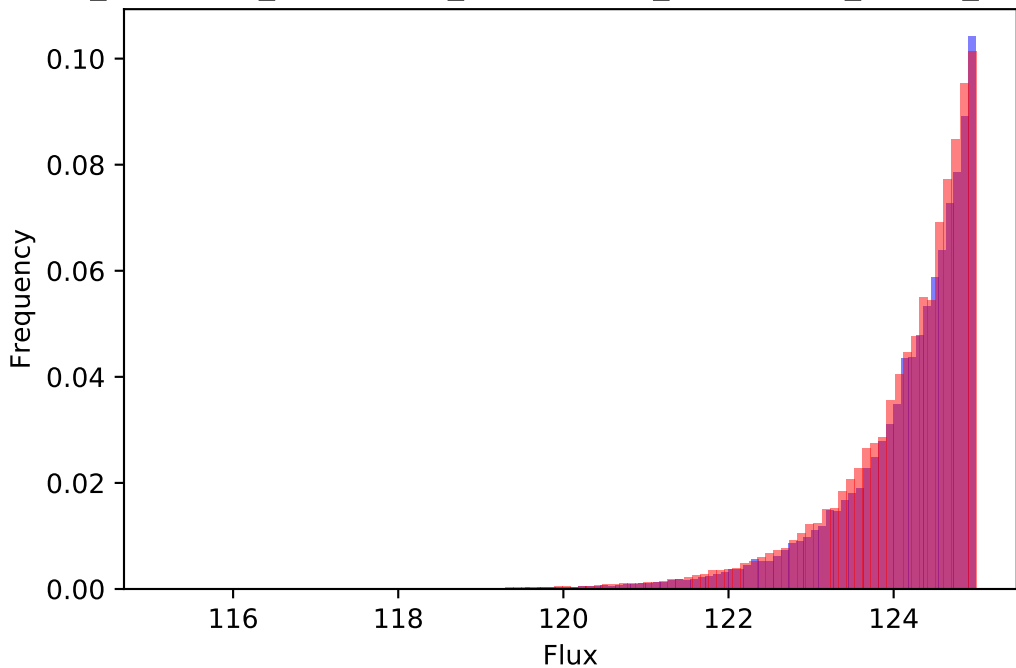
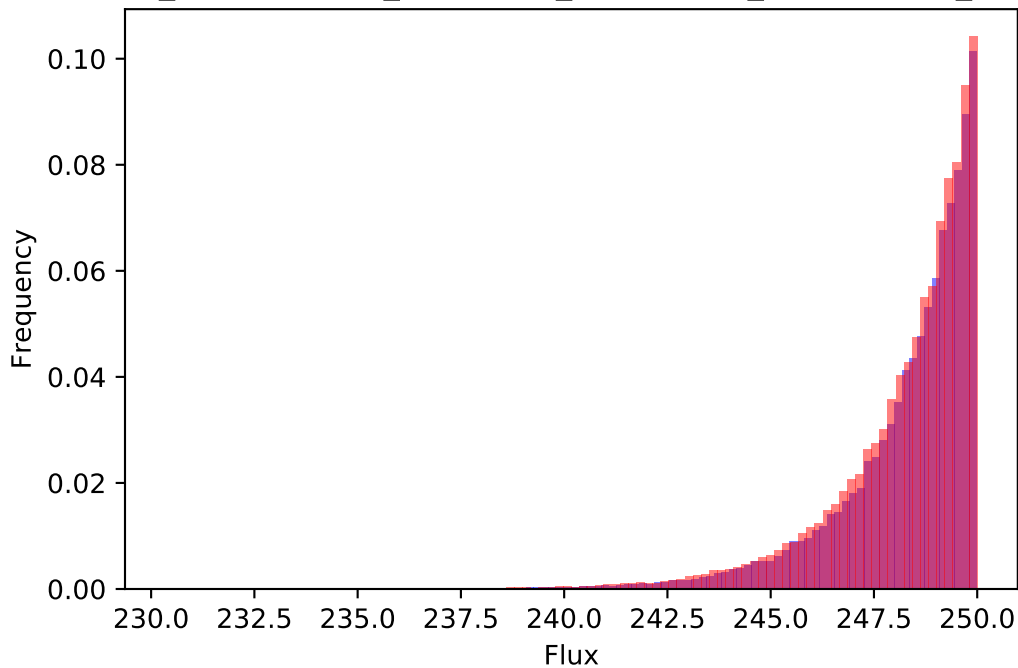


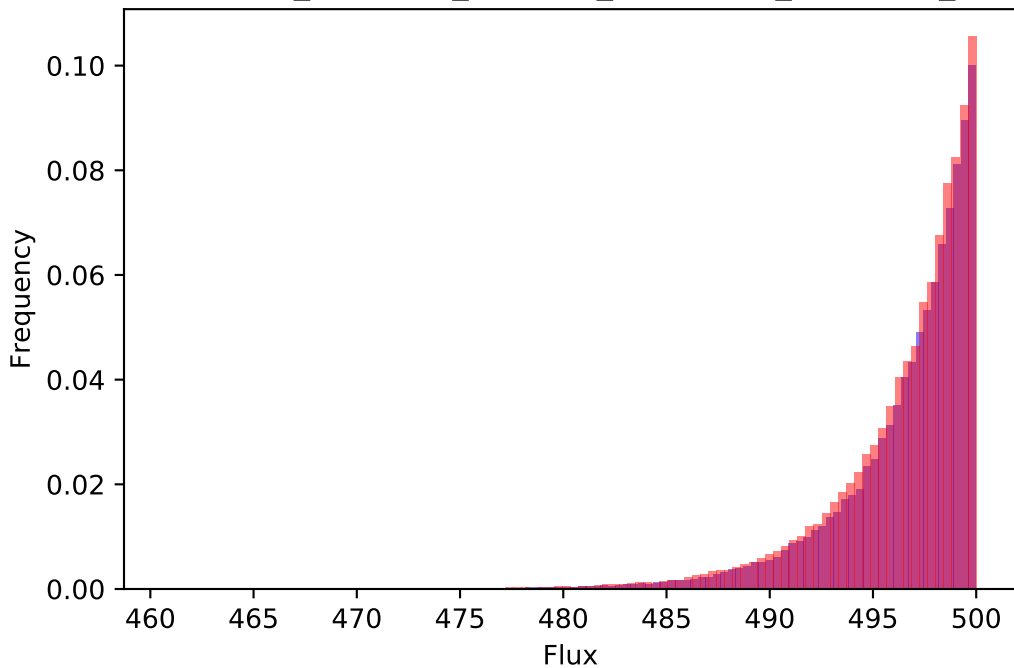
.0 H2O_h + 4.0 H_h + 2.0 PQ_h + 4.0 hnu_h --> 4.0 H_l + O2_h + 2.0 PO_h



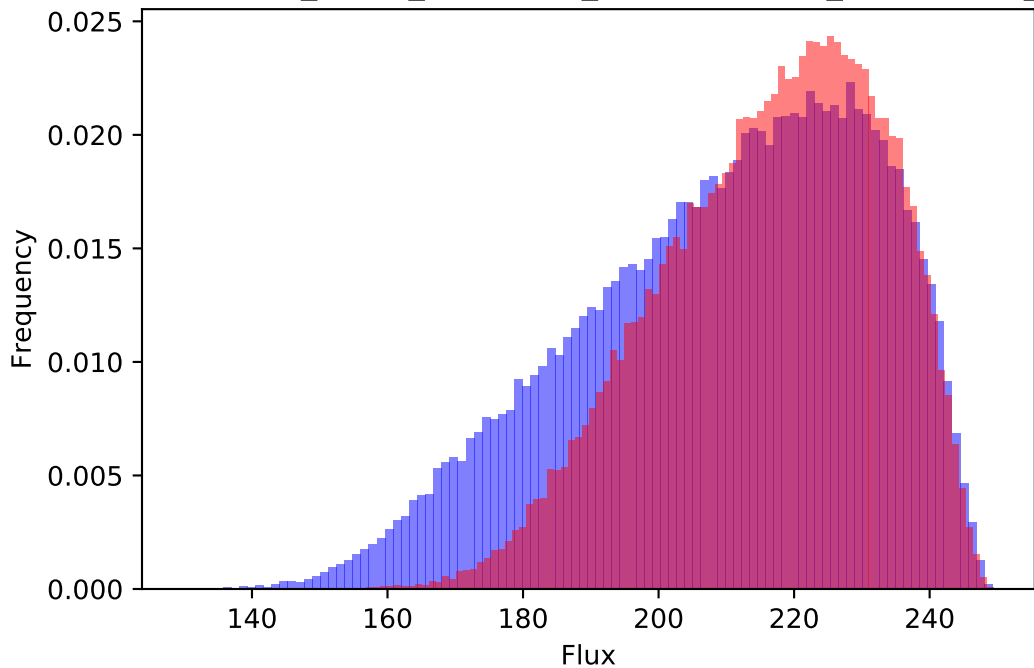
****1 : 2.0 H_h + 2.0 PCox_h + PQH2_h --> 4.0 H_l + 2.0 PCrd_h + PQ_h***



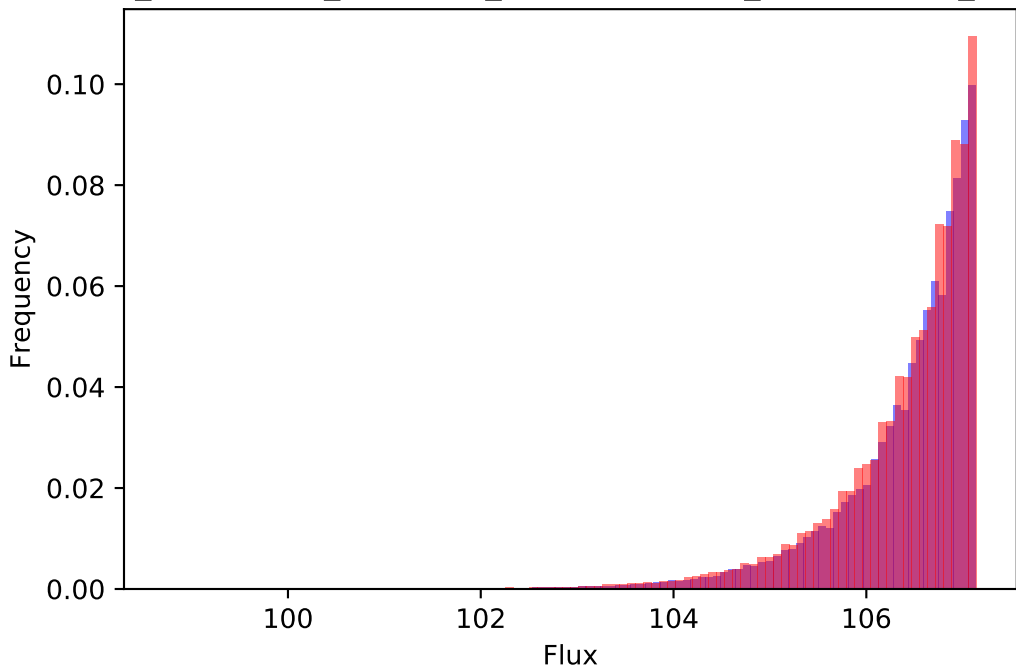
****2 : Fdox_h + PCrd_h + hnu_h --> Fdrd_h + PCox_h****



