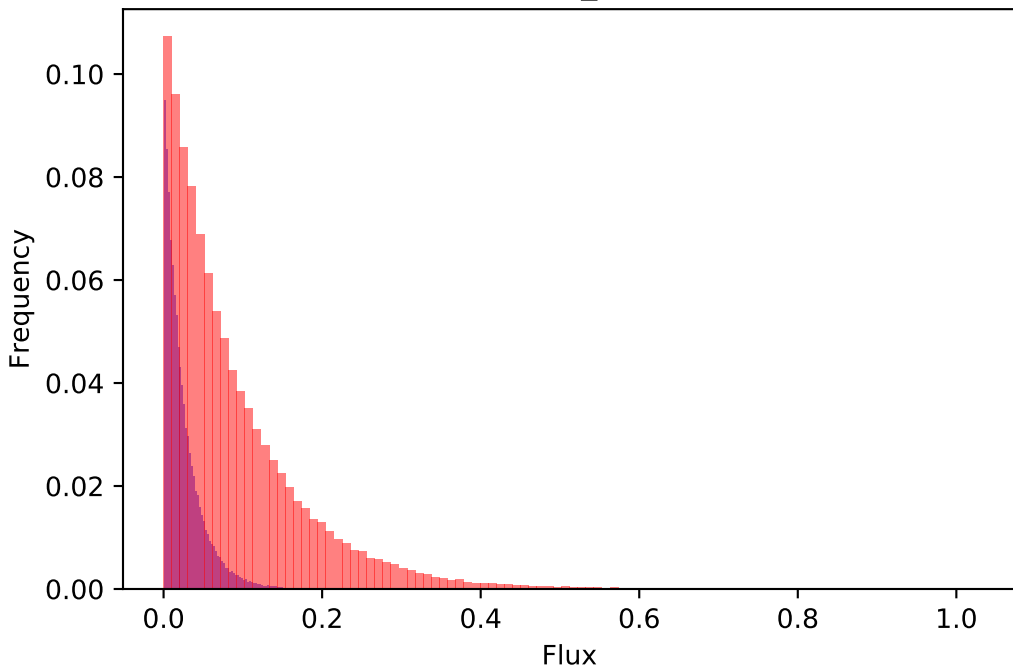
491 : Ile_h -->



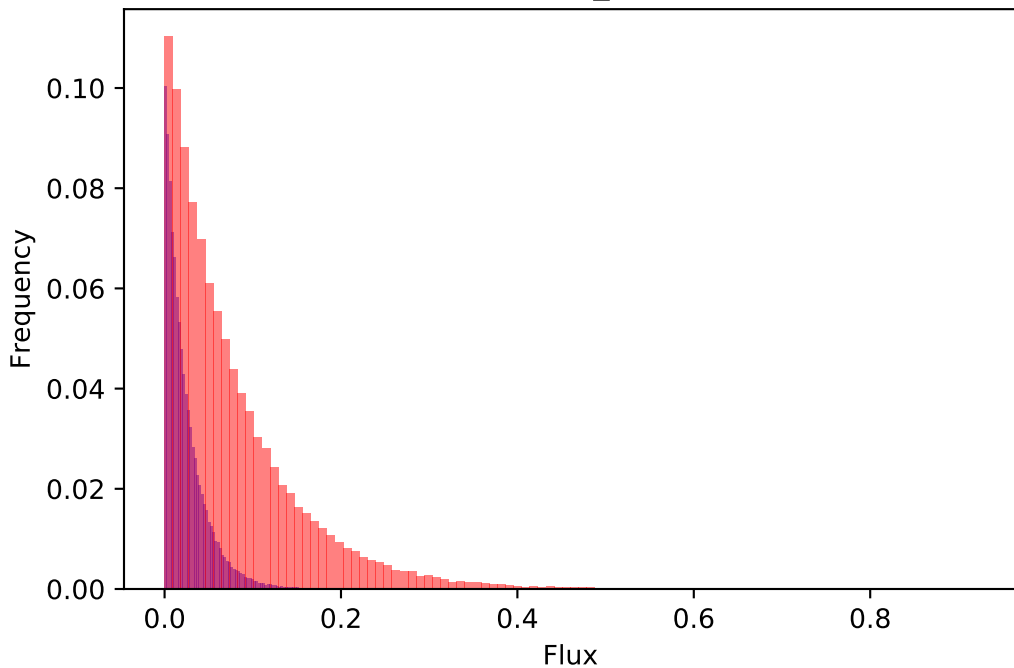
492 : lle_m -->



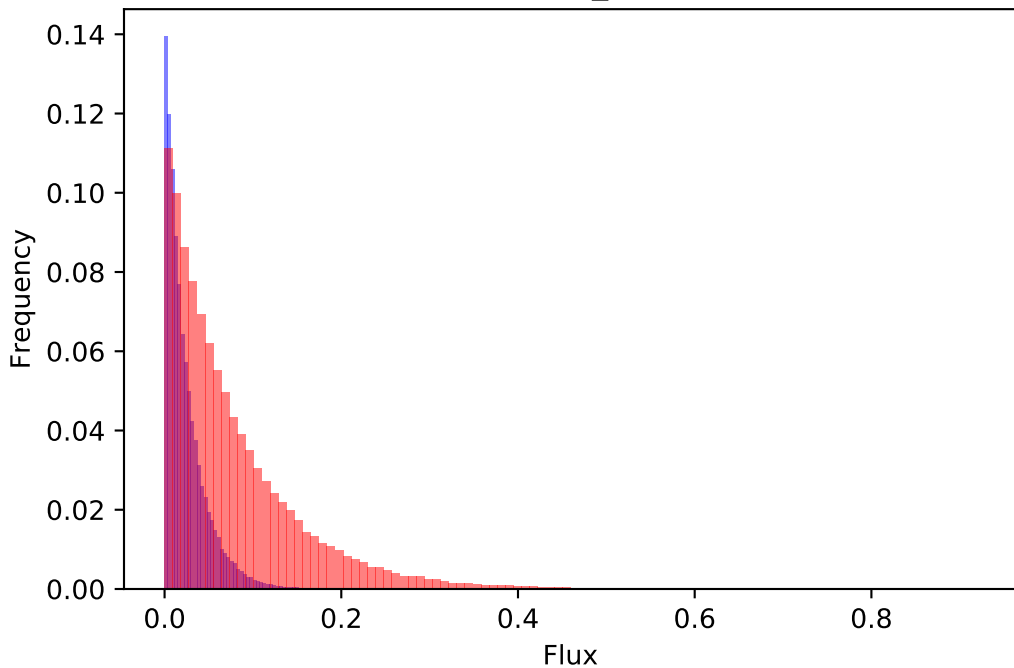
493 : Ile_p -->



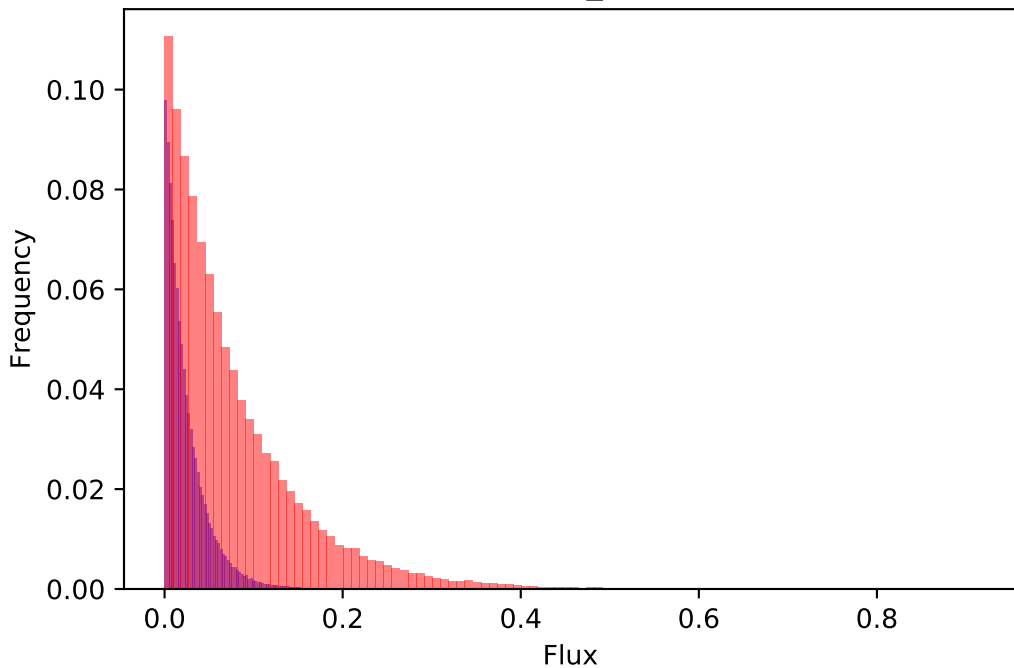
494 : Leu_c -->



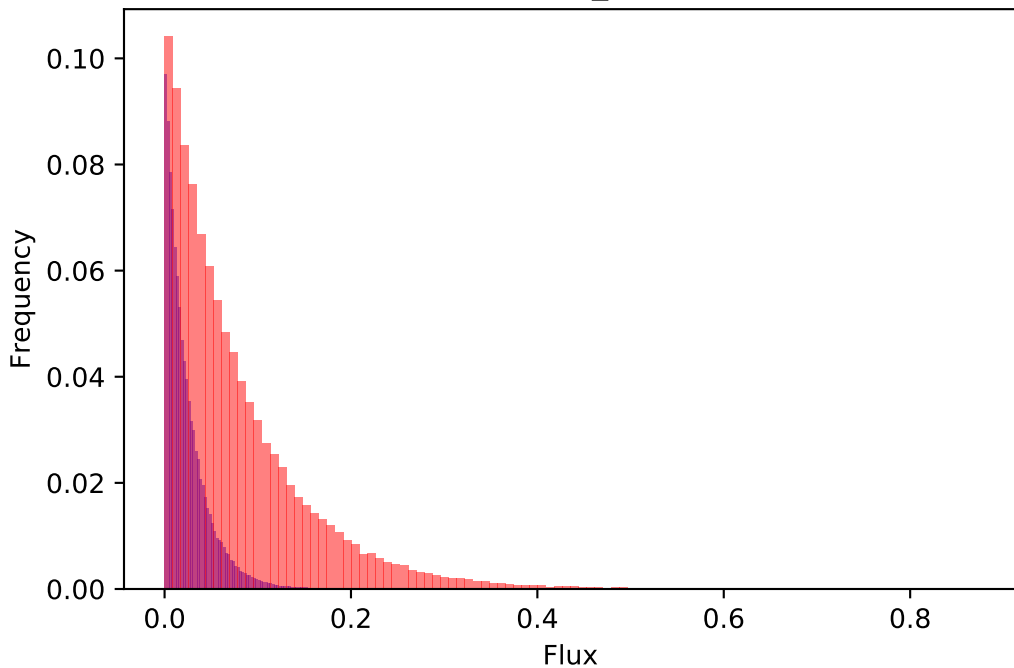
495 : Leu_h -->



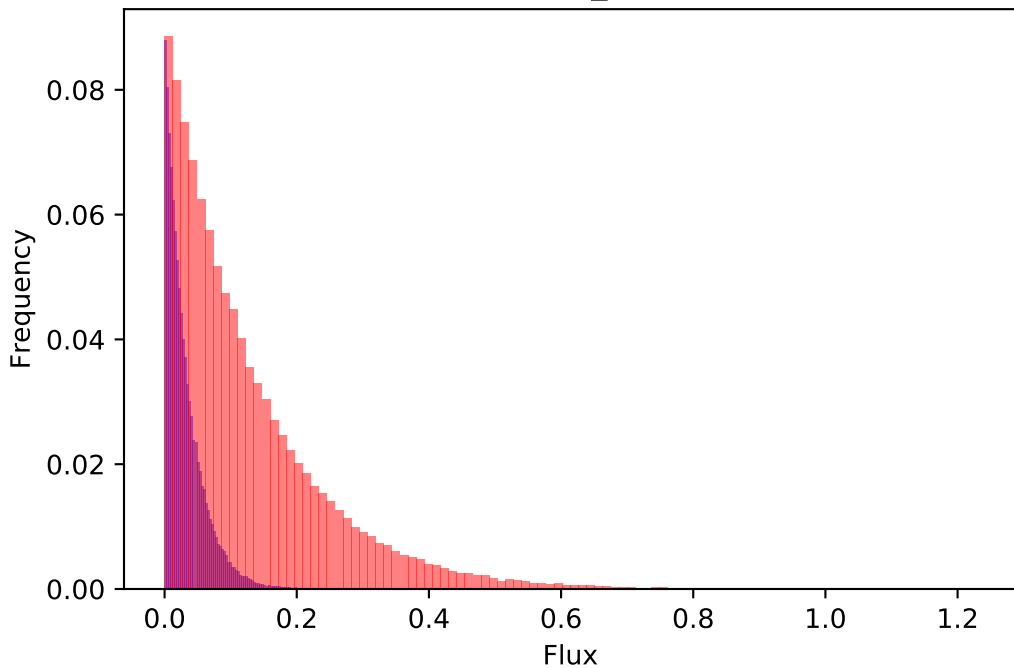
496 : Leu_m -->



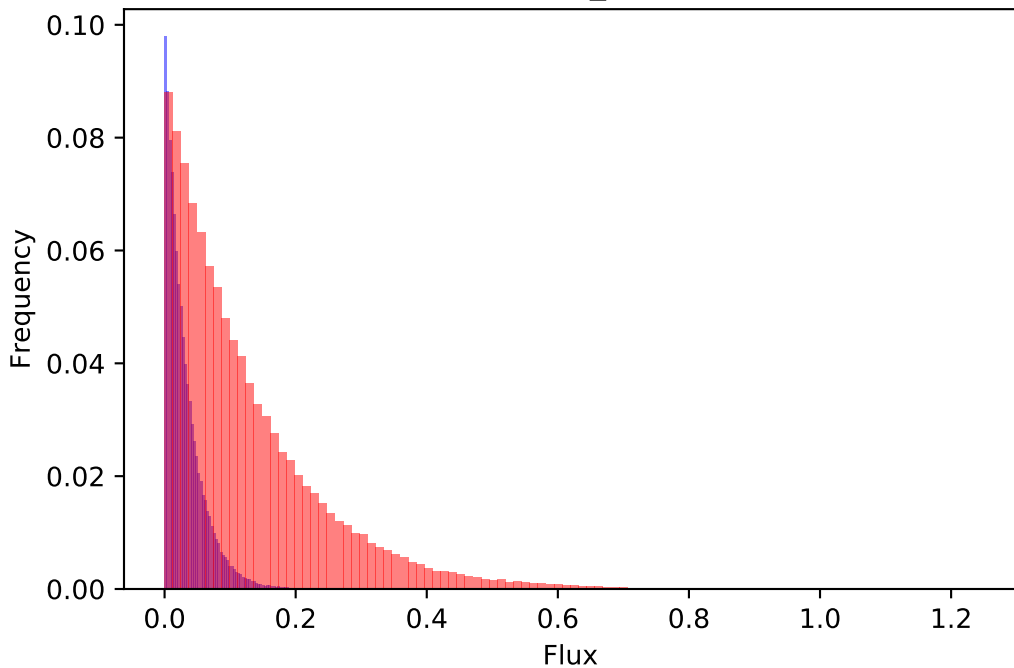
497 : Leu_p -->



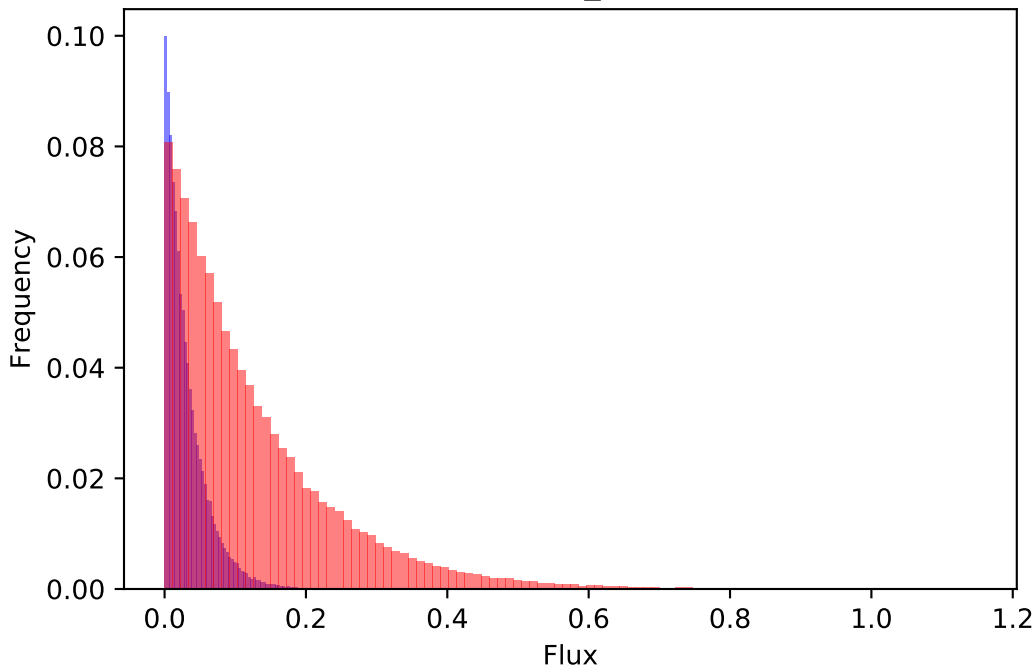