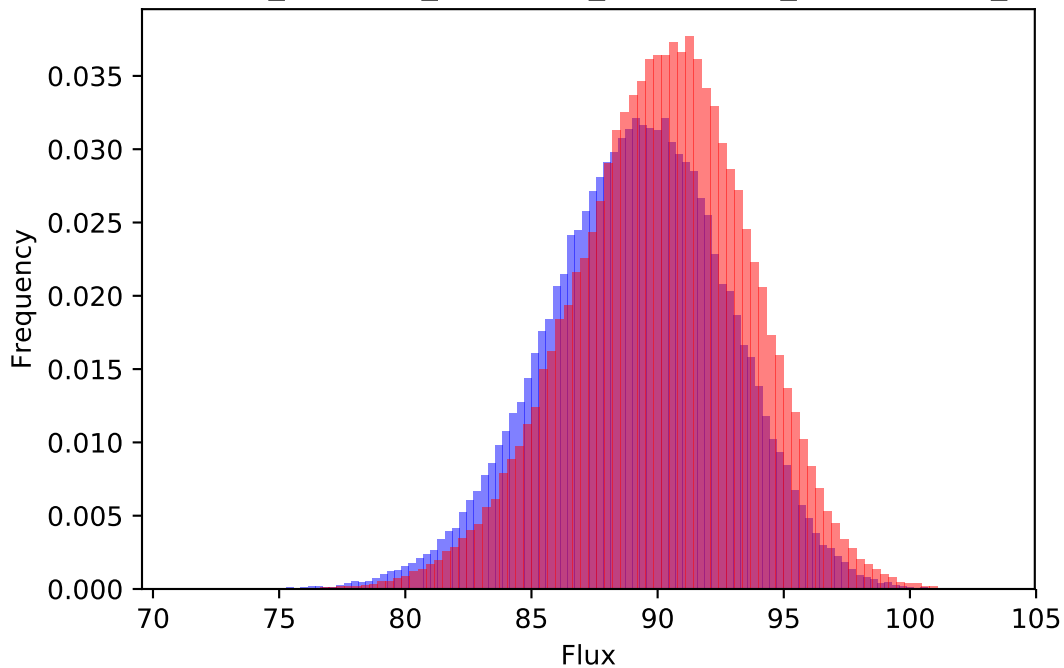
****3 : 2.0 Fdrd_h + H_h + NADP_h --> 2.0 Fdox_h + NADPH_h****



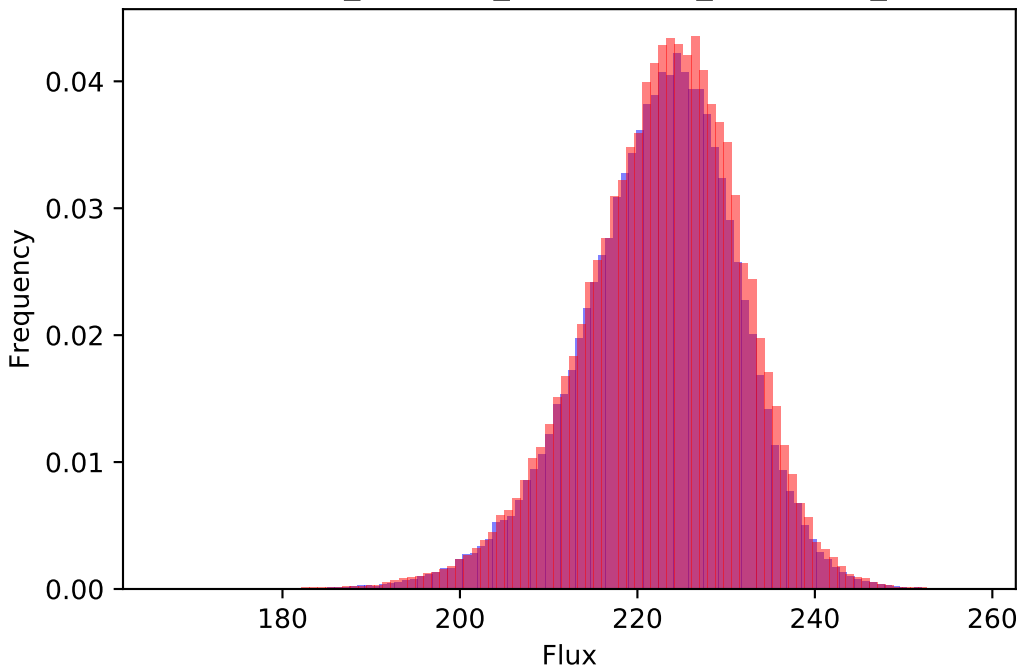
: 3.0 ADP_h + 14.0 H_l + 3.0 Pi_h <=> 3.0 ATP_h + 3.0 H2O_h + 11.0 H



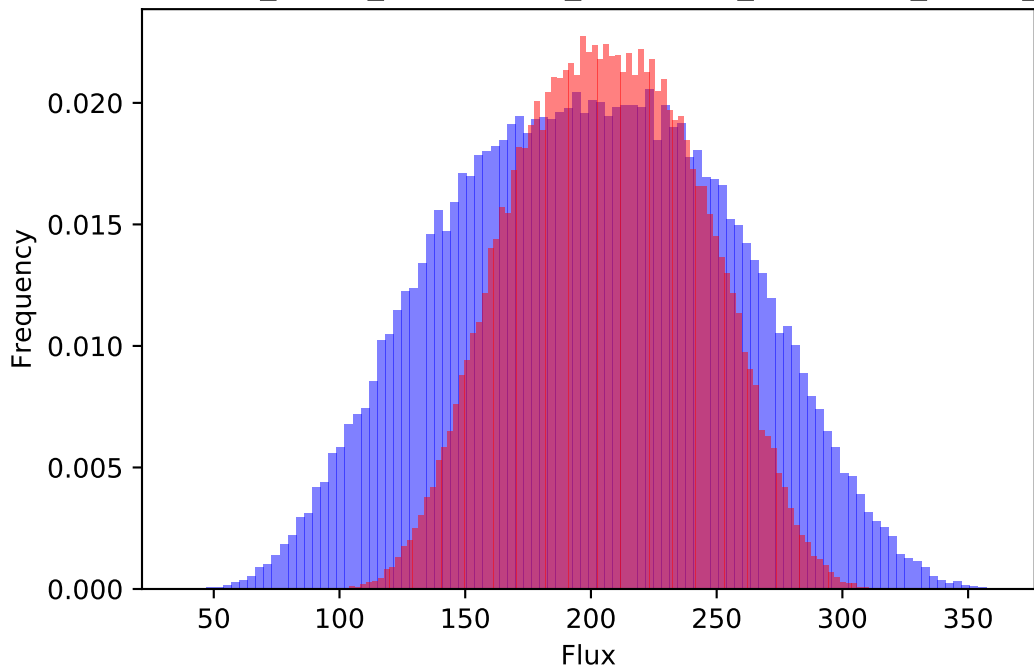
****5 : CO2_h + H2O_h + RuBP_h --> 2.0 H_h + 2.0 PGA_h****



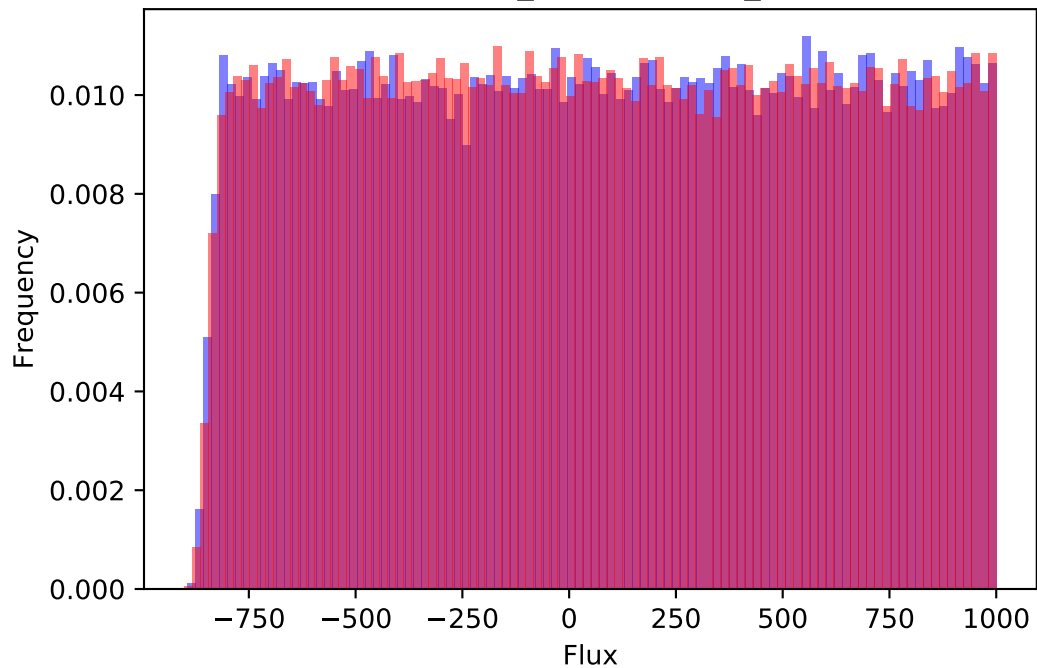
****6 : ATP_h + PGA_h <=> ADP_h + DPGA_h****



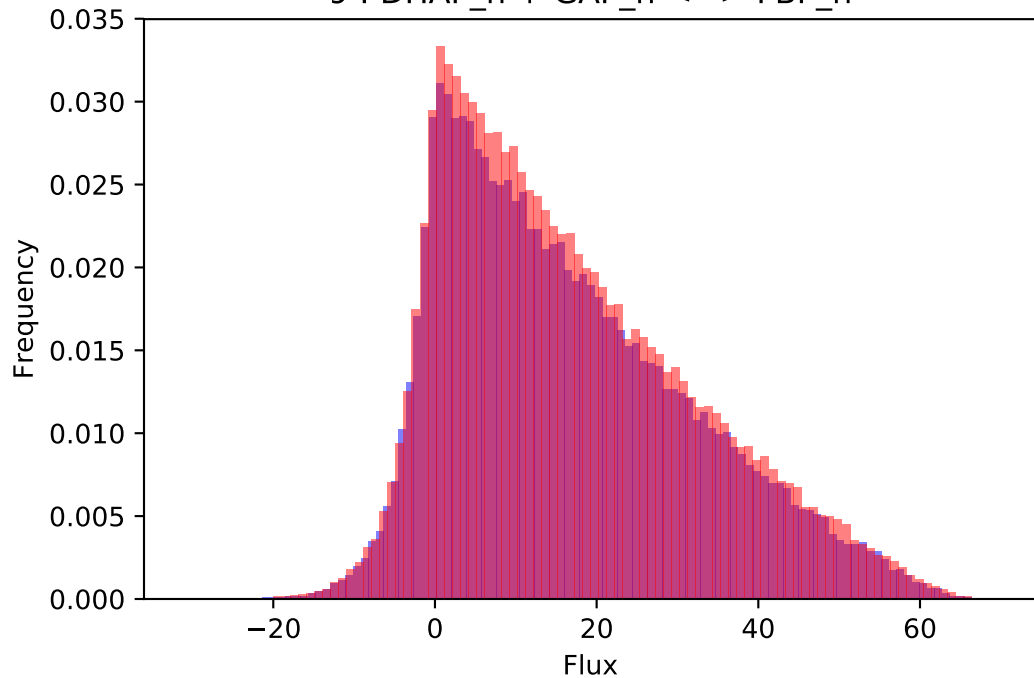
****7 : DPGA_h + H_h + NADPH_h --> GAP_h + NADP_h + Pi_h****

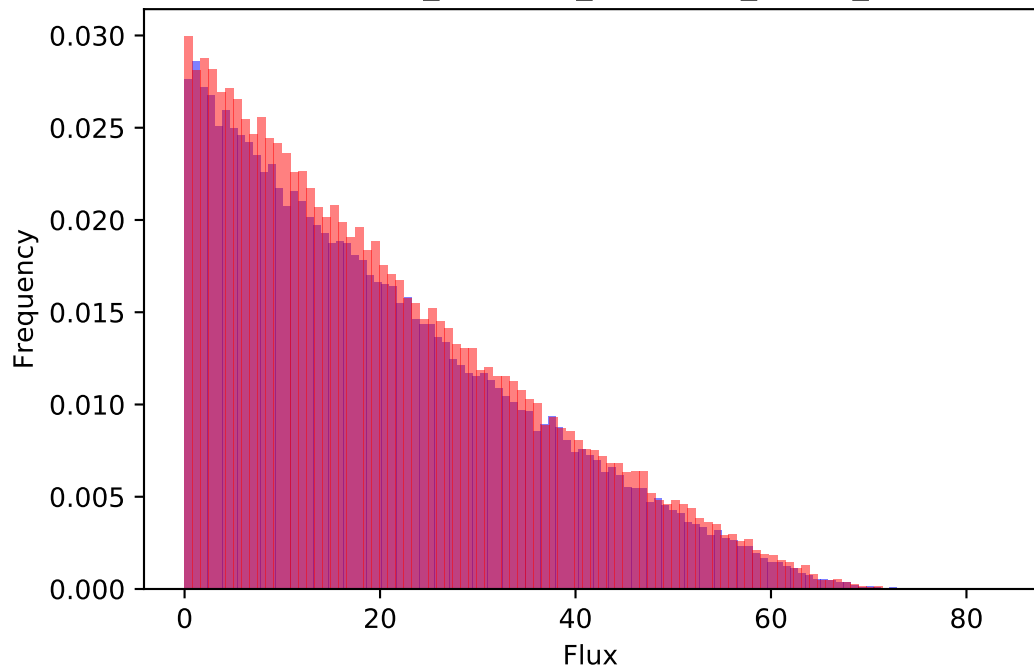
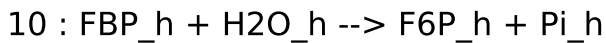


8 : GAP_h \Leftrightarrow DHAP_h

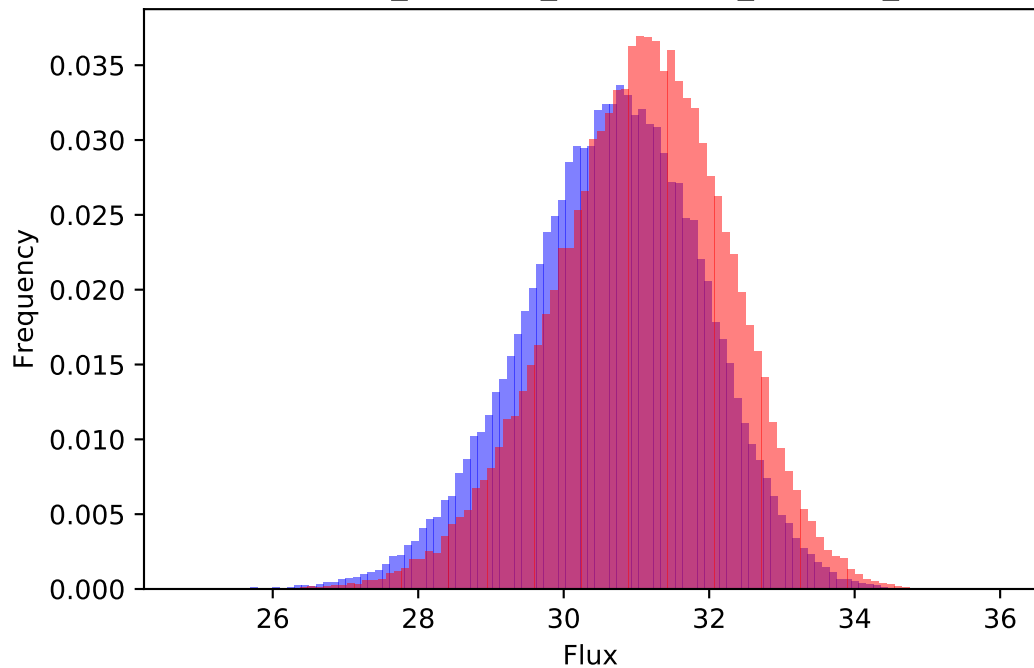


9 : DHAP_h + GAP_h \rightleftharpoons FBP_h

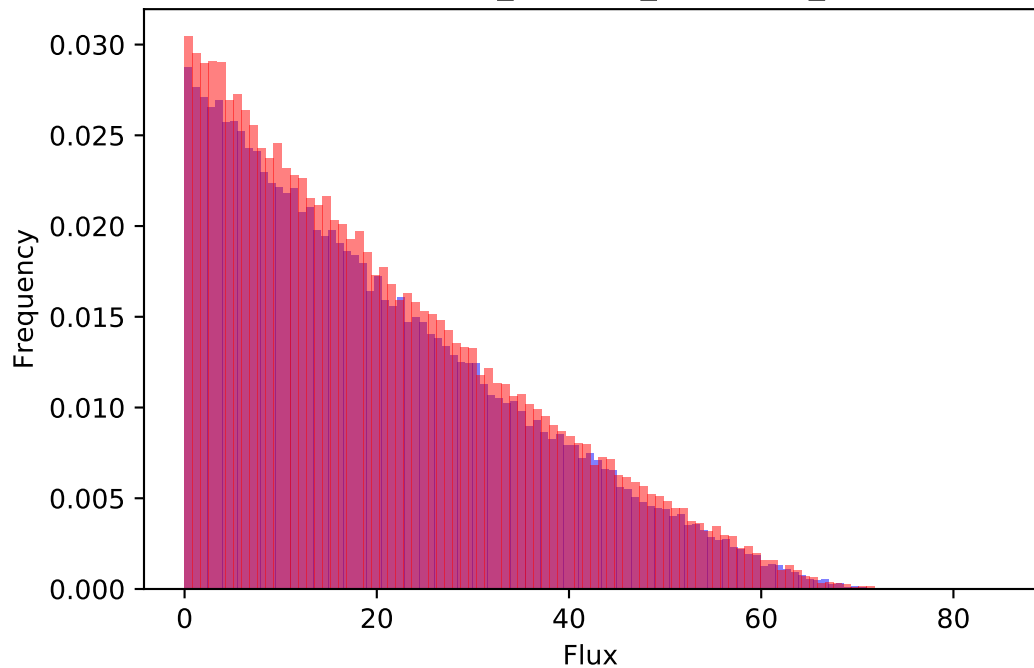




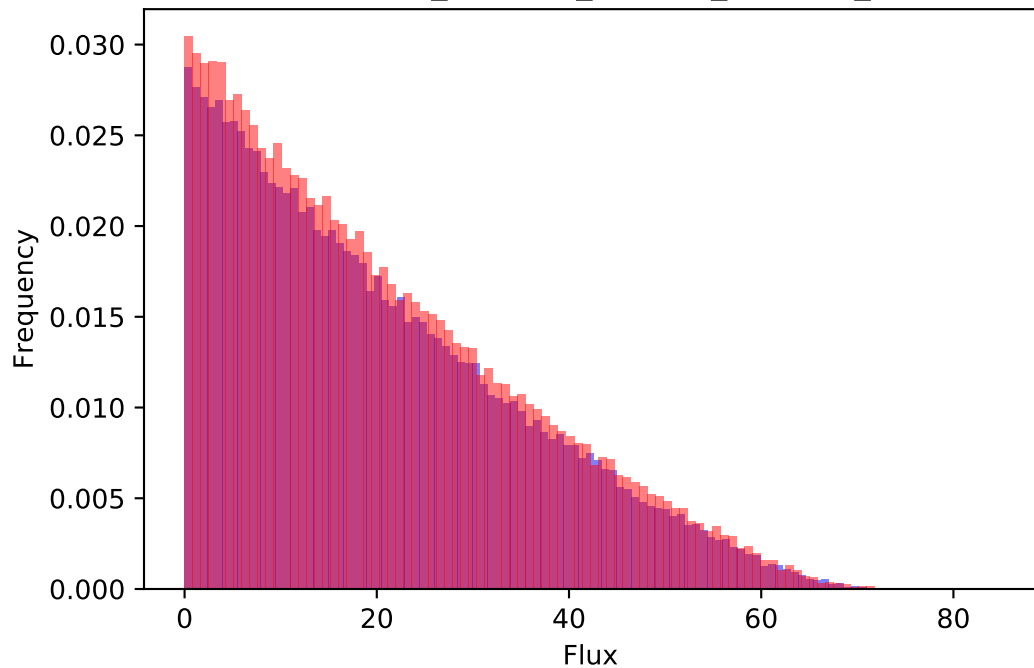
****11 : F6P_h + GAP_h <=> E4P_h + X5P_h****



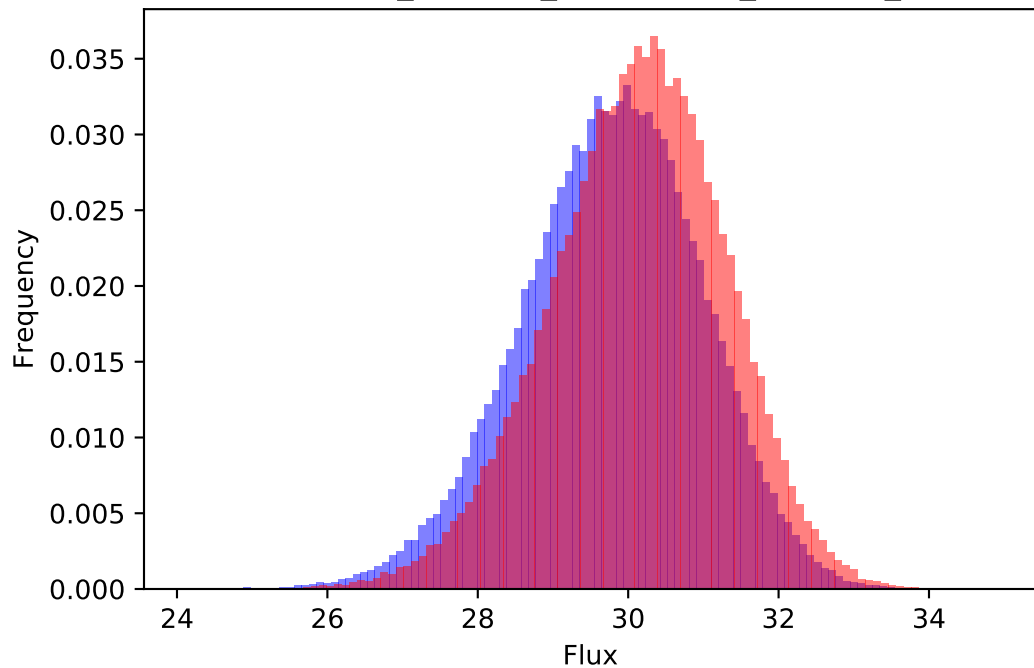
12 : DHAP_h + E4P_h --> SBP_h



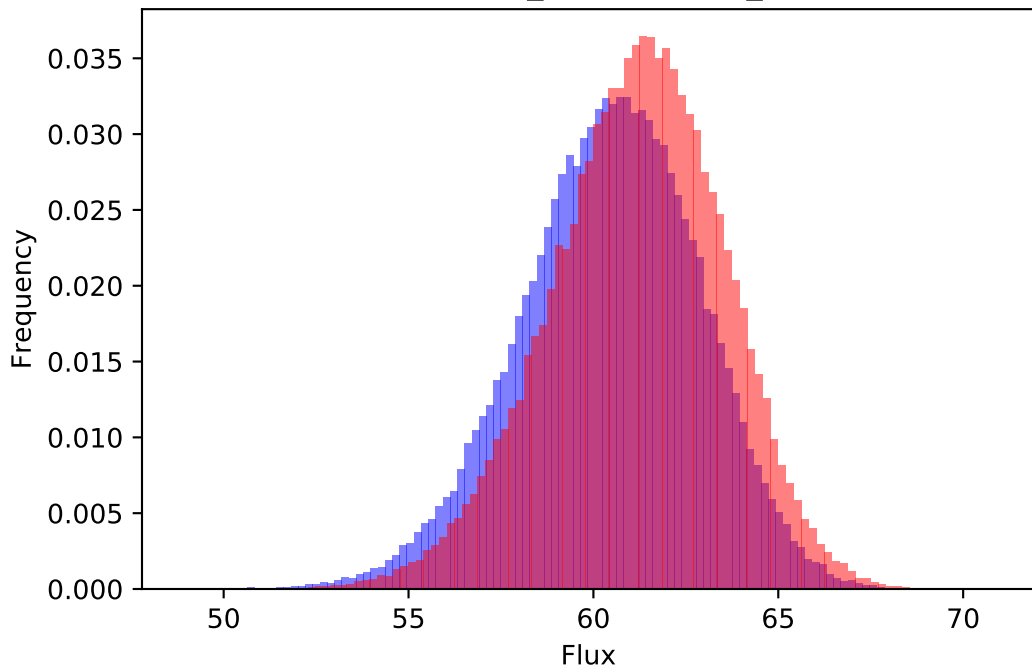
13 : H2O_h + SBP_h --> Pi_h + S7P_h



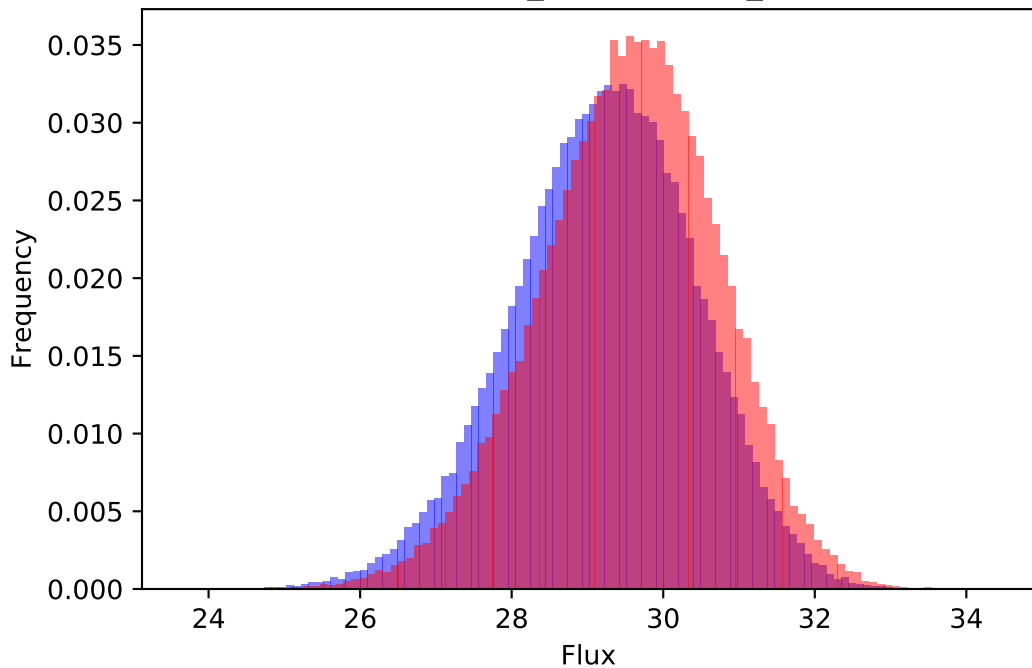
****14 : GAP_h + S7P_h <=> R5P_h + X5P_h****