498 : Lys_c -->



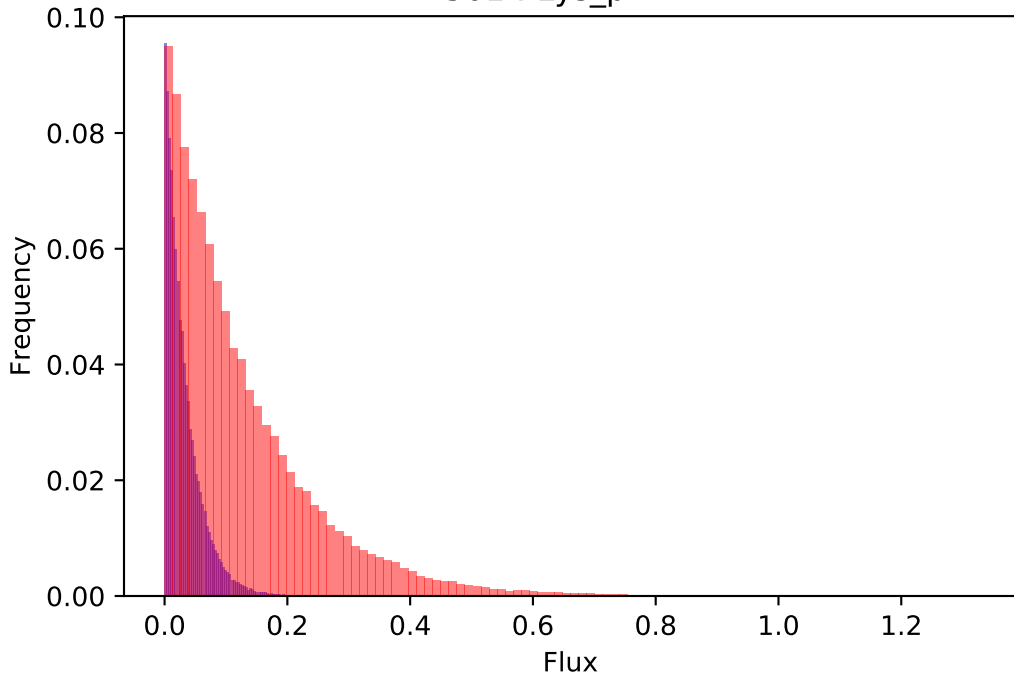
499 : Lys_h -->



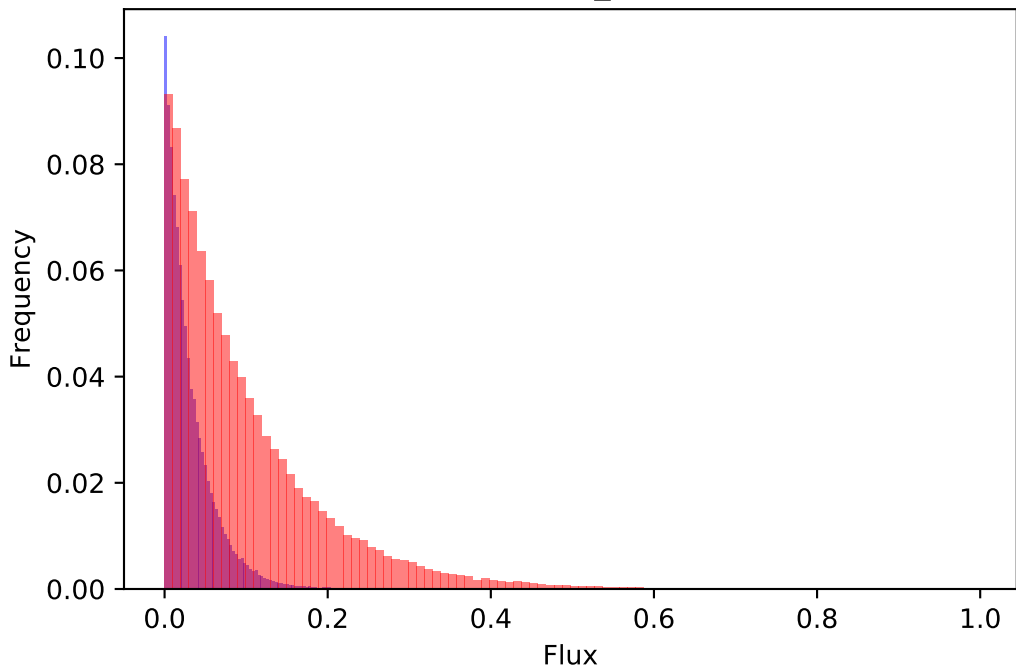
500 : Lys_m -->



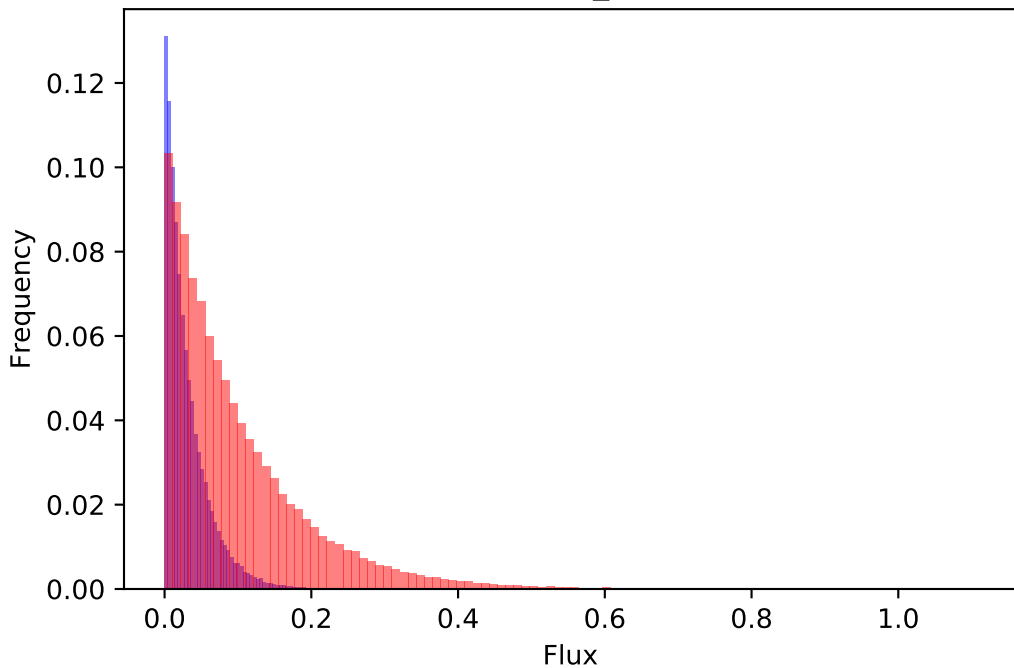
501 : Lys_p -->



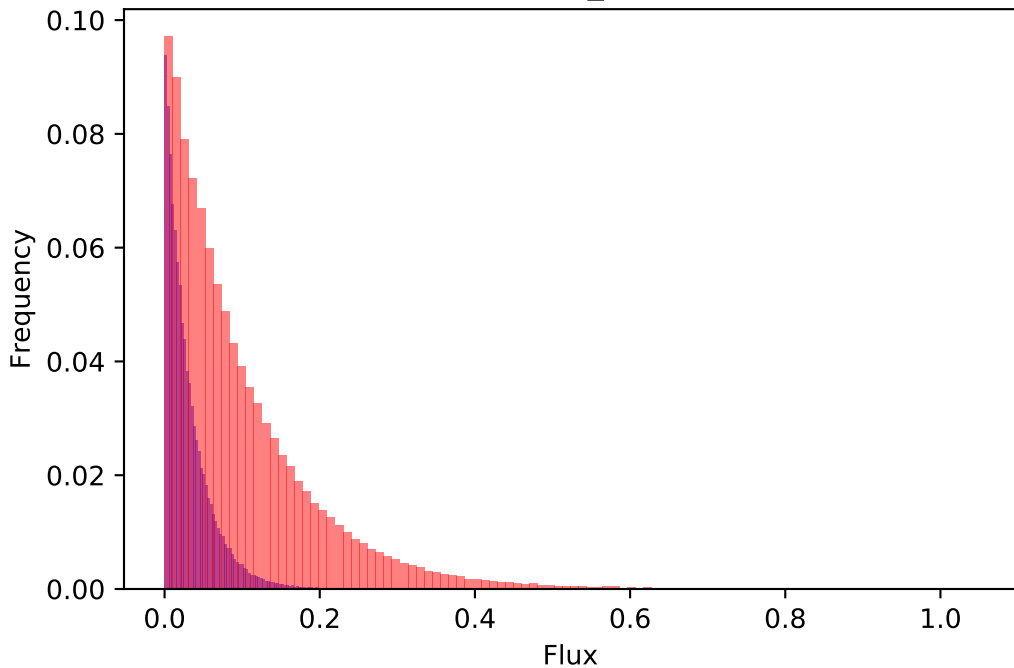
502 : Met_c -->



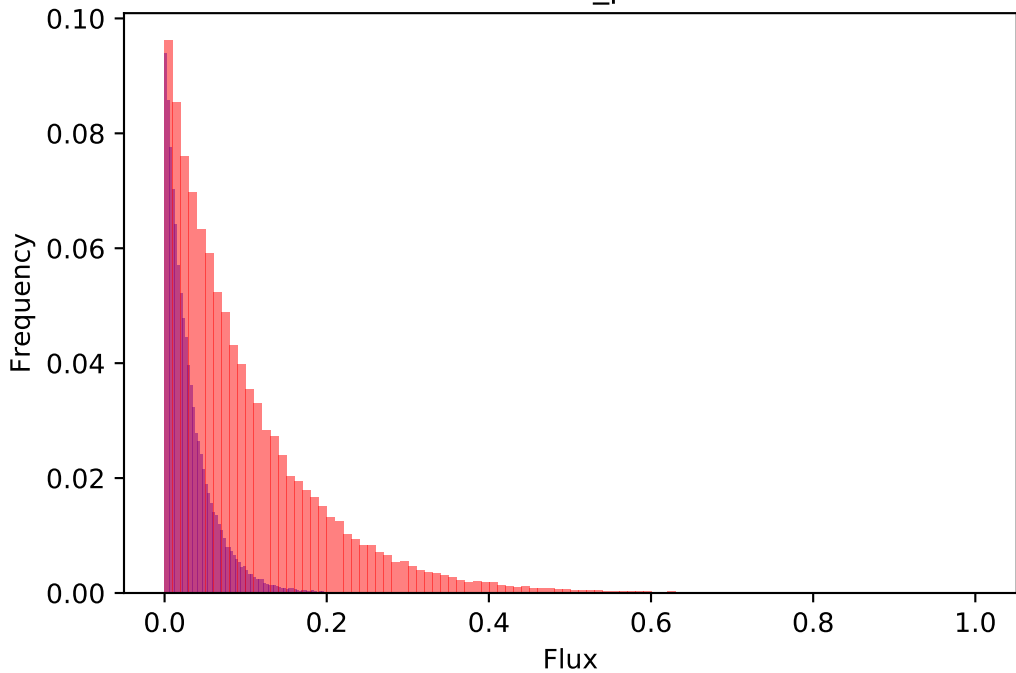
503 : Met_h -->



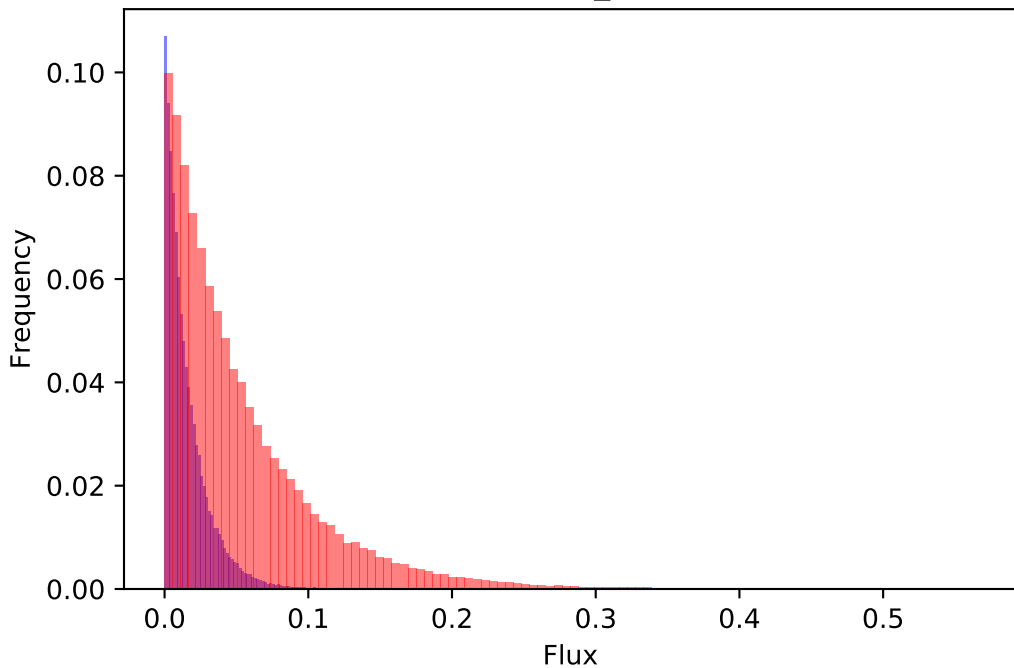
504 : Met_m -->



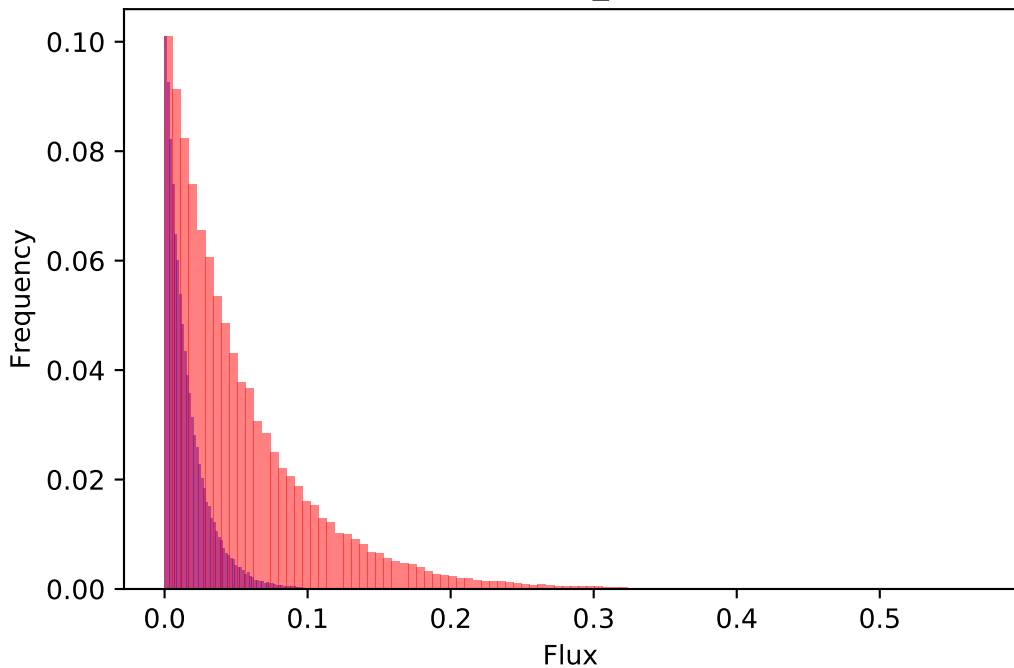
505 : Met_p -->