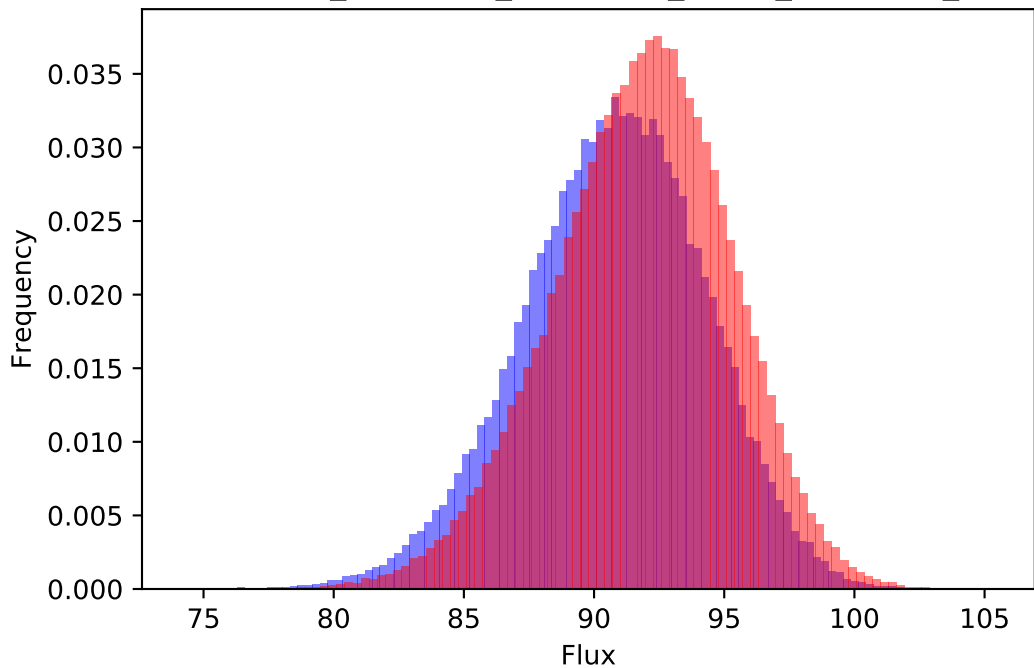
****15 : X5P_h <=> Ru5P_h****



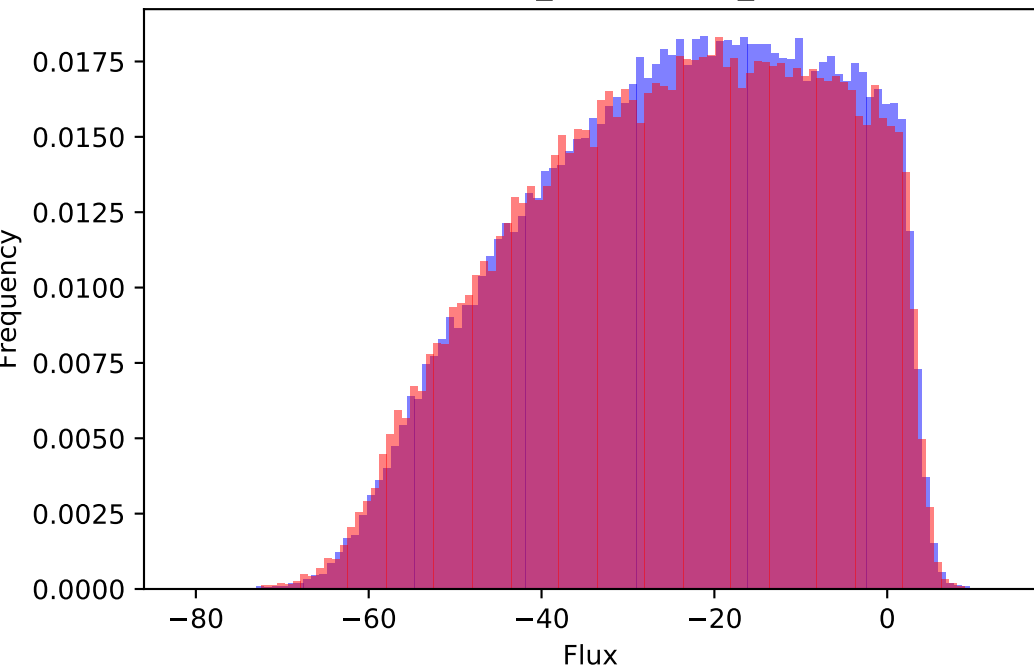
****16 : R5P_h <=> Ru5P_h****



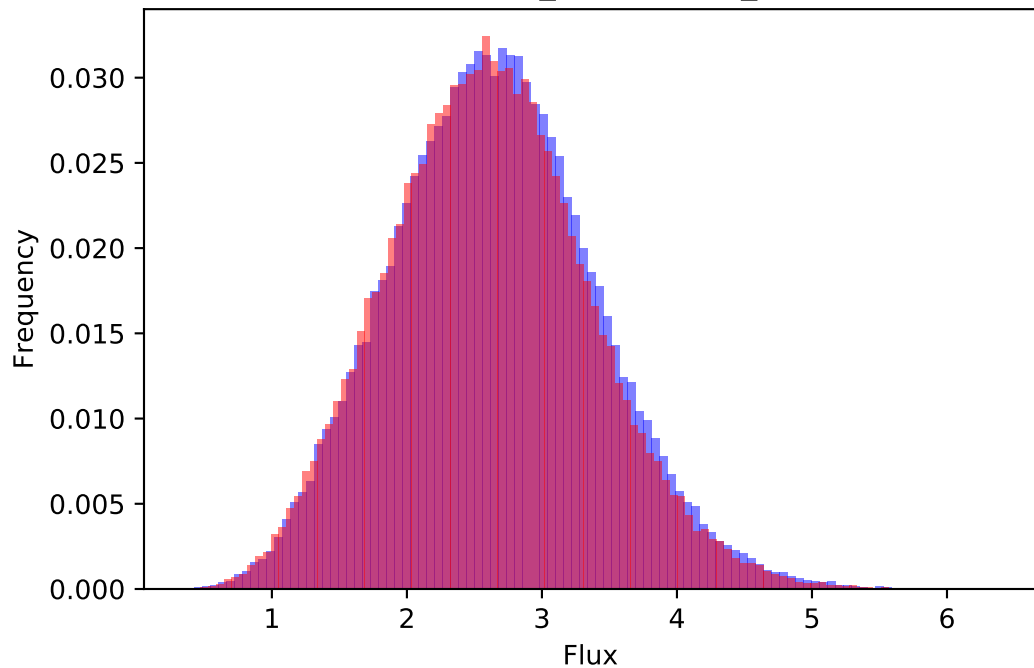
****17 : ATP_h + Ru5P_h --> ADP_h + H_h + RuBP_h****