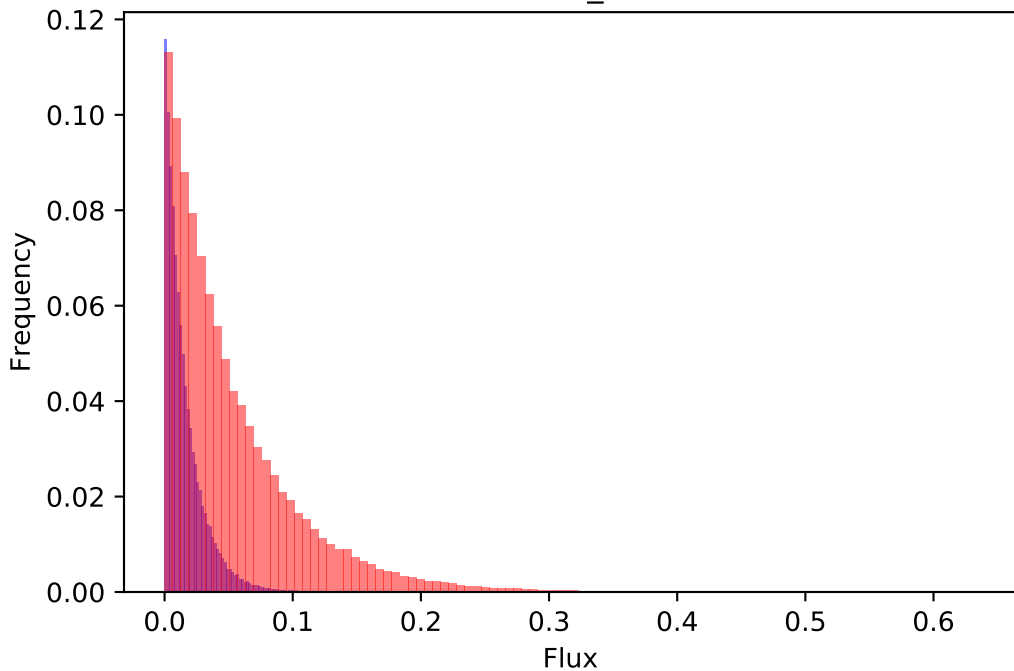
506 : Phe_c -->



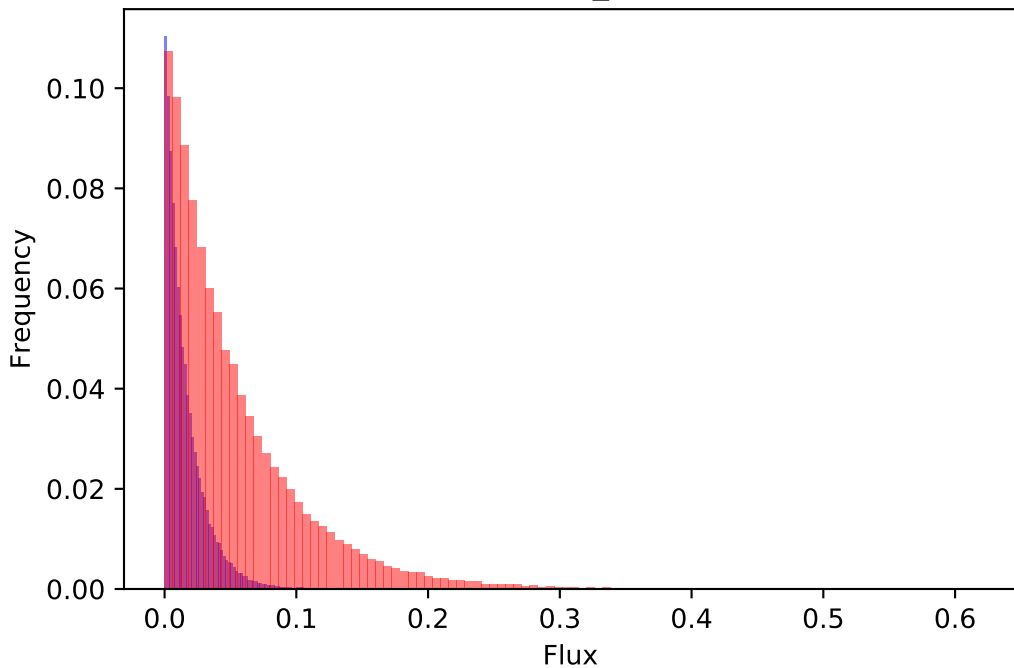
507 : Phe_h -->



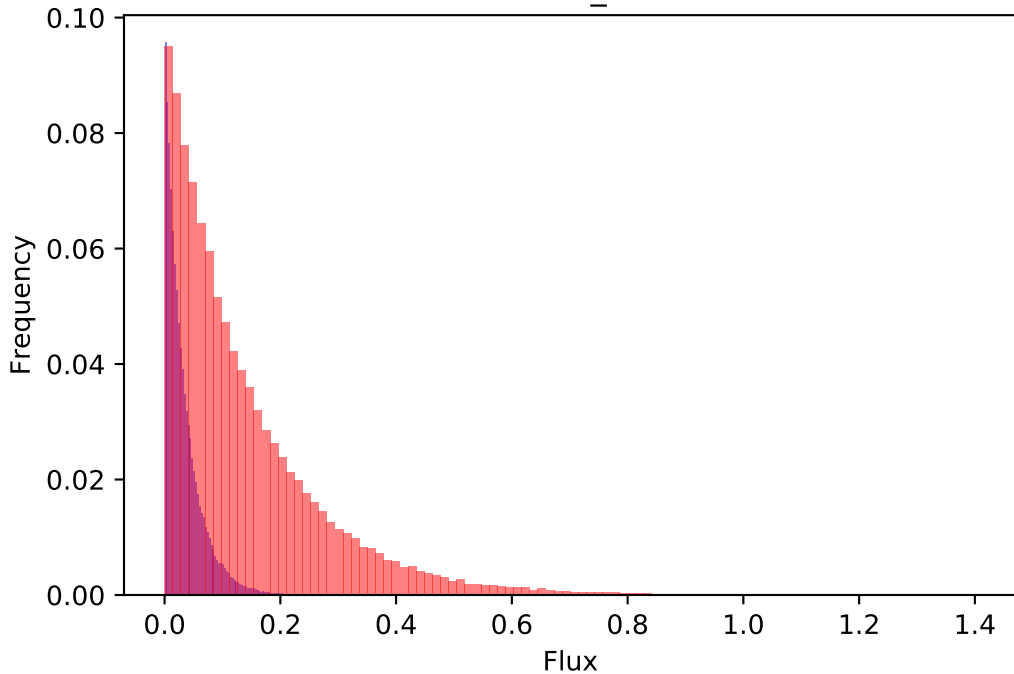
508 : Phe_m -->



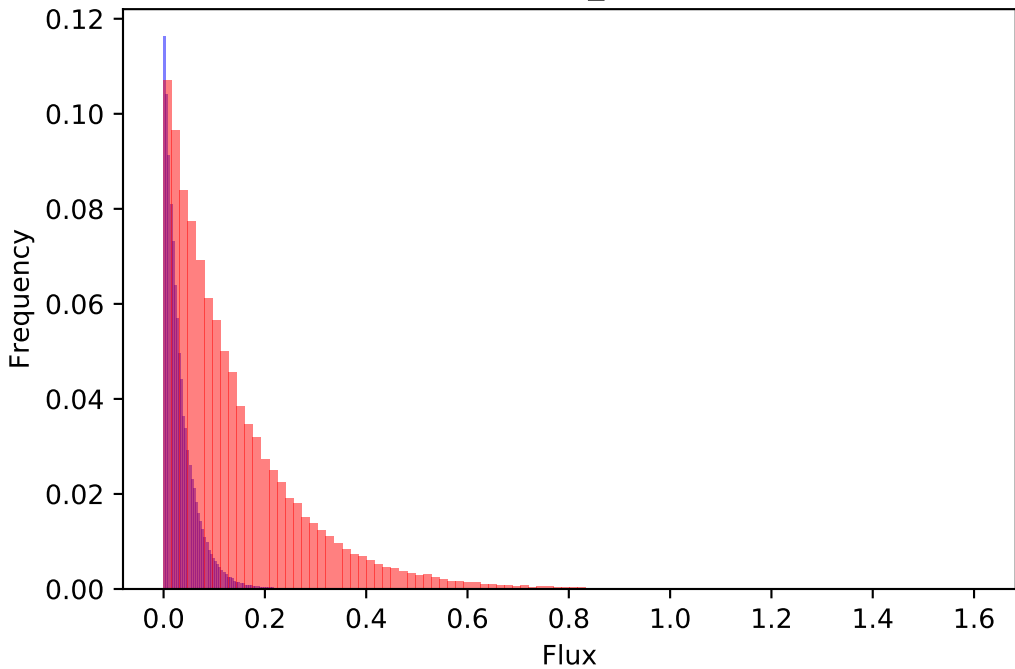
509 : Phe_p -->



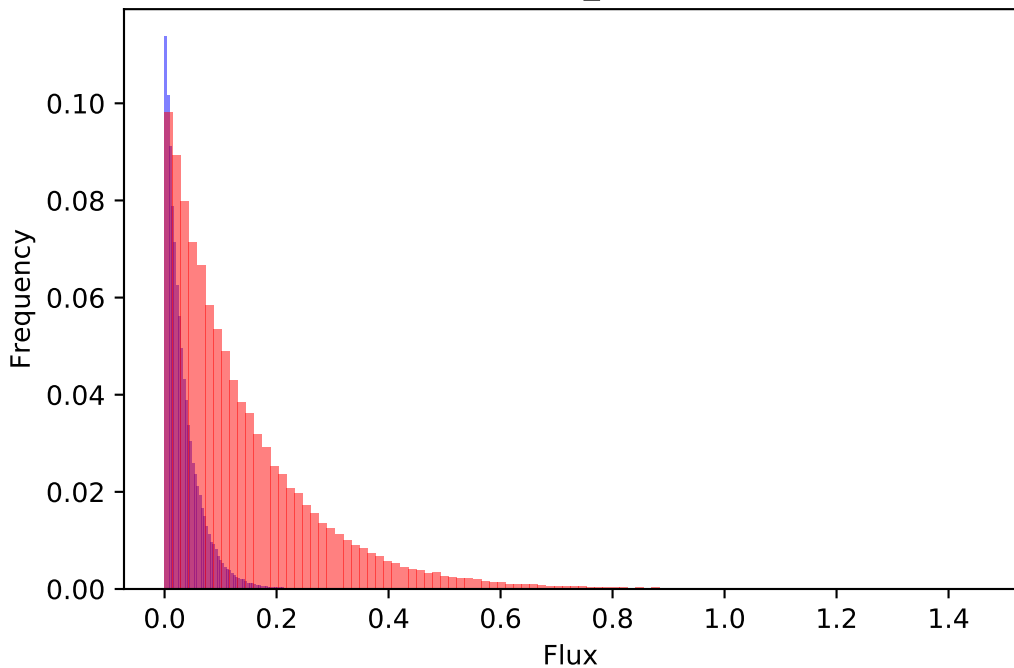
510 : Pro_c -->



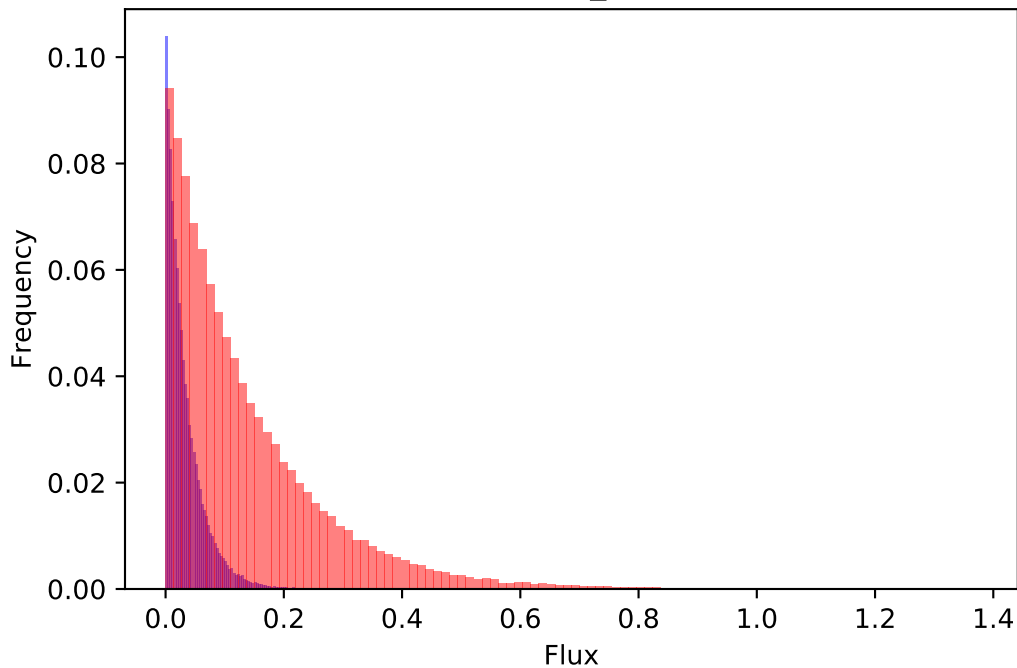
511 : Pro_h -->



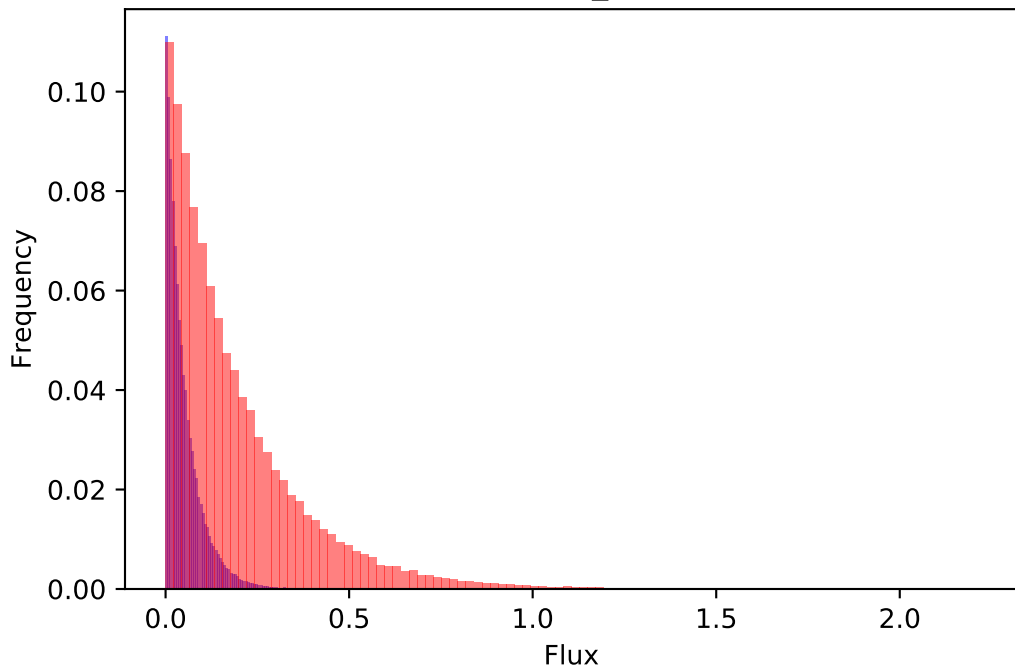
512 : Pro_m -->



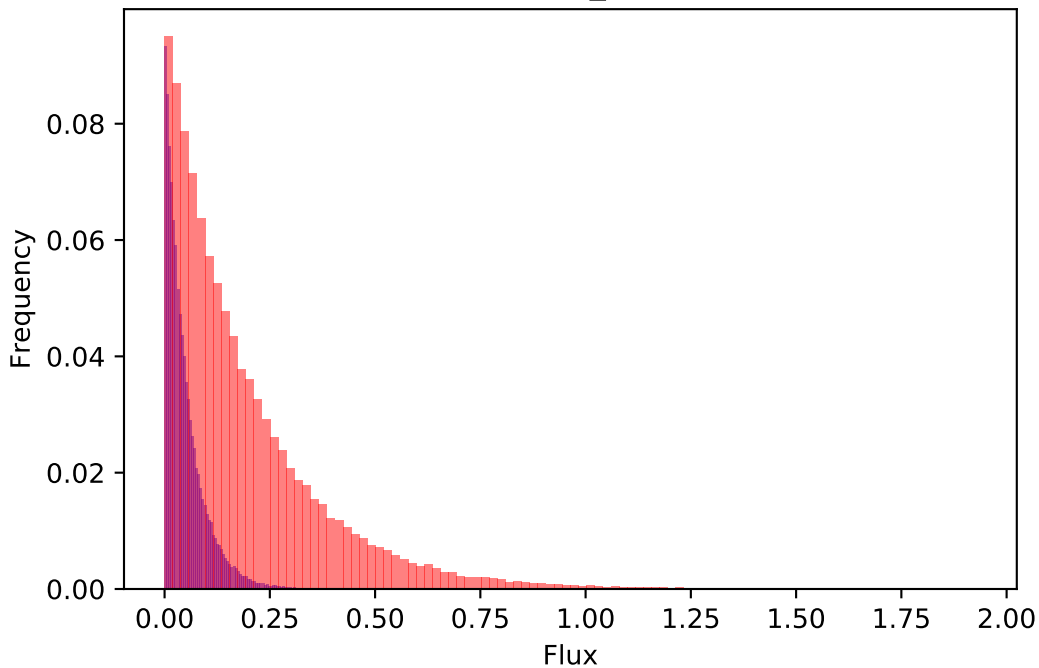
513 : Pro_p -->



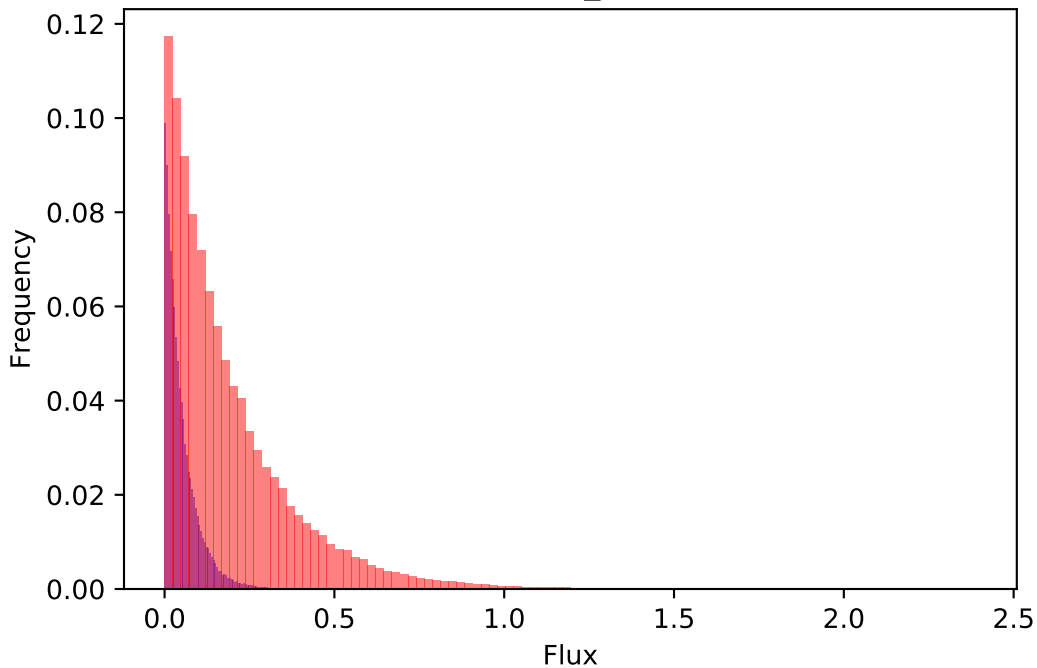
514 : Ser_c -->



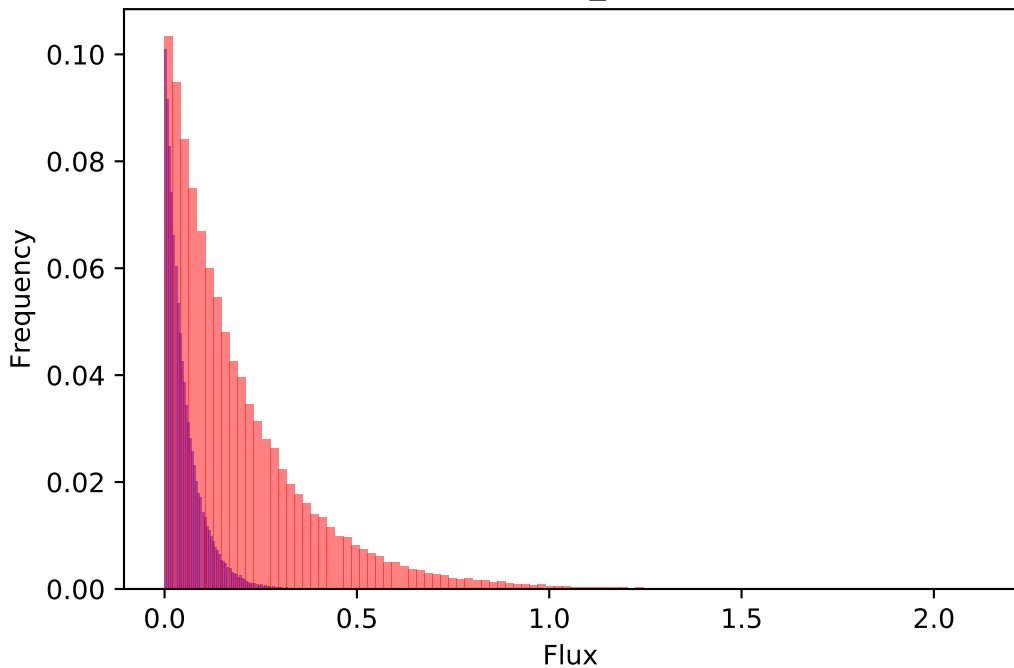
515 : Ser_h -->



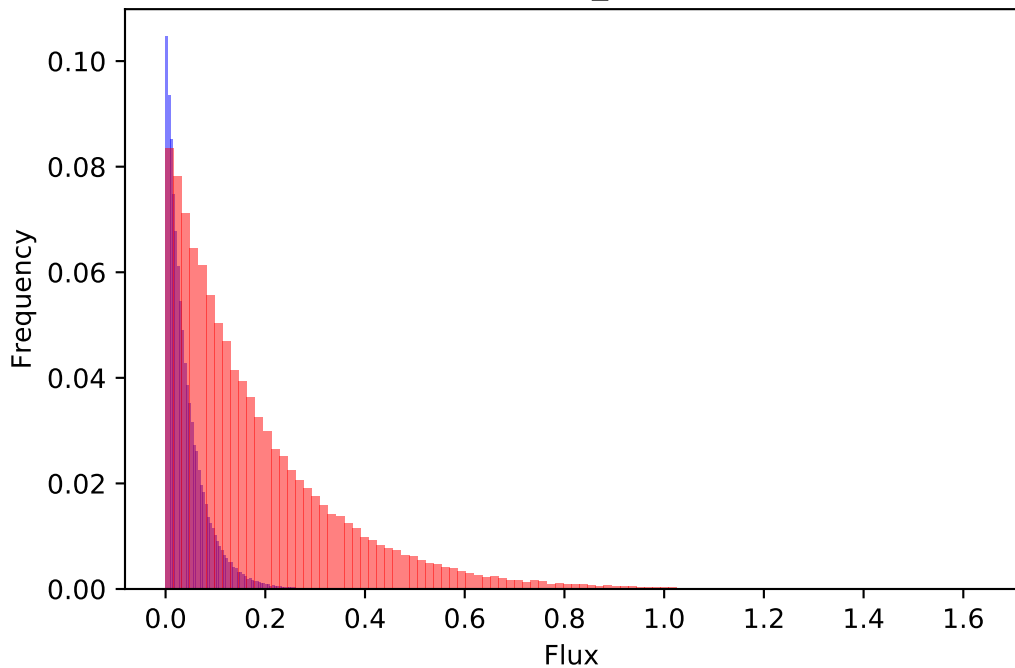
516 : Ser_m -->



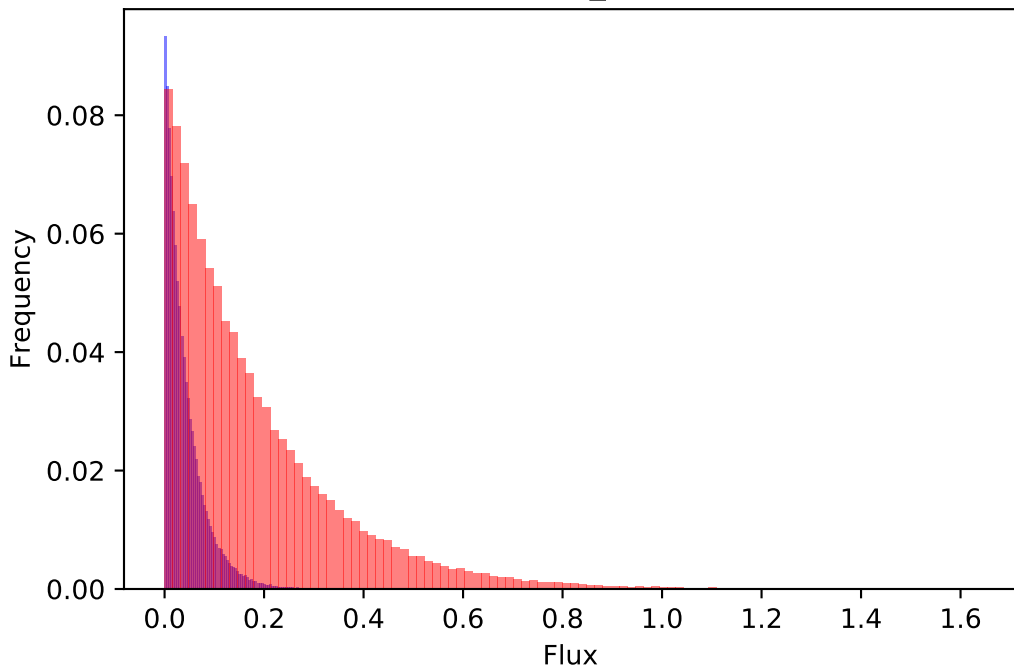
517 : Ser_p -->



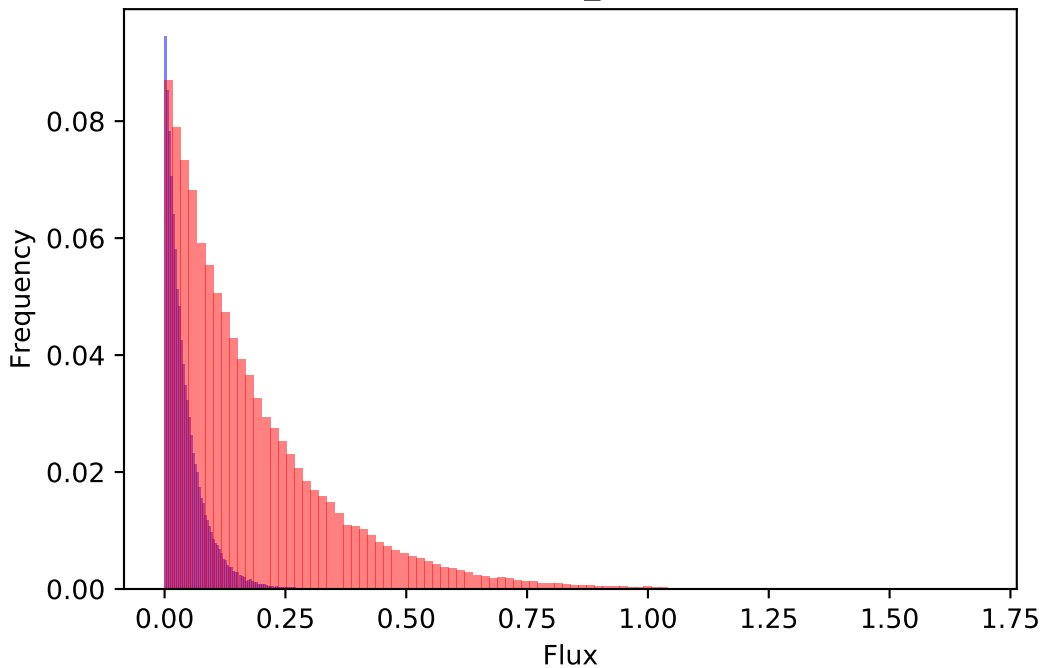
518 : Thr_c -->



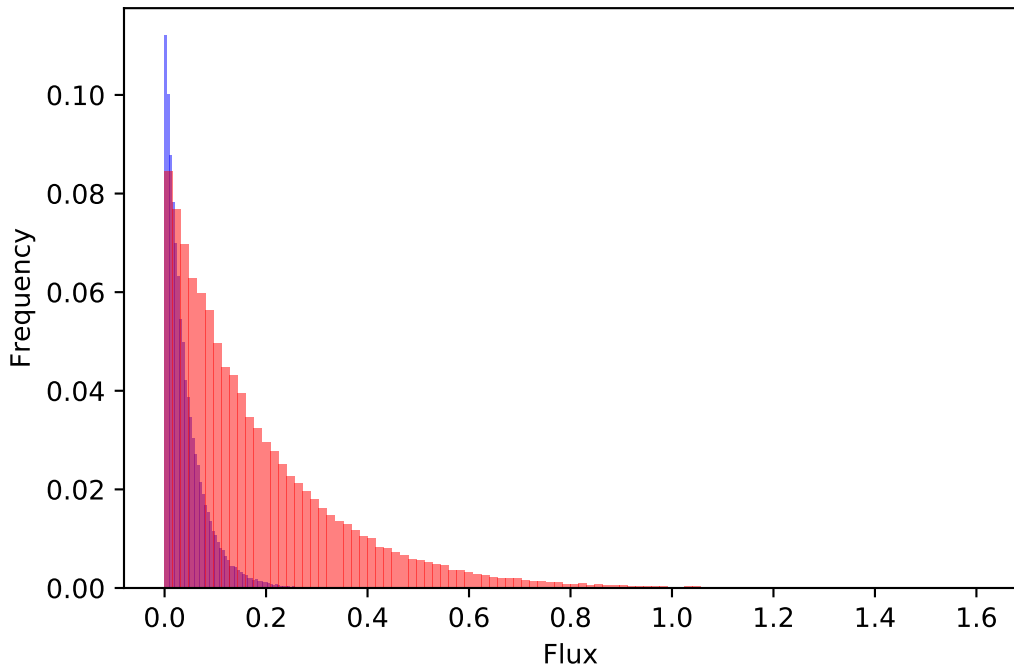
519 : Thr_h -->



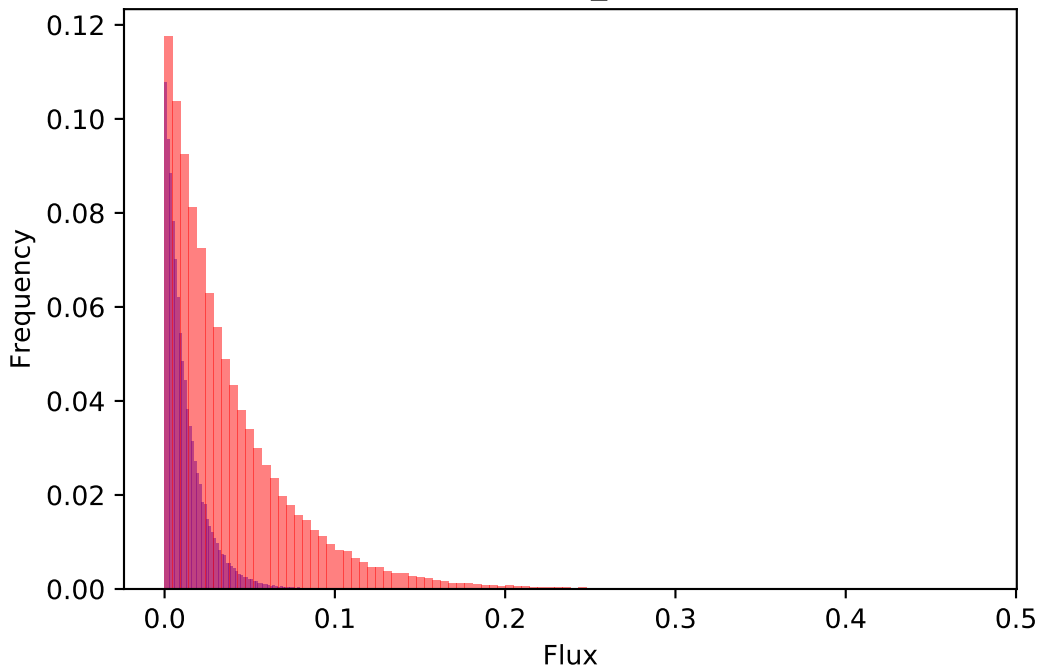
520 : Thr_m -->