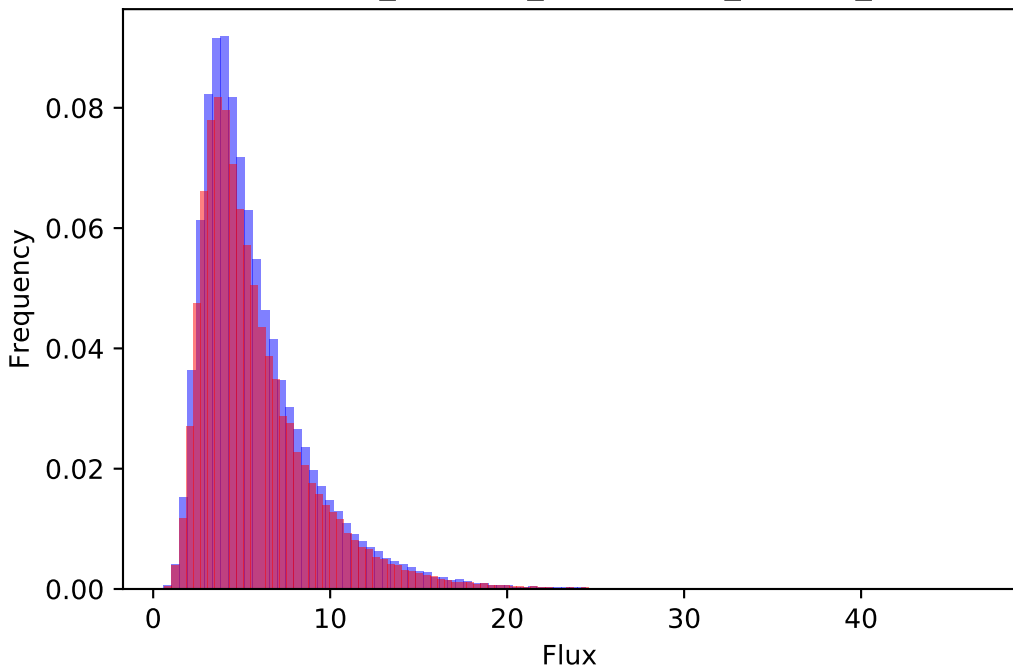
****18 : F6P_h <=> G6P_h****



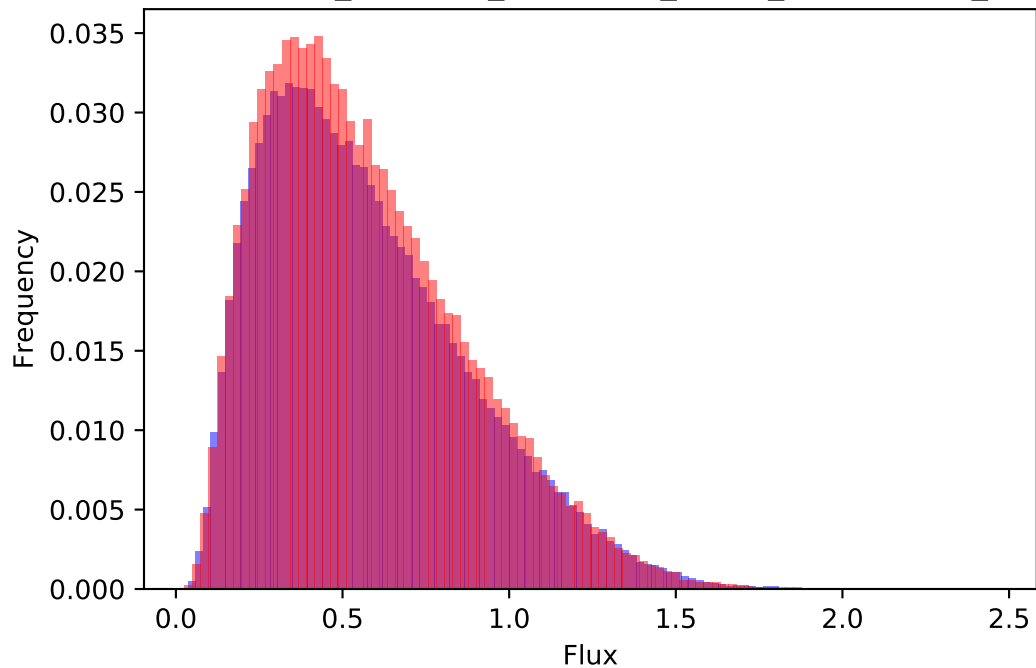
****19 : G6P_h <=> G1P_h****



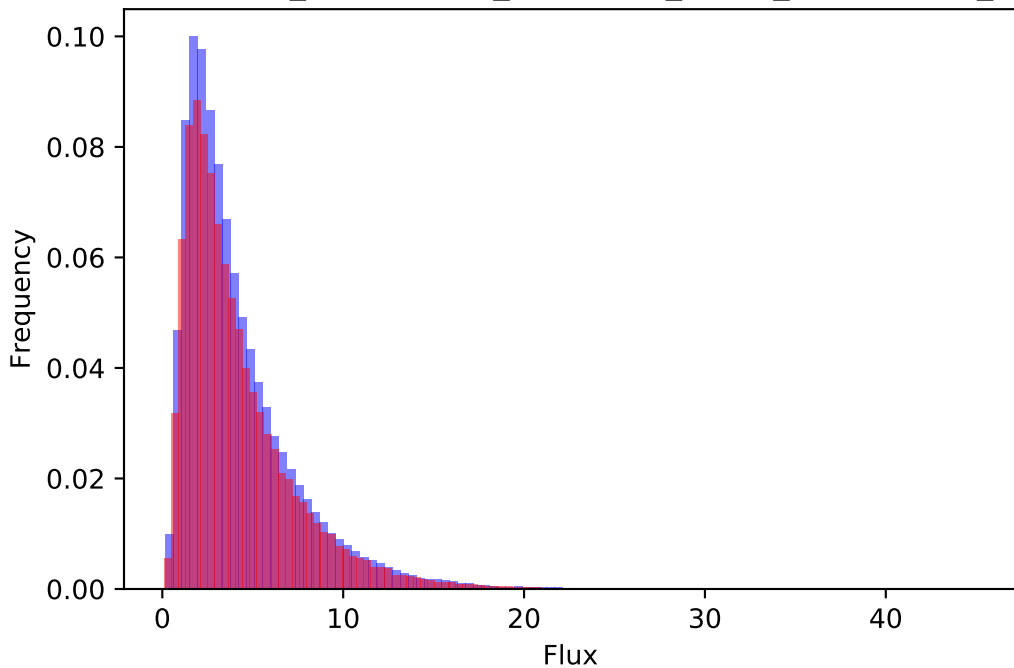
20 : ATP_h + G1P_h --> ADPG_h + PPI_h



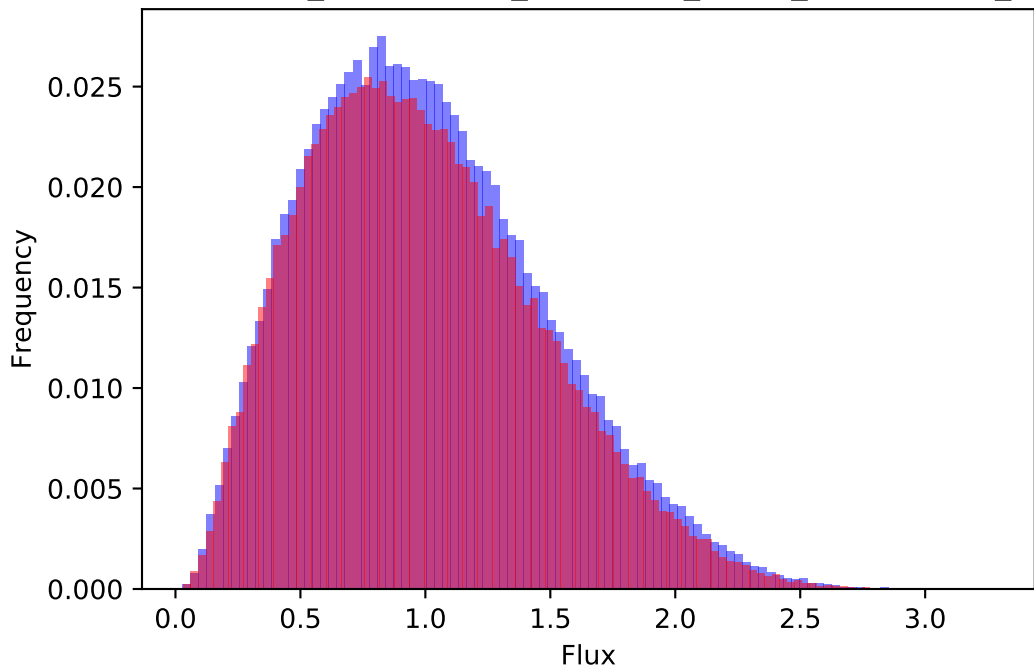
21 : ADPG_h + H2O_h --> ADP_h + H_h + starch1_h



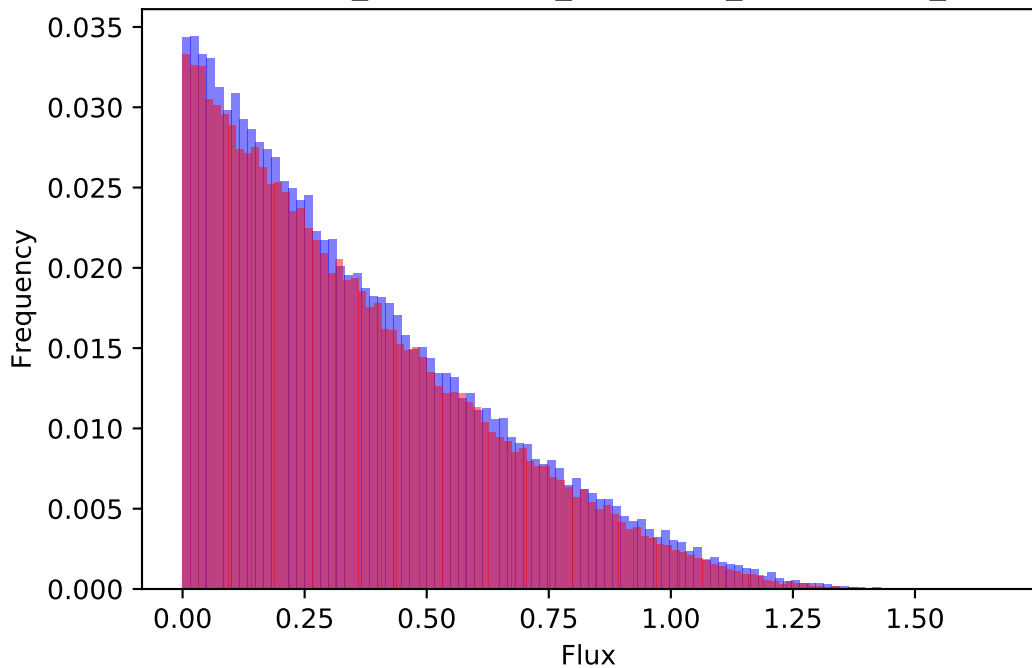
22 : ADPG_h + starch1_h --> ADP_h + H_h + starch2_h



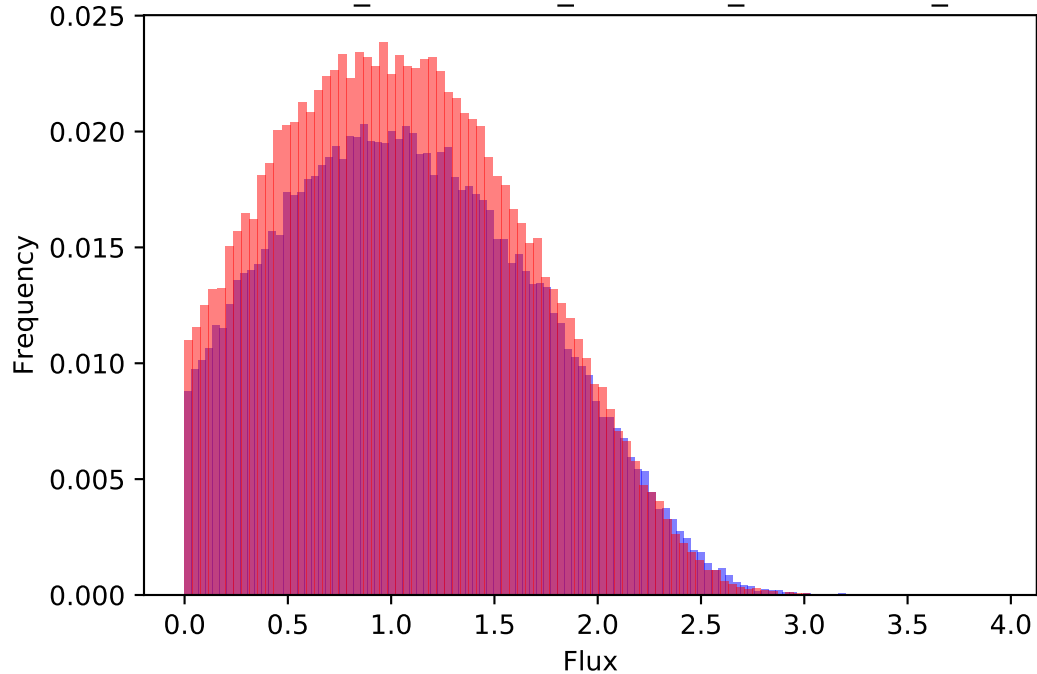
****23 : ADPG_h + starch2_h --> ADP_h + H_h + starch3_h****



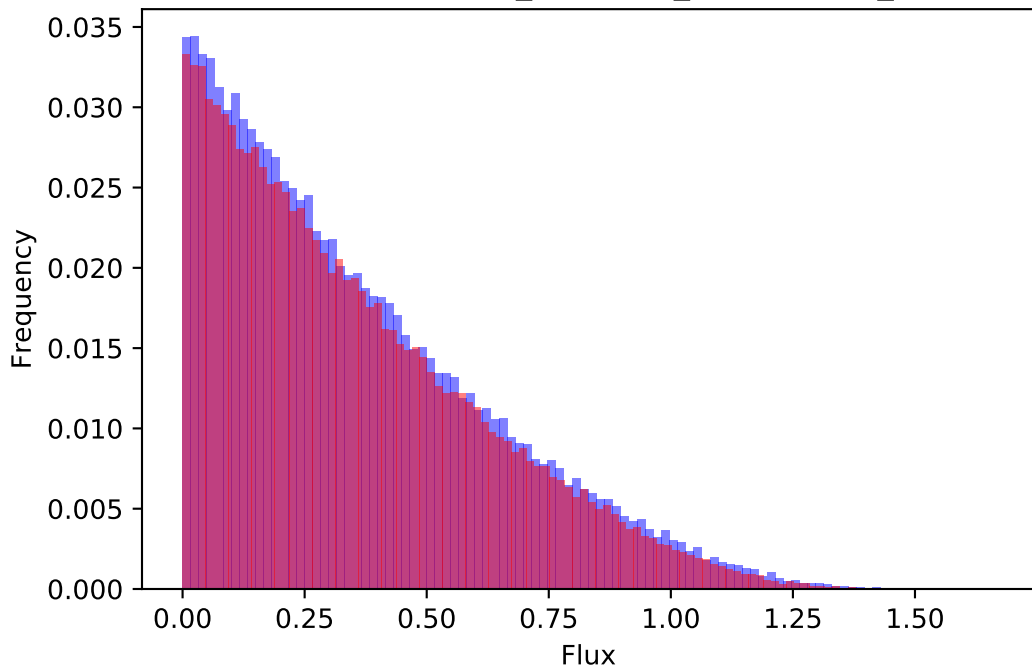
****24 : H2O_h + starch5_h --> Mas_h + starch3_h****