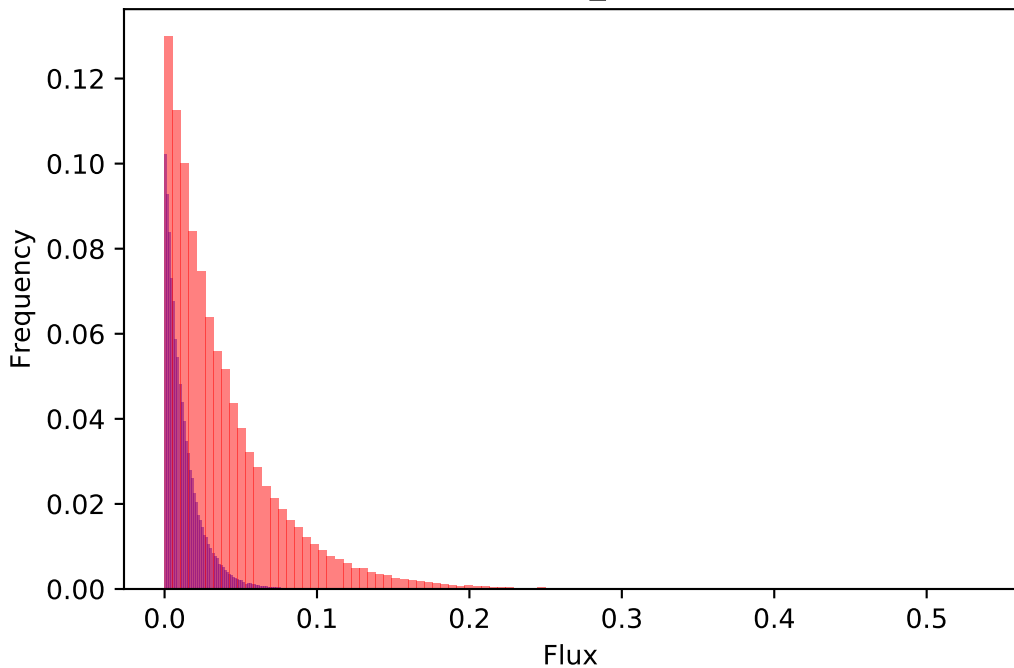
521 : Thr_p -->



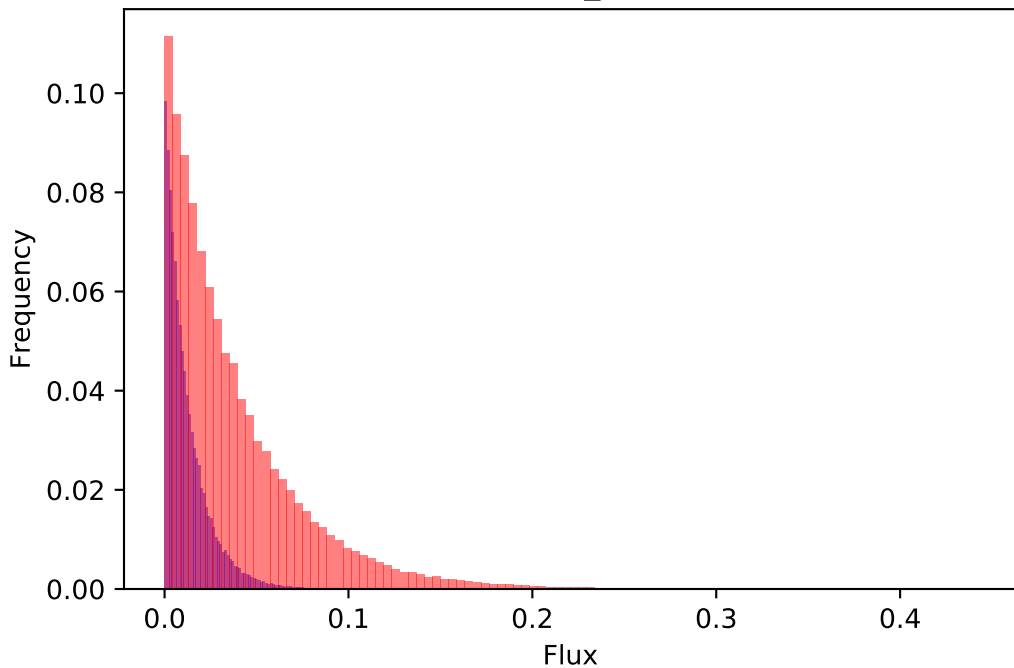
522 : Trp_c -->



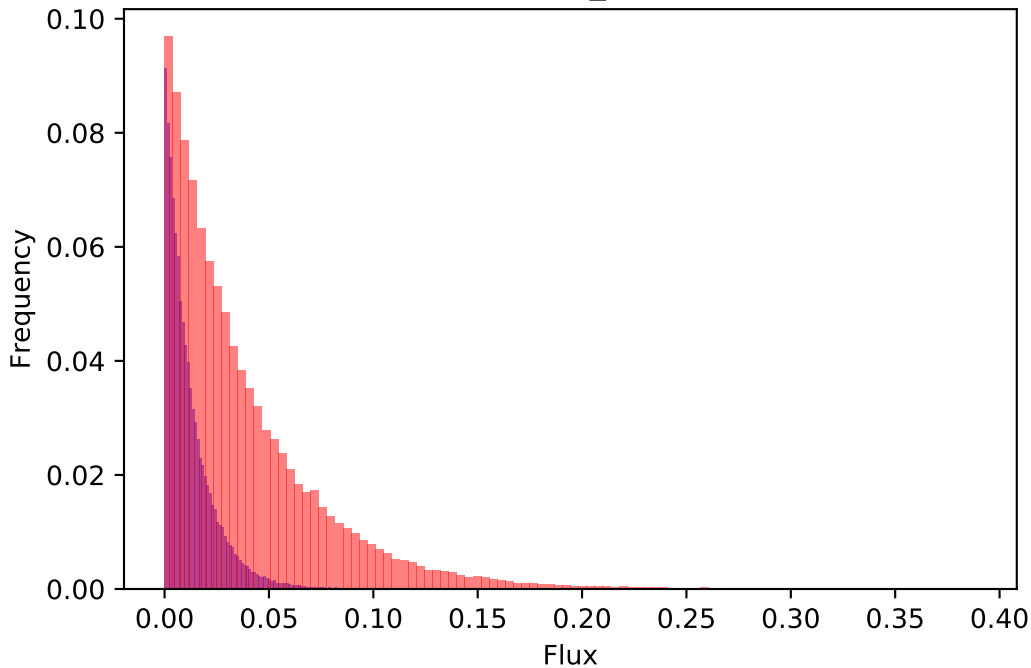
523 : Trp_h -->



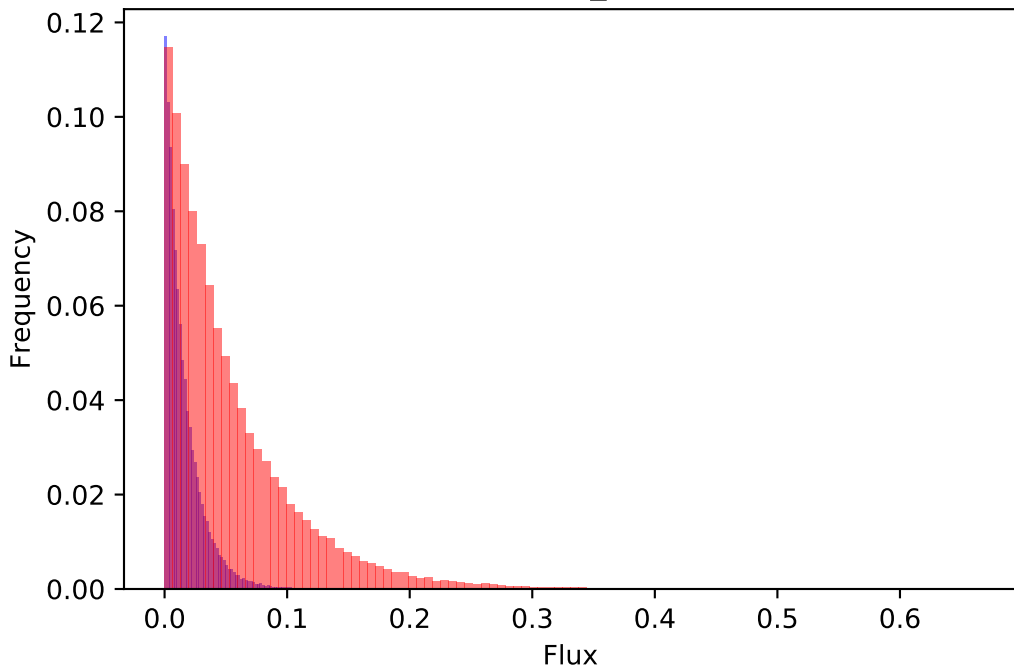
524 : Trp_m -->



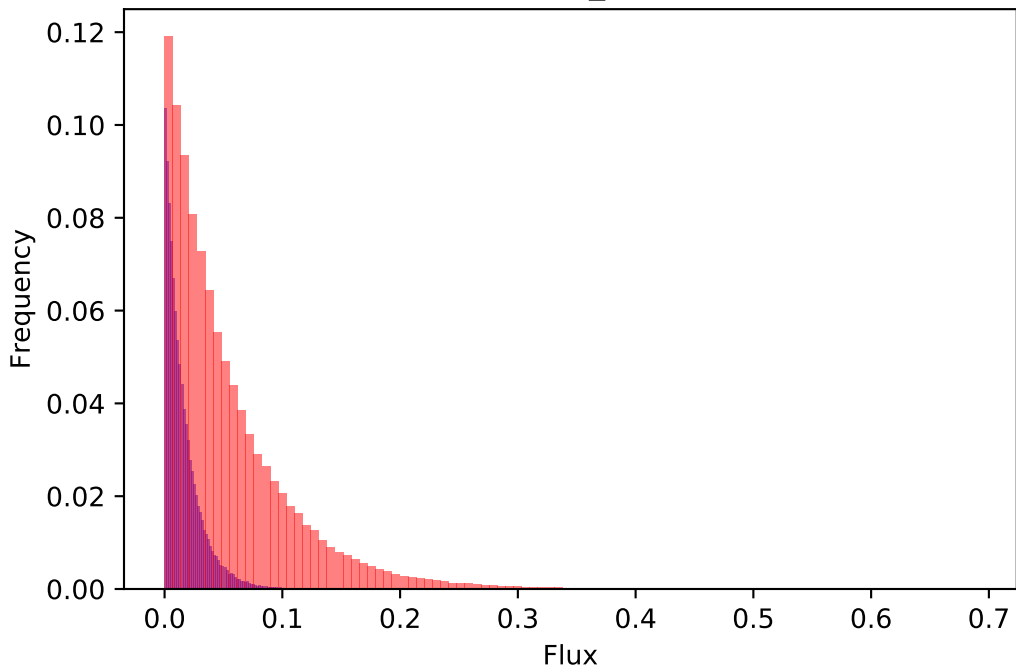
525 : Trp_p -->



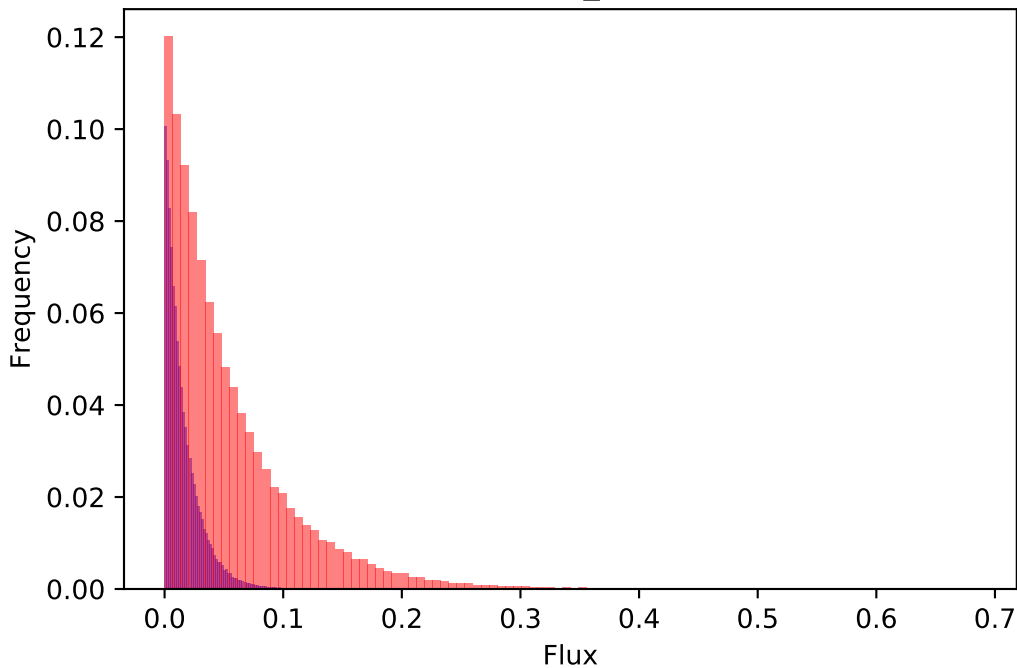
526 : Tyr_c -->



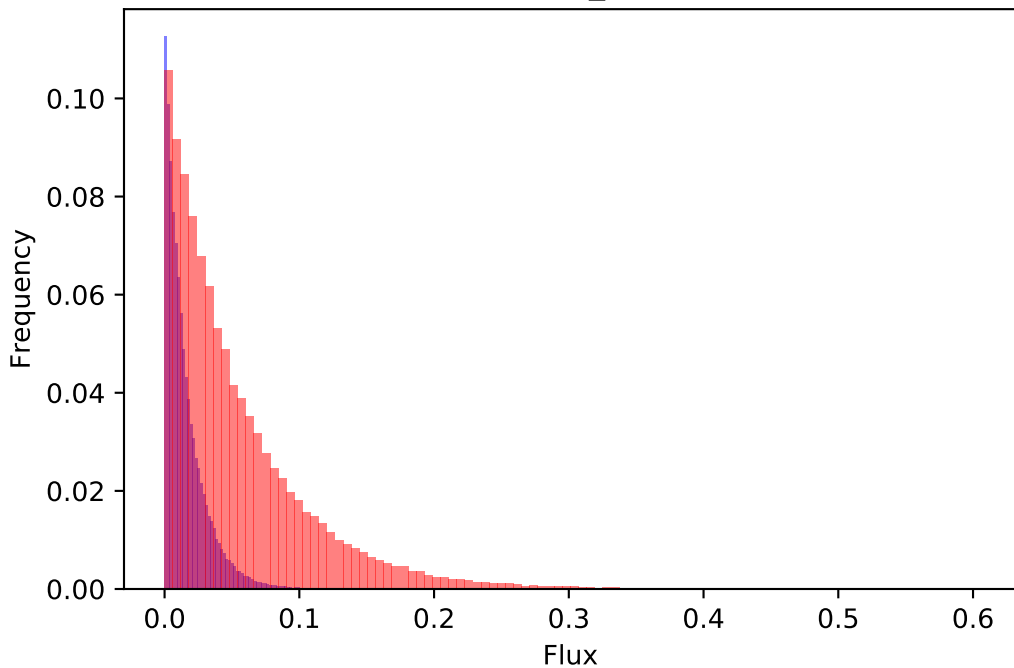
527 : Tyr_h -->



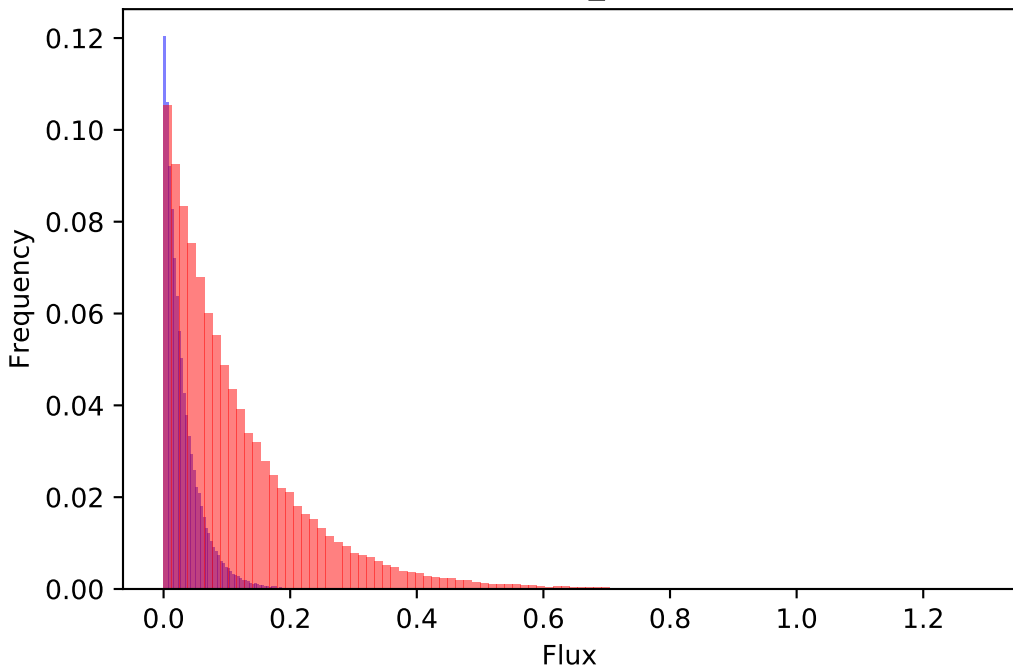