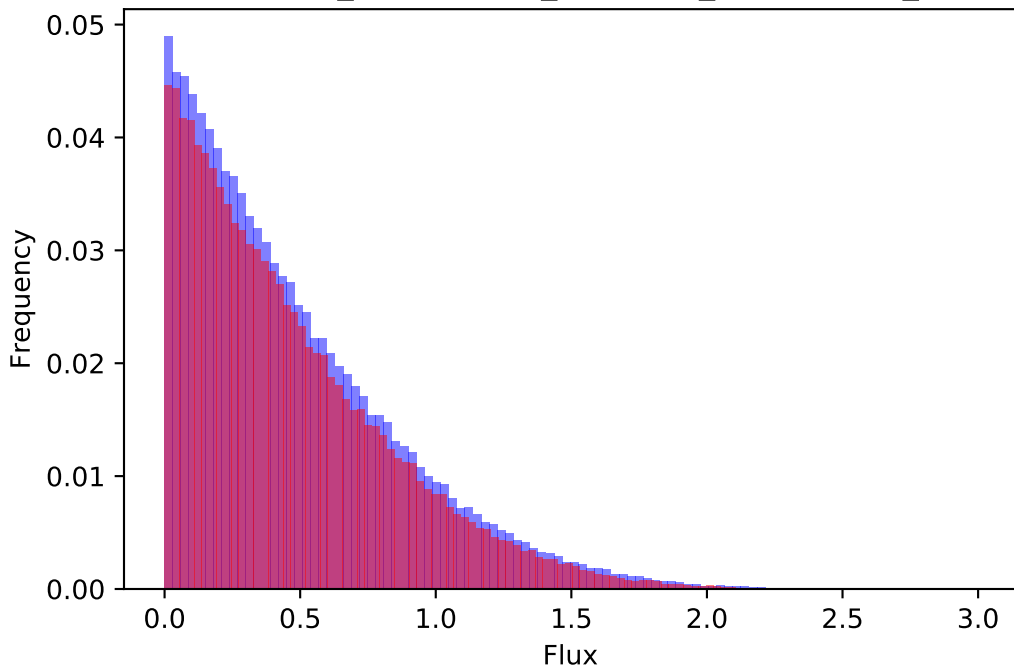
****25 : H2O_h + starch3_h --> Mas_h + starch1_h****



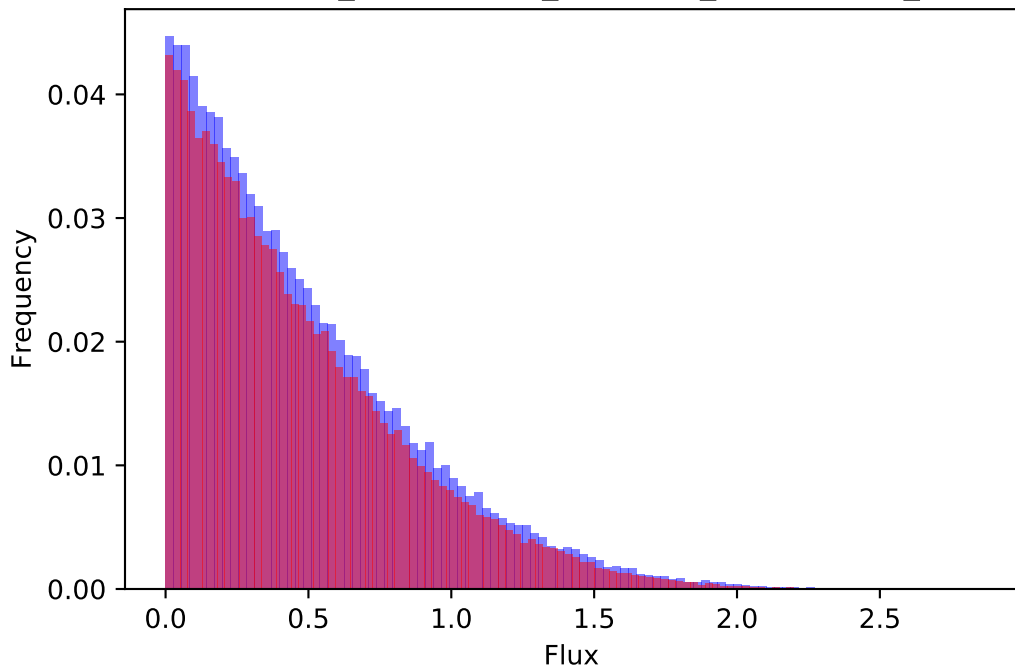
****26 : 2.0 starch3_h --> Glc_h + starch5_h****



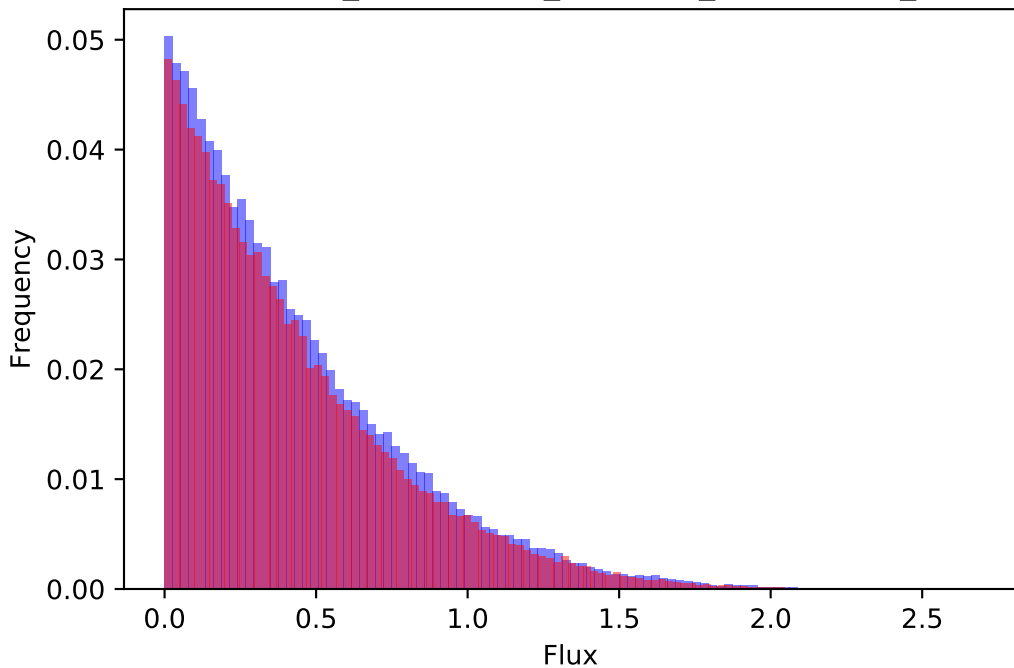
****27 : Mas_h + starch1_h --> Glc_h + starch2_h****



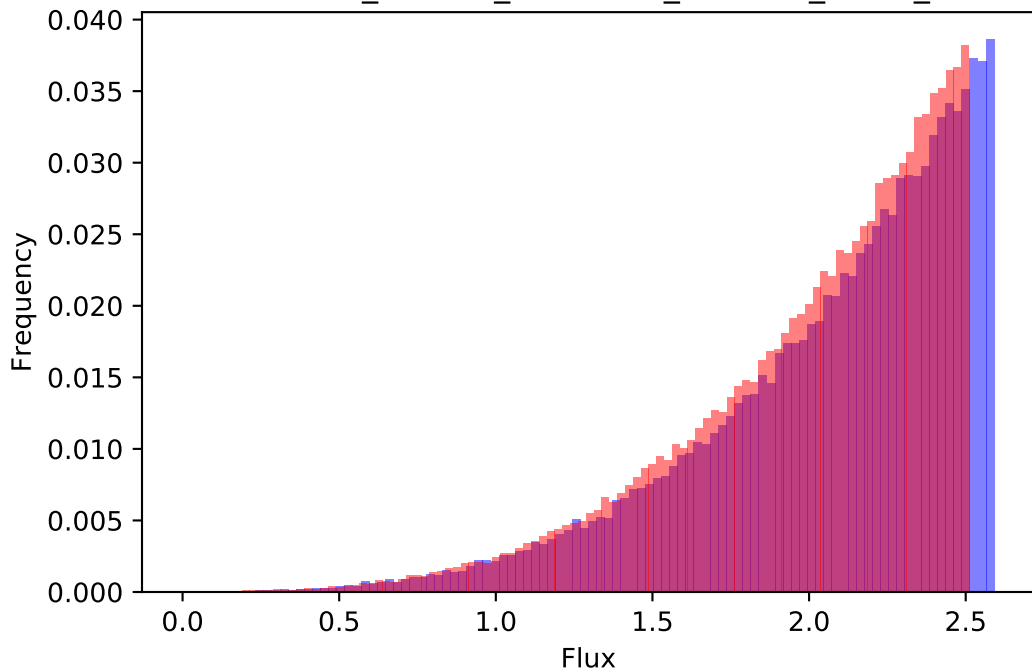
****28 : Mas_h + starch2_h --> Glc_h + starch3_h****



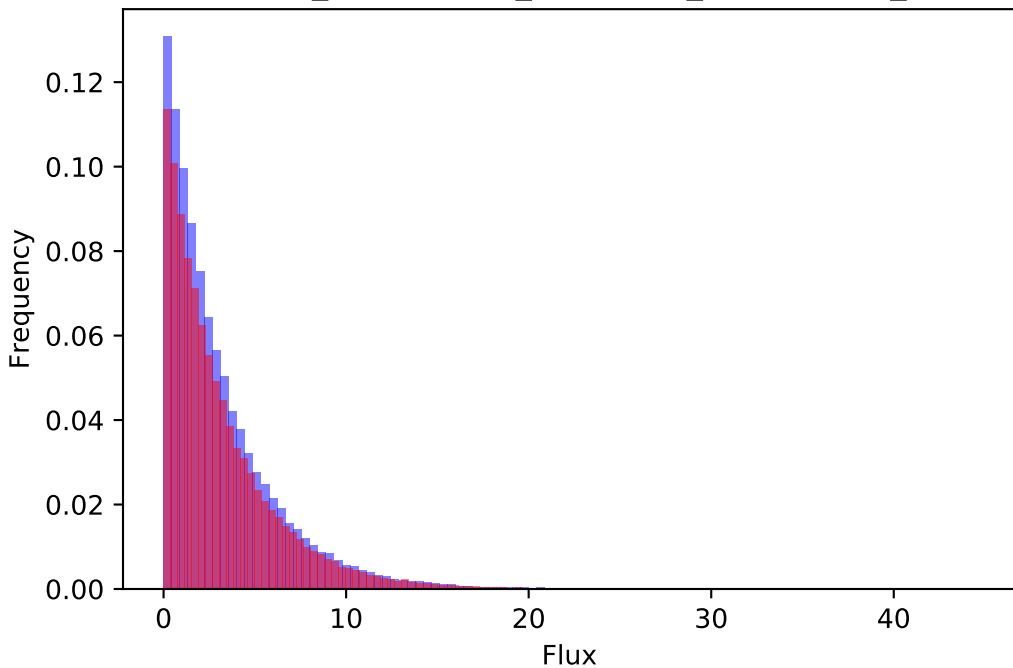
****29 : Mas_c + starch1_c --> Glc_c + starch2_c****



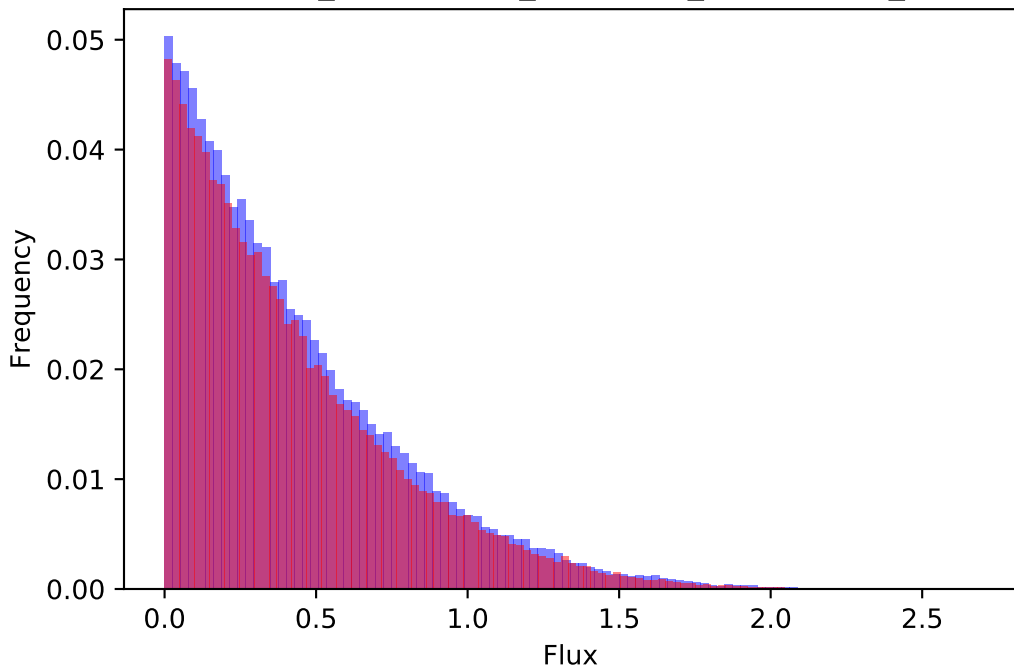
****30 : ATP_c + Glc_c --> ADP_c + G6P_c + H_c****



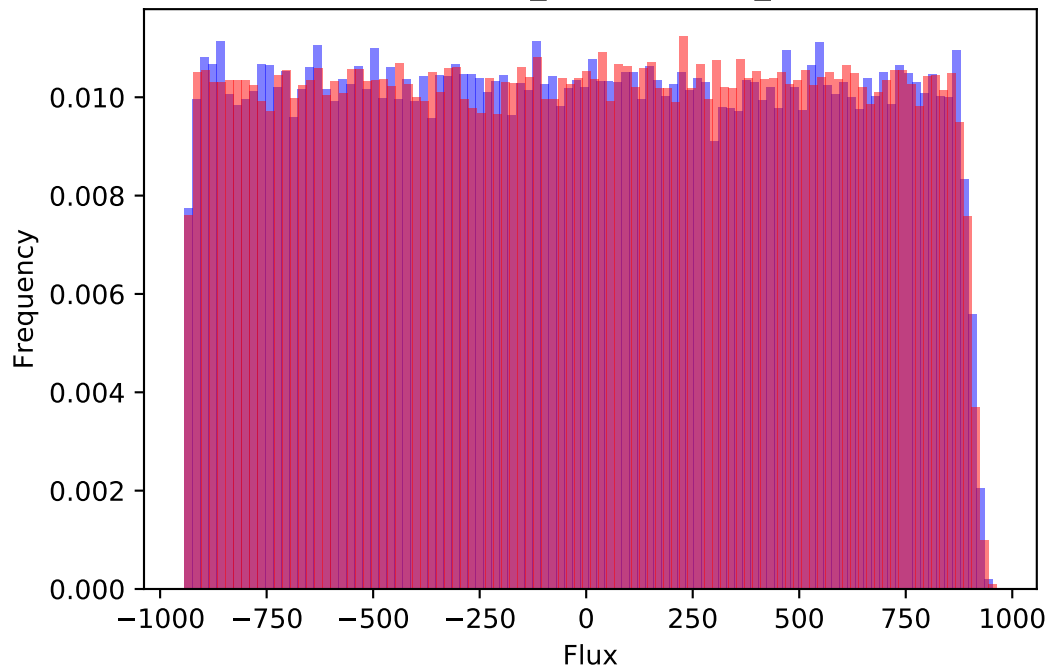
31 : Pi_h + starch2_h --> G1P_h + starch1_h



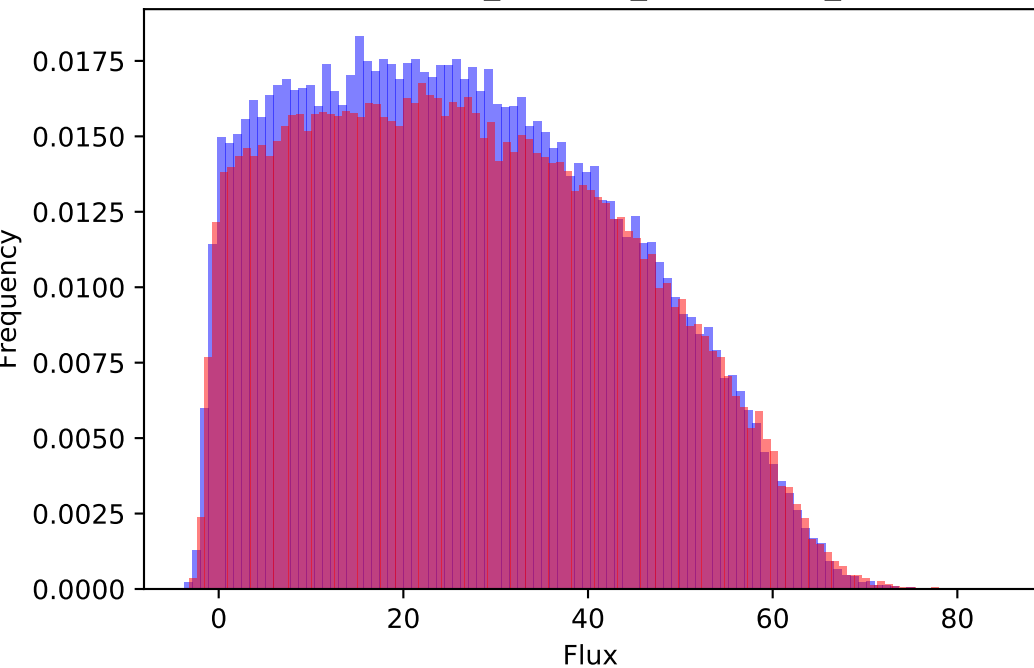
****32 : Pi_c + starch2_c --> G1P_c + starch1_c****

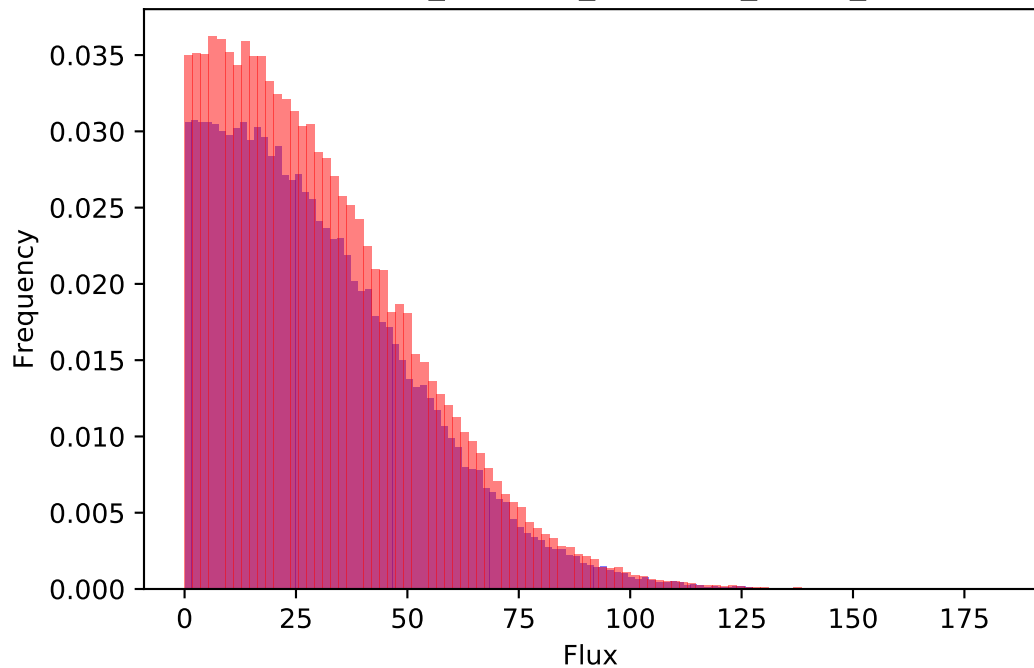


33 : GAP_c <=> DHAP_c

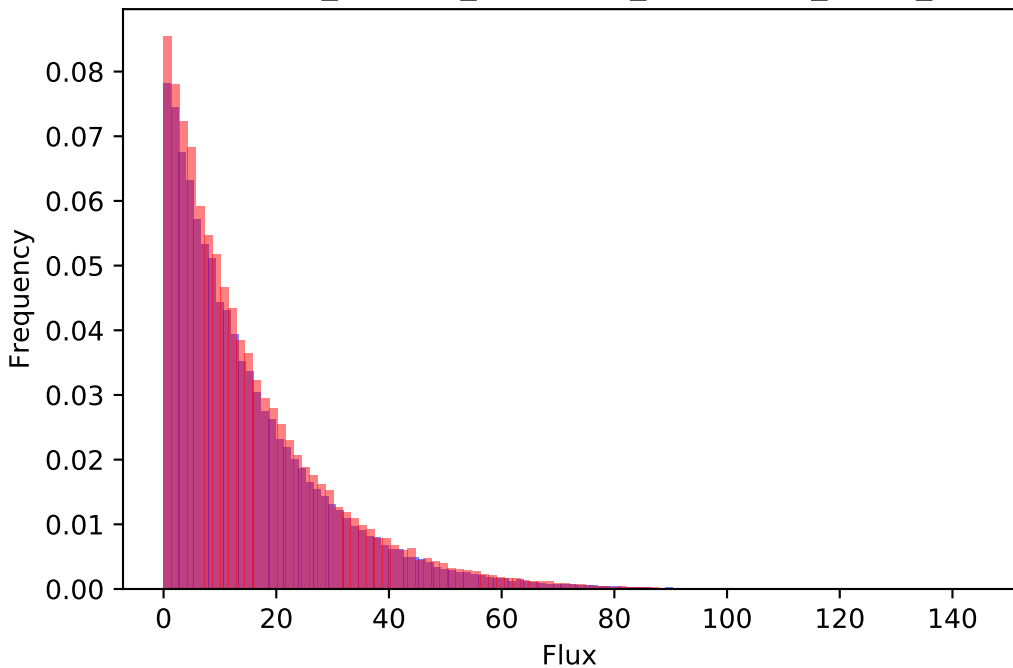


****34 : DHAP_c + GAP_c \rightleftharpoons FBP_c****

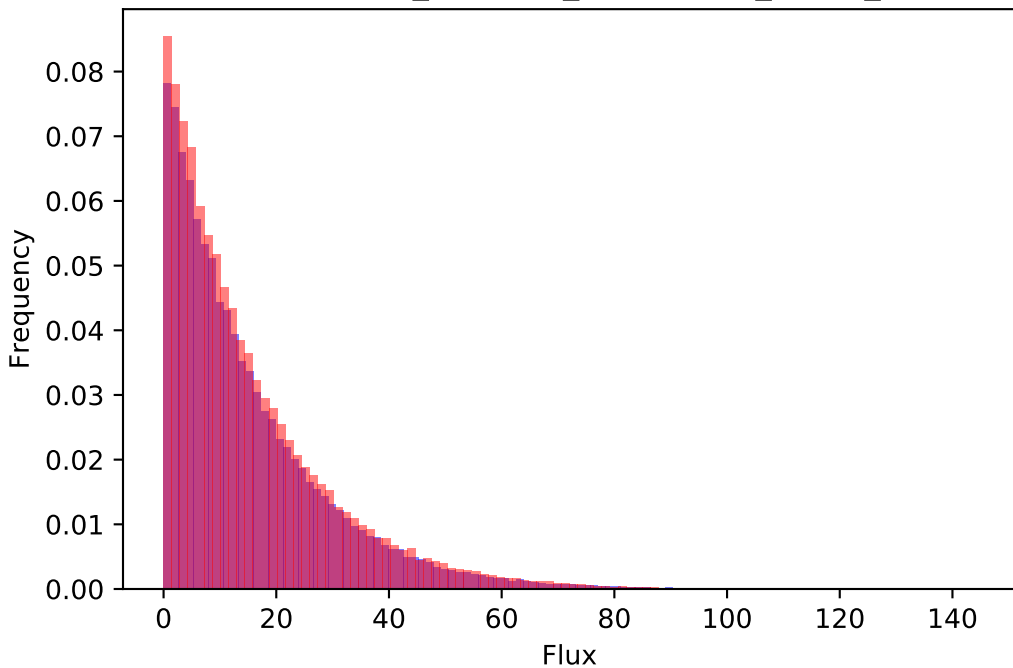




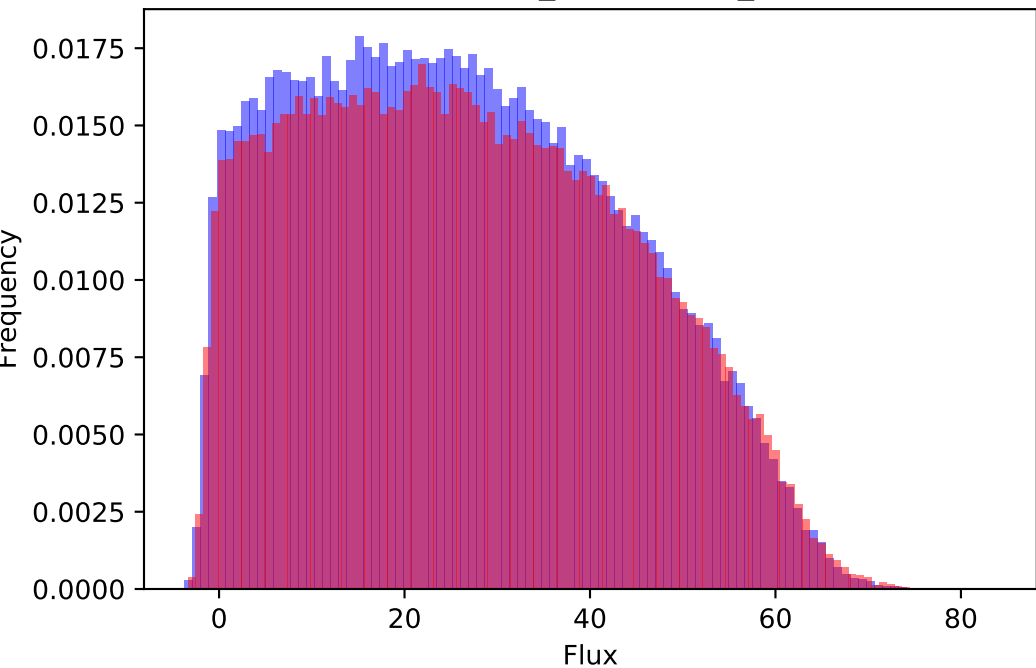
36 : ATP_c + F6P_c --> ADP_c + F26BP_c + H_c