528 : Tyr_m -->



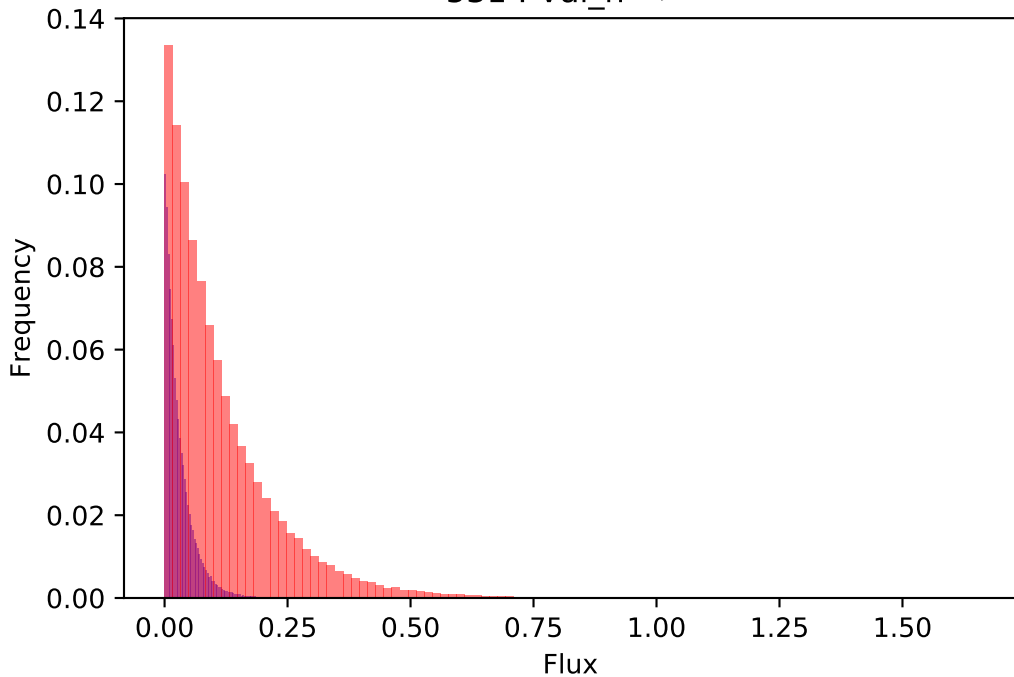
529 : Tyr_p -->



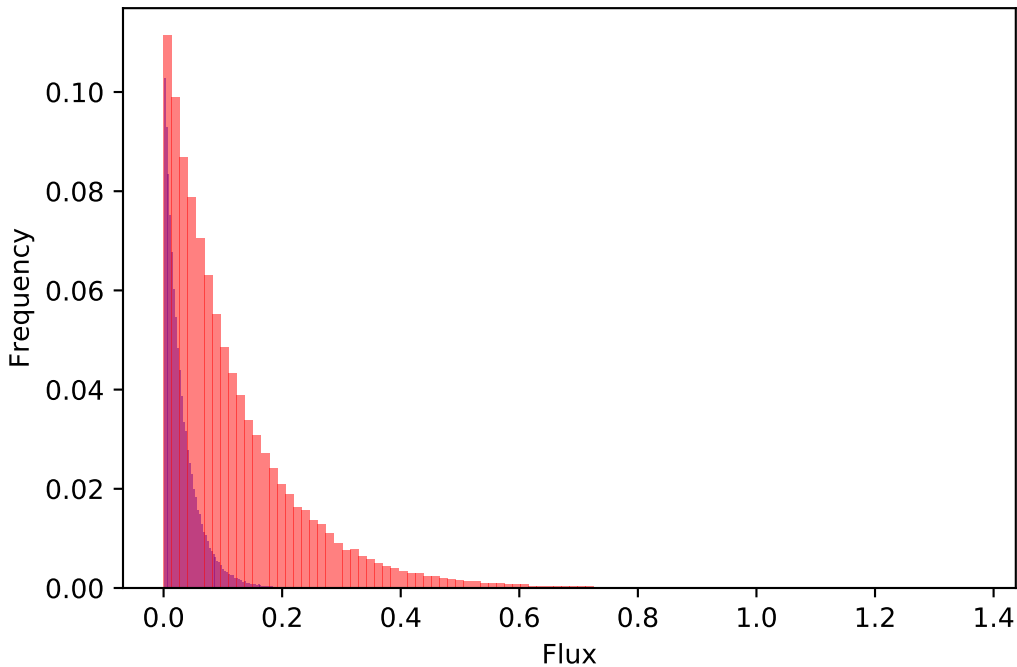
530 : Val_c -->



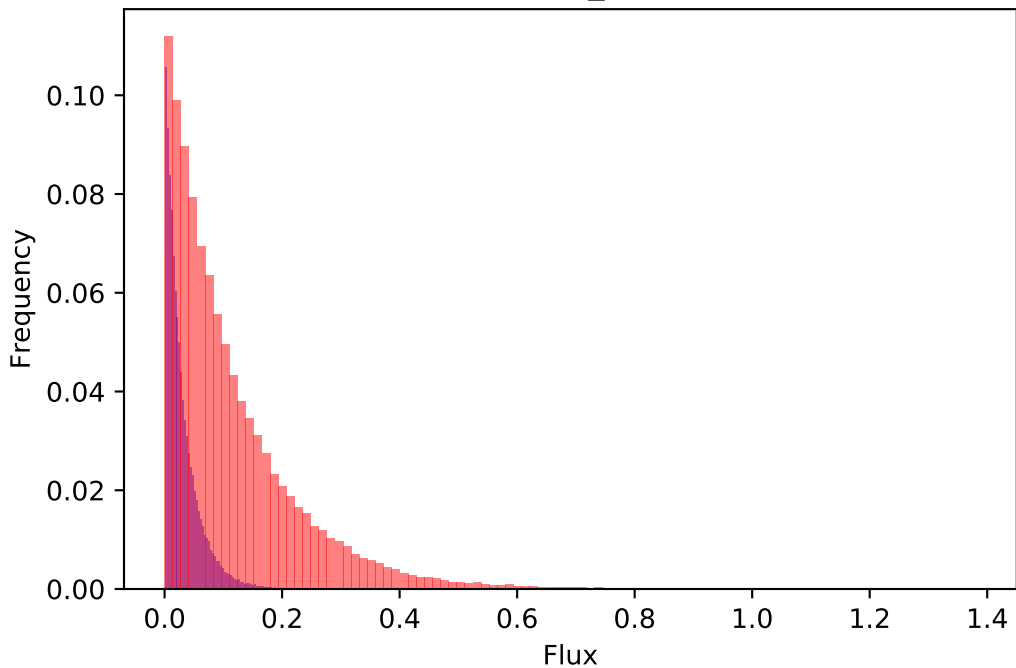
531 : Val_h -->



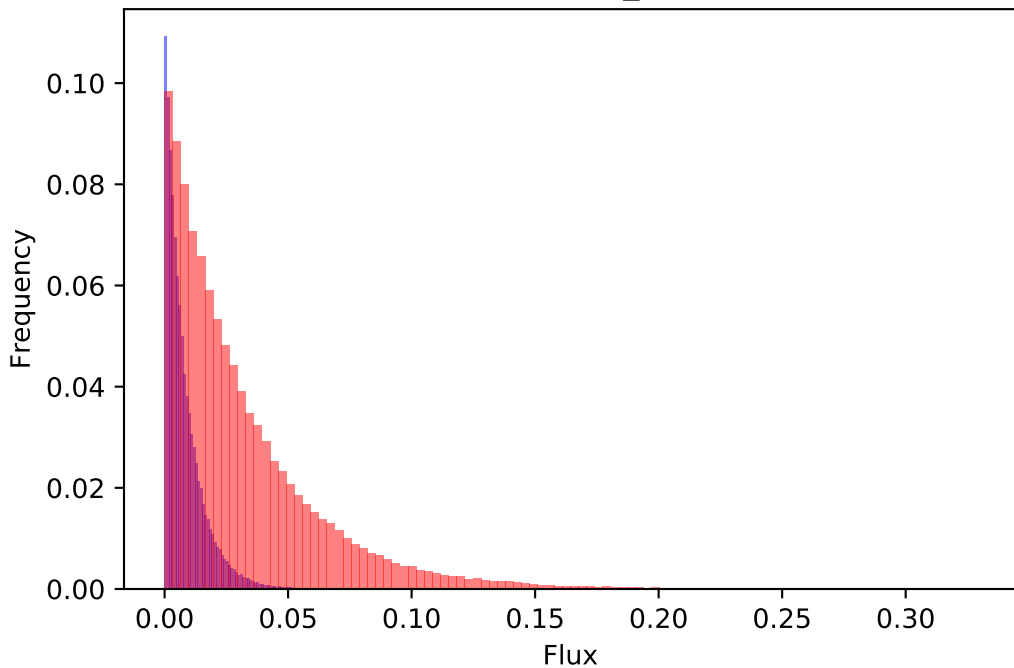
532 : Val_m -->



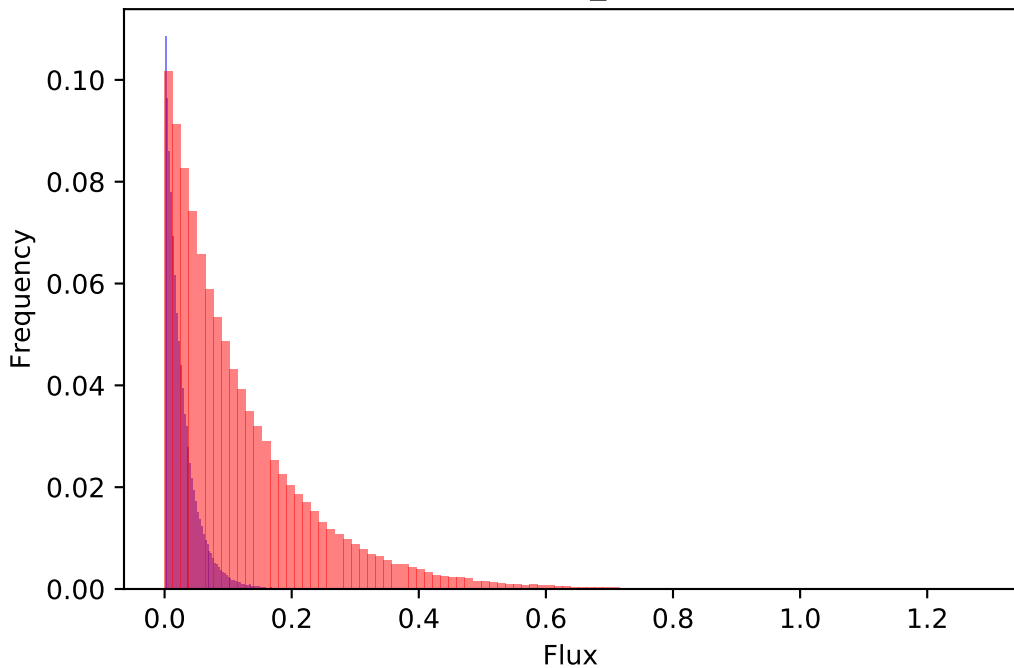
533 : Val_p -->



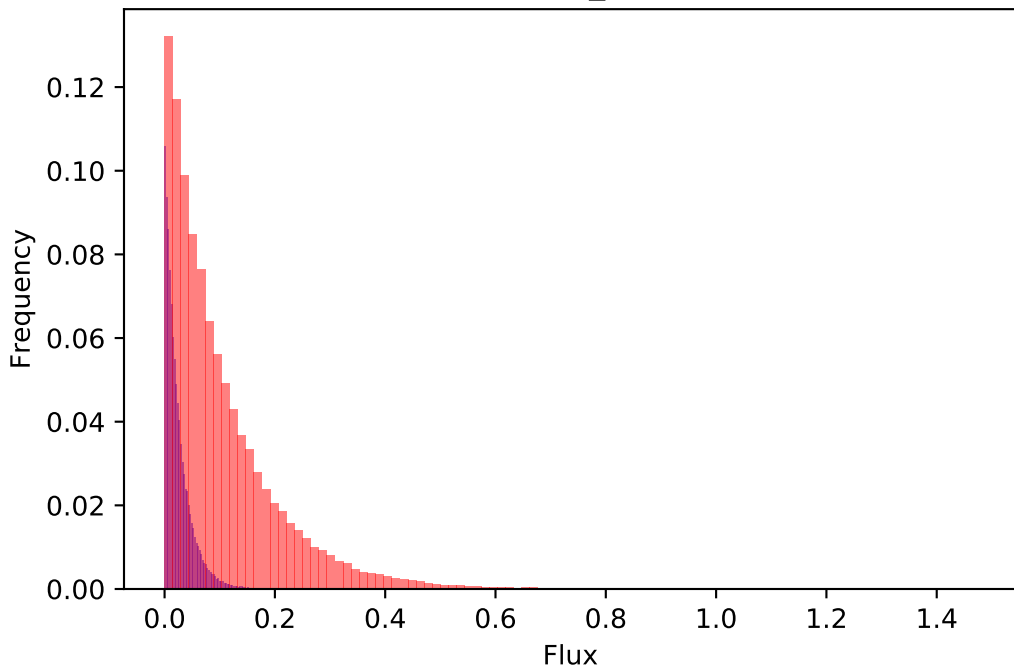
534 : starch3_h -->



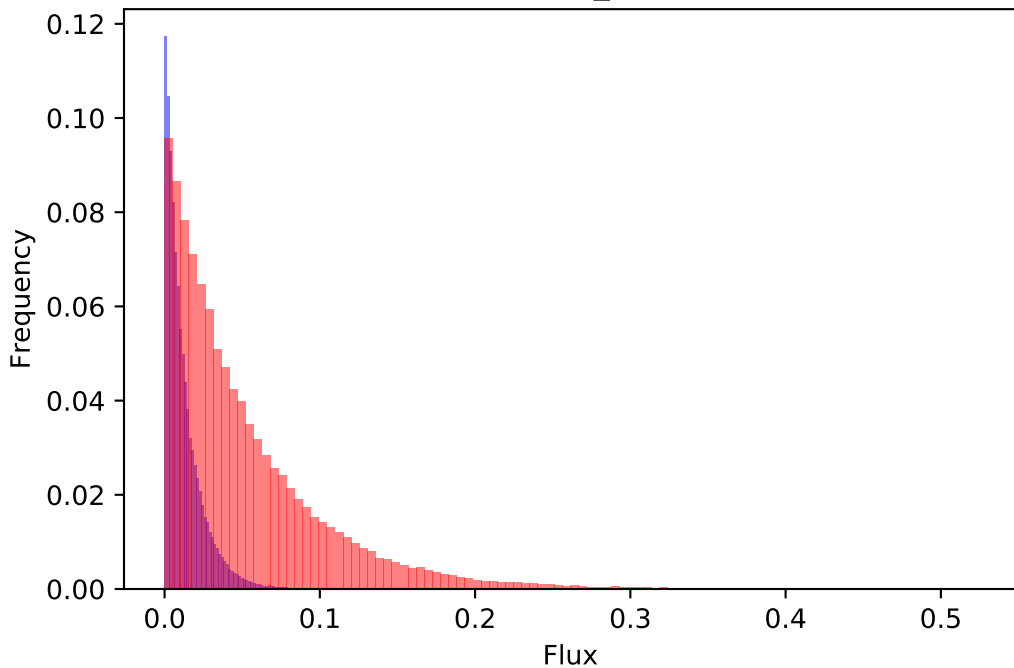
535 : Glc_c -->



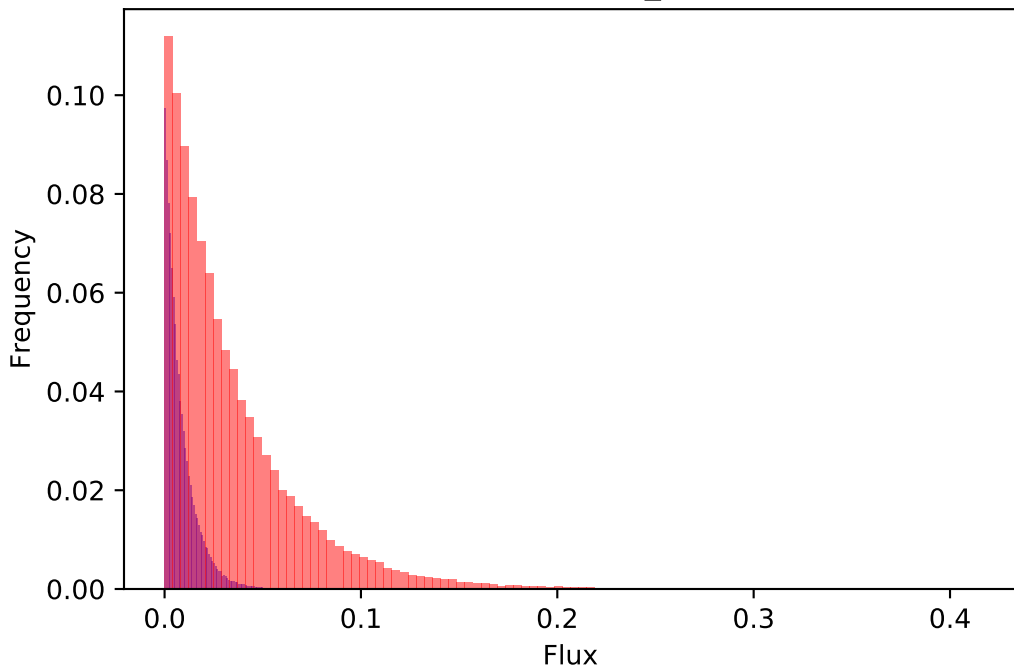
536 : Frc_c -->



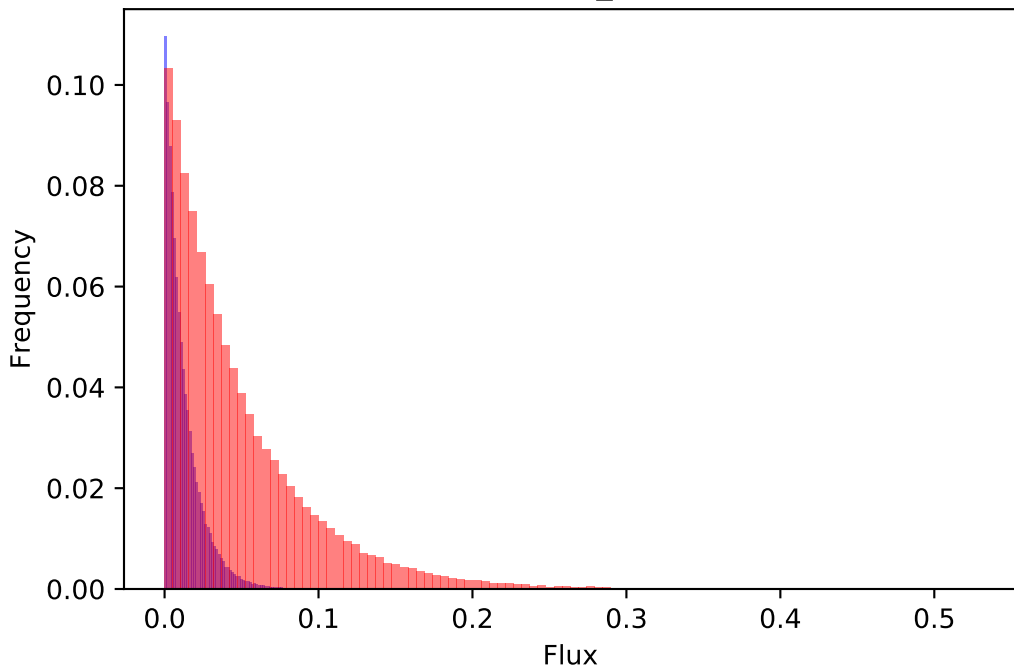
537 : Suc_c -->



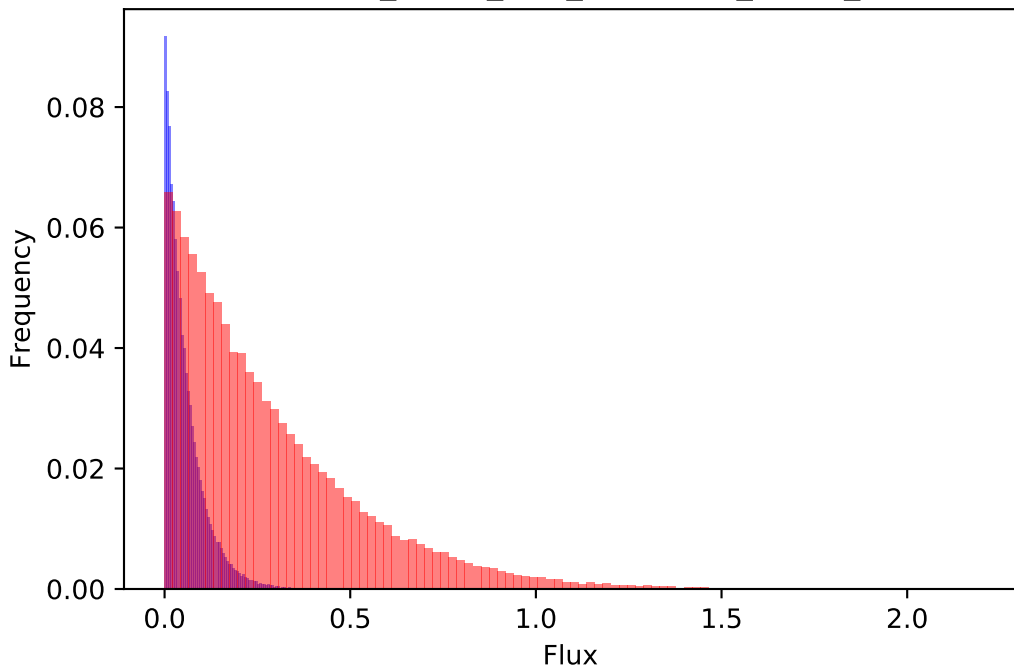
538 : cellulose3_c -->



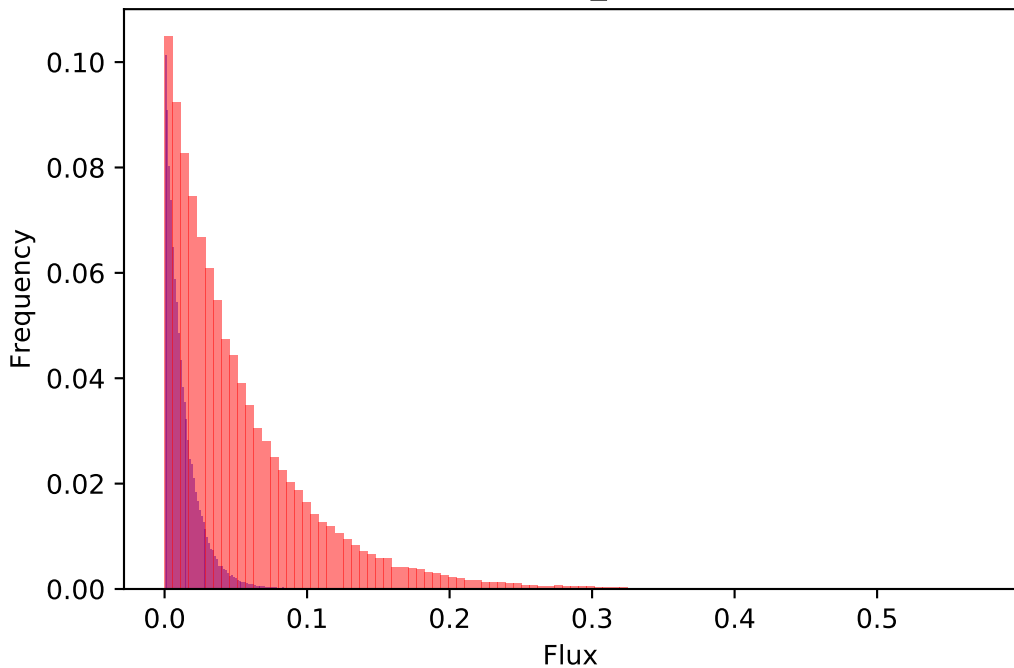
539 : Mas_c -->

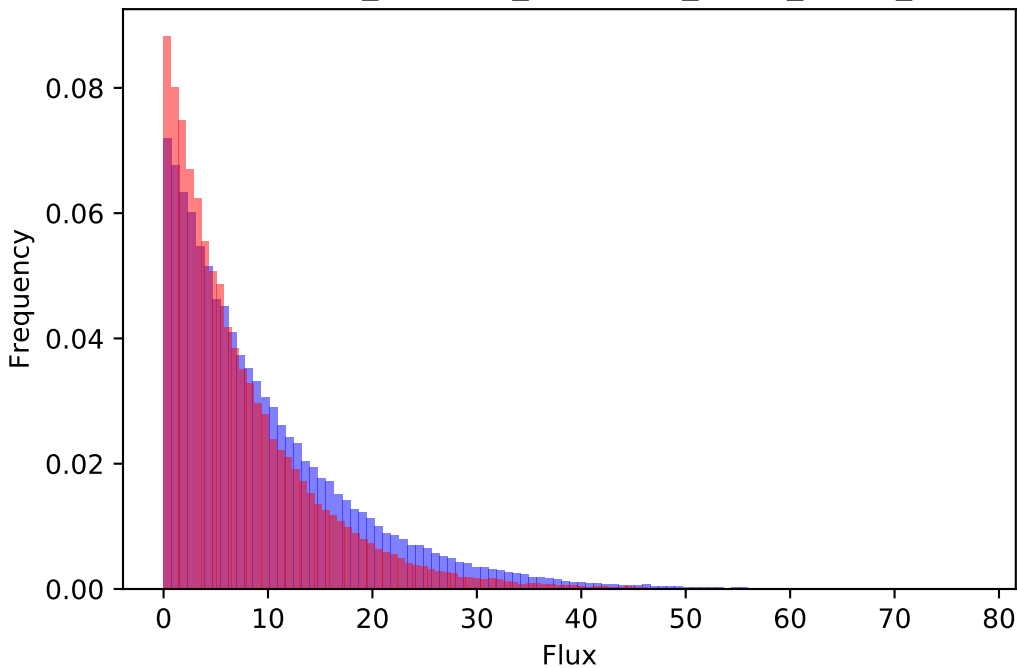
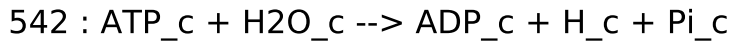


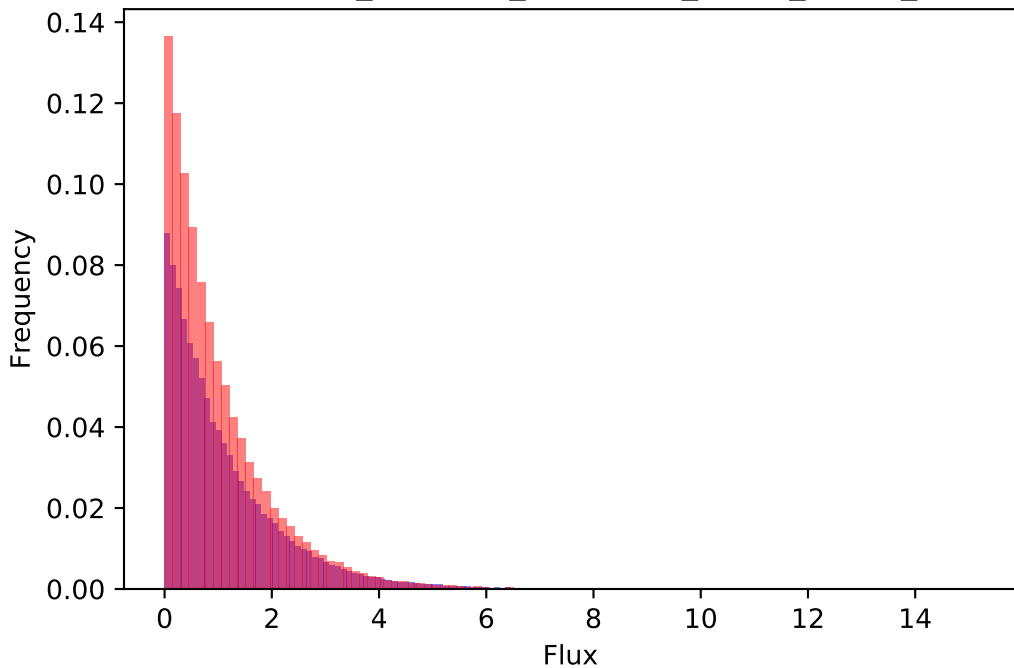
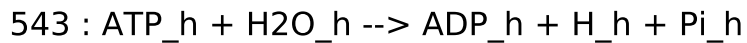
540 : M_DASH_ACP_h --> ACP_h + H_h



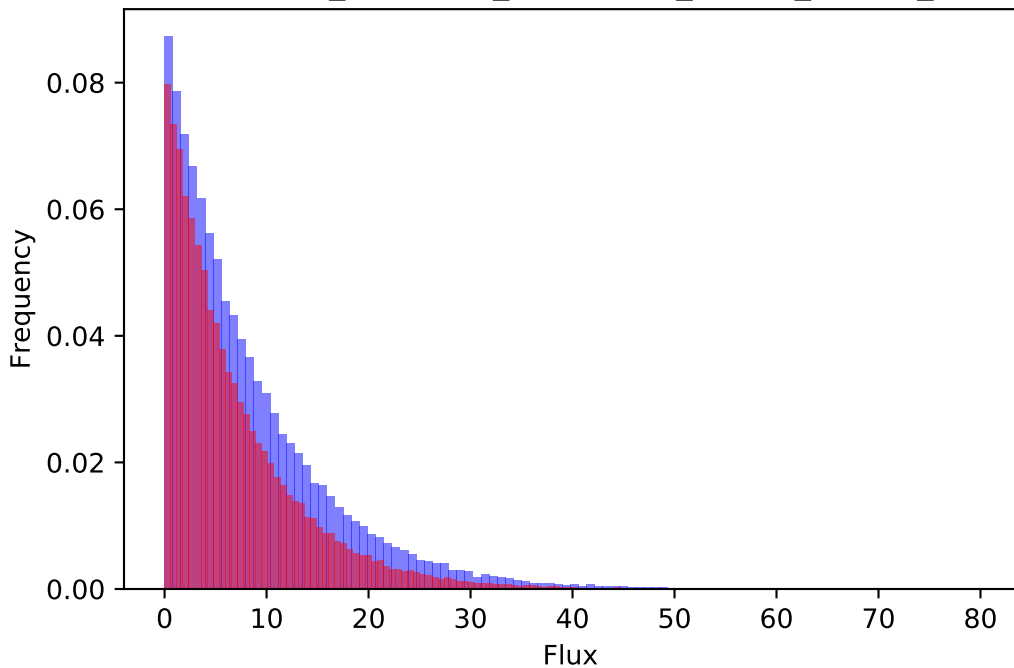
541 : Tre_c -->



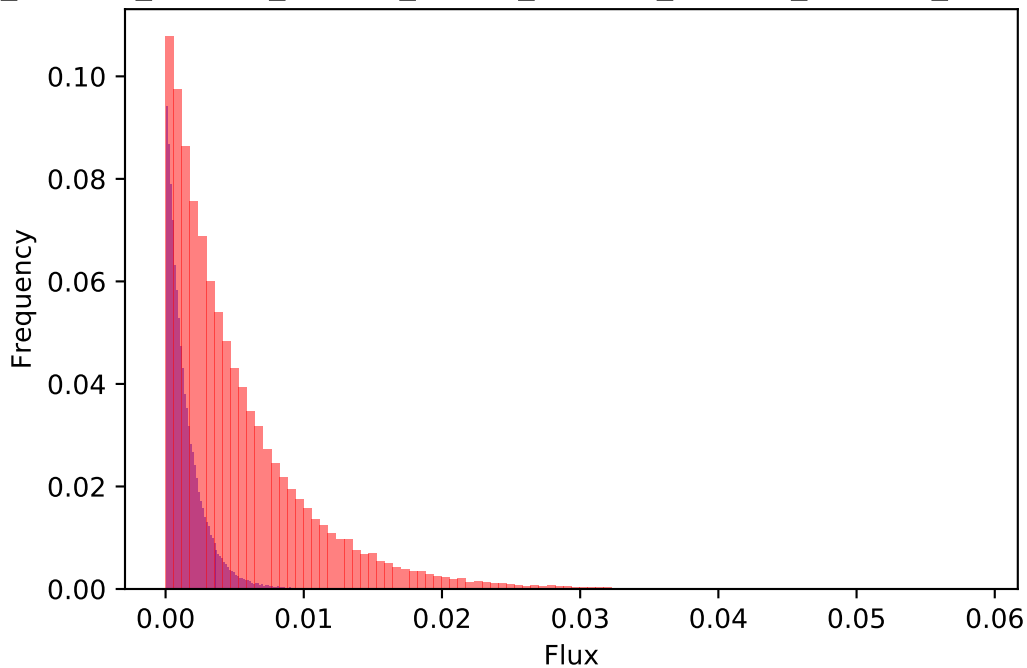




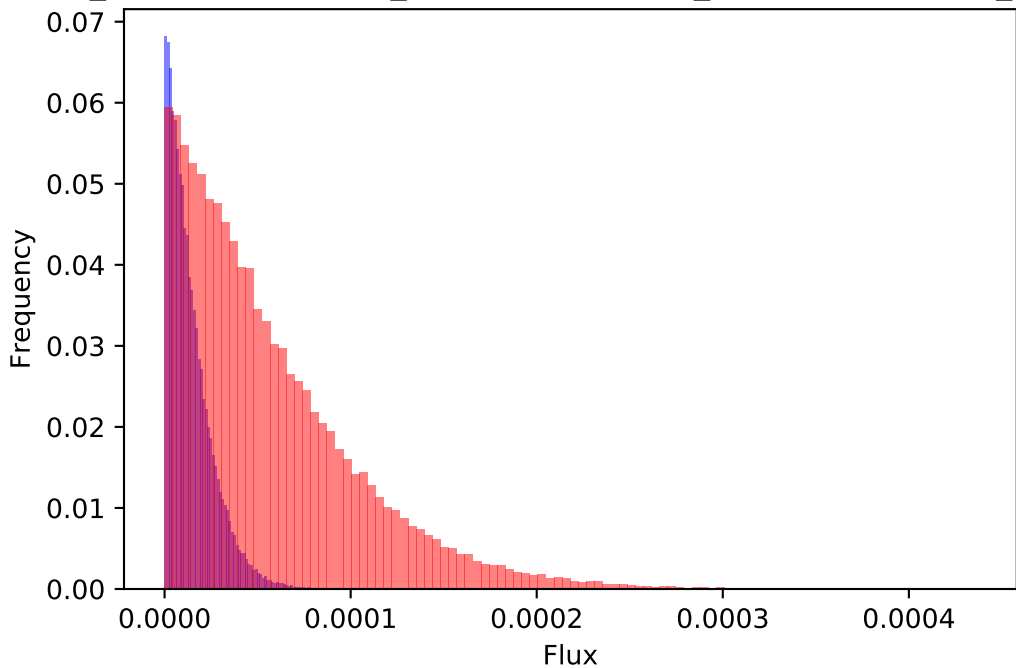
544 : $\text{ATP}_m + \text{H}_2\text{O}_m \rightarrow \text{ADP}_m + \text{H}_m + \text{Pi}_m$



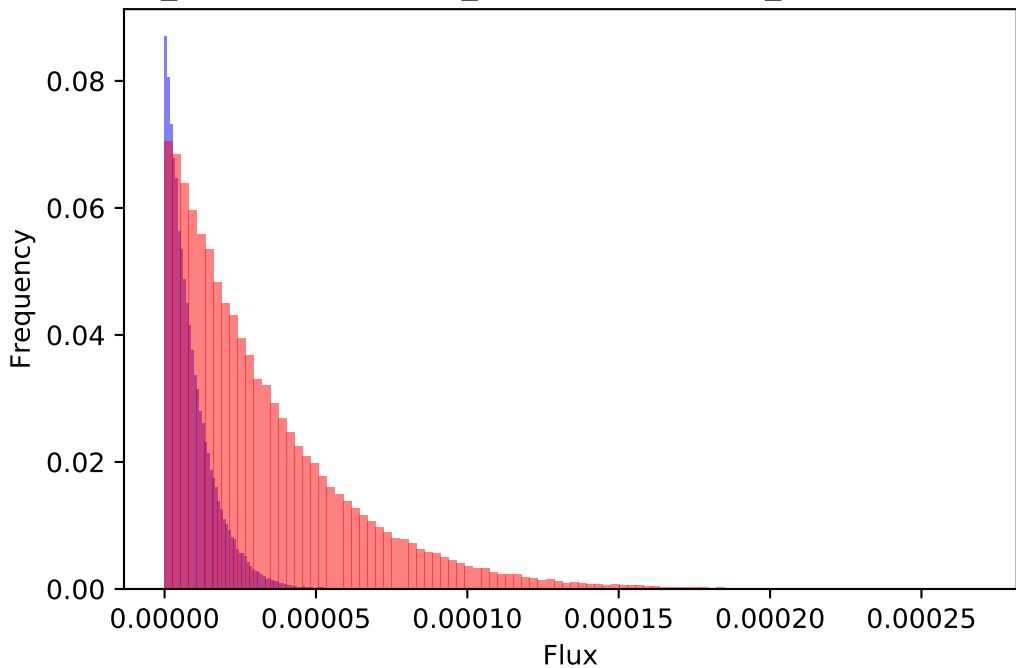
n_c + Glu_c + Gly_c + His_c + Ile_c + Leu_c + Lys_c + Met_c + Phe_c +



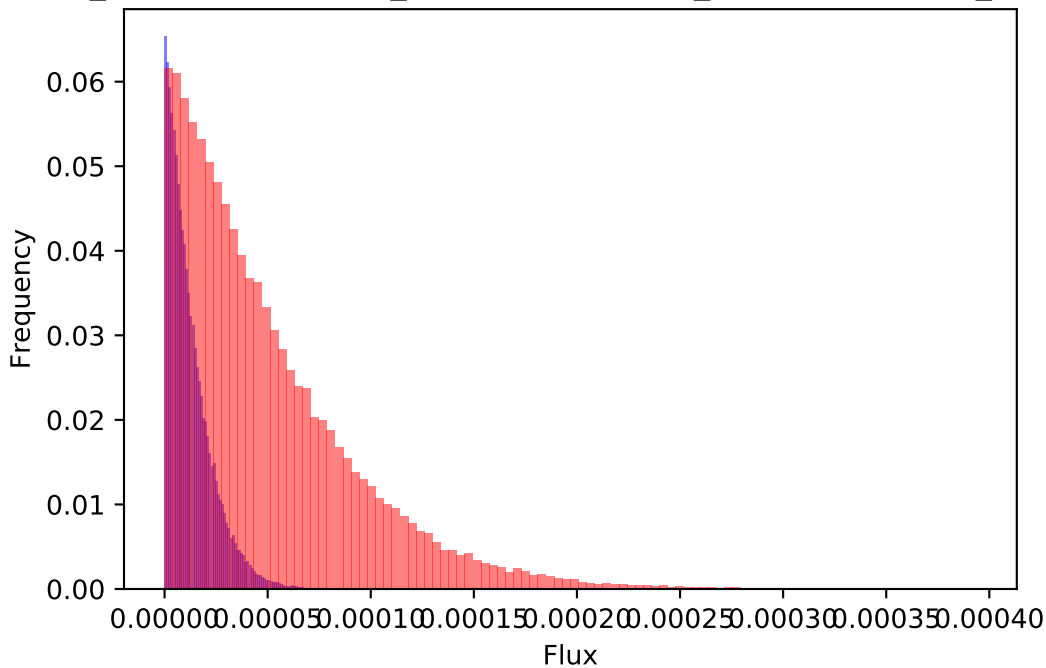
99 Mal_m + 2.27742 Mas_c + 30.37981 Met_c + 14.60727 Orn_h + 59.



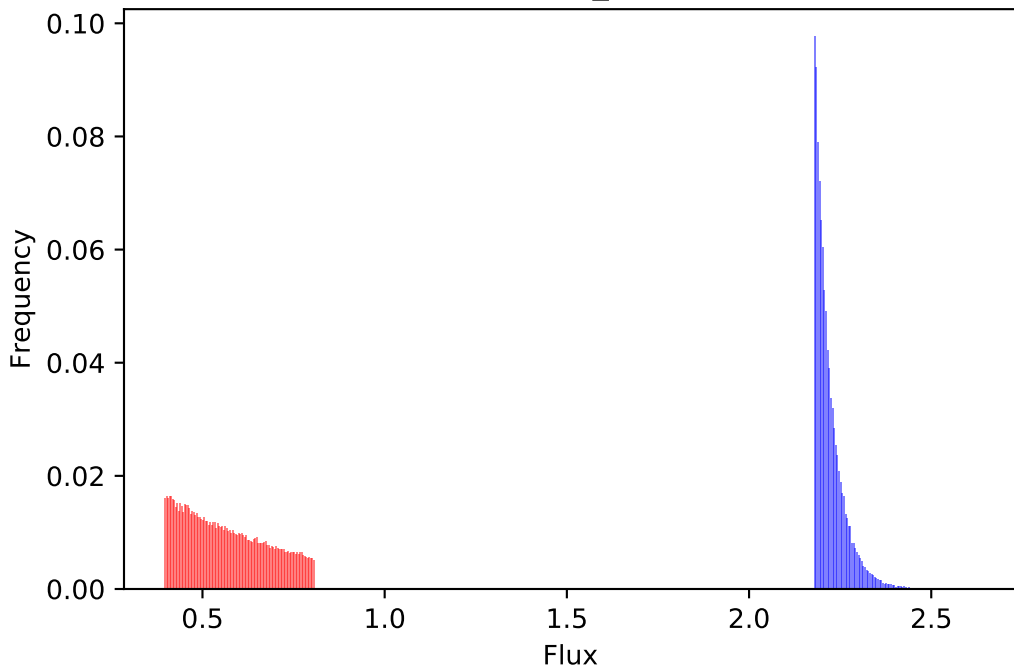
.89856 Mal_m + 5.37965 Mas_c + 51.81818 Met_c + 9.64682 Orn_h +



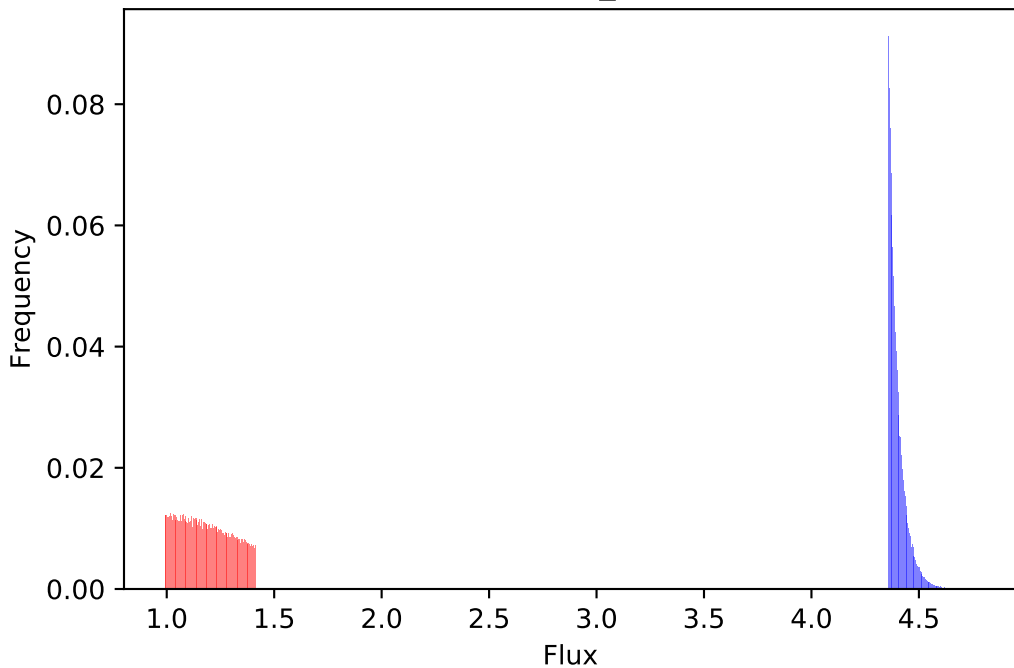
$$41 \text{ Mal_m} + 2.60958 \text{ Mas_c} + 33.61497 \text{ Met_c} + 1.58654 \text{ Orn_h} + 66.6$$



549 : Mal_c -->



550 : Fum_c -->



551 : starch1_h -->