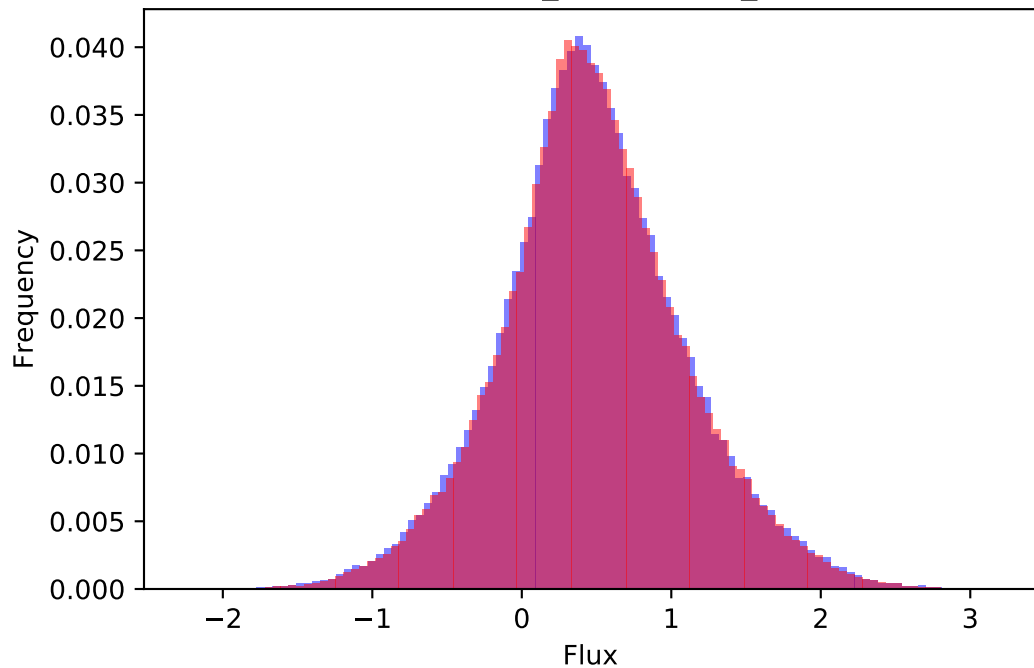
37 : F26BP_c + H2O_c <=> F6P_c + Pi_c



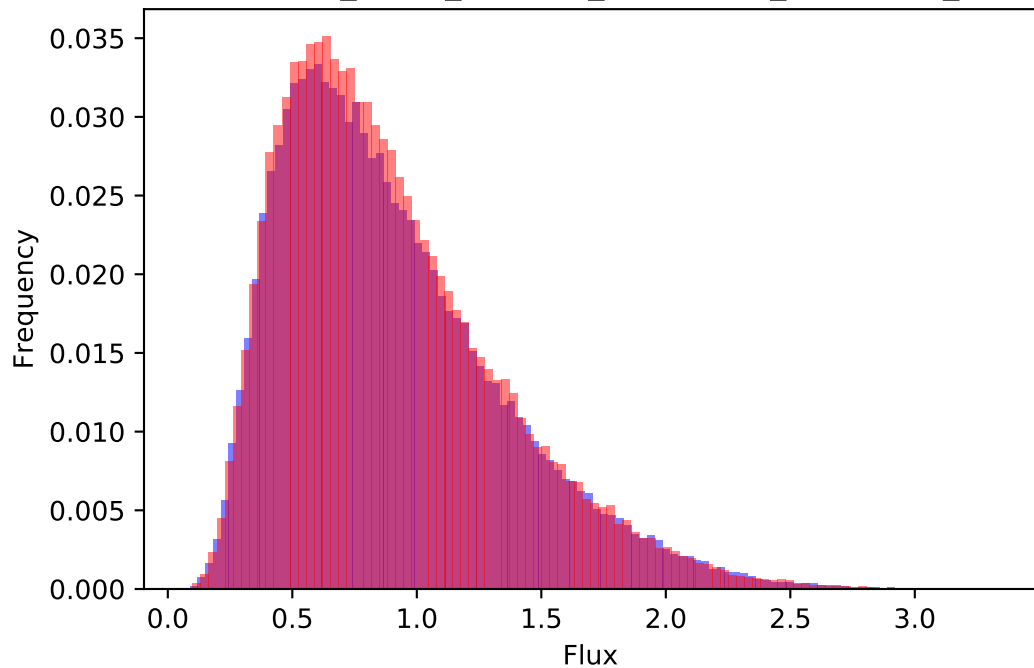
****38 : F6P_c <=> G6P_c****



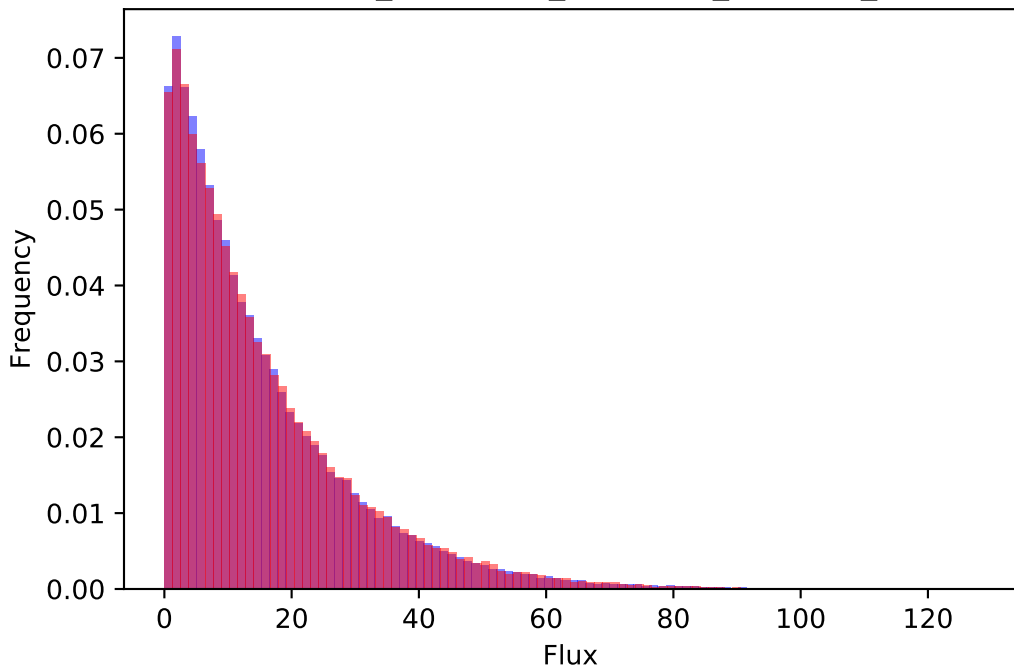
39 : G6P_c \rightleftharpoons G1P_c



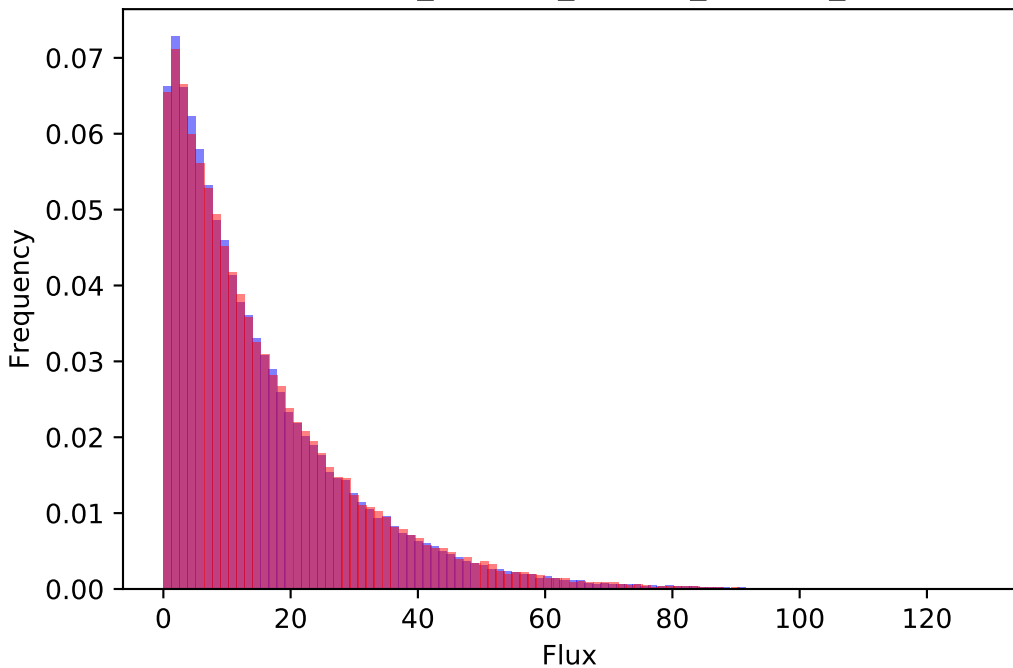
40 : $G1P_c + H_c + UTP_c \rightleftharpoons PPi_c + UDPG_c$



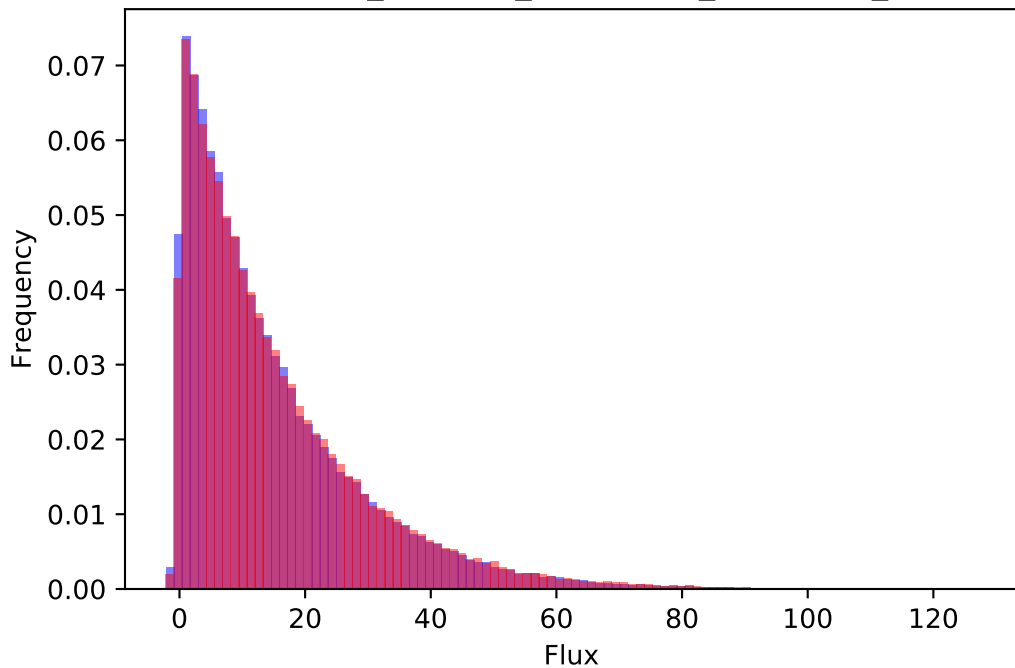
****41 : F6P_c + UDPG_c --> S6P_c + UDP_c****



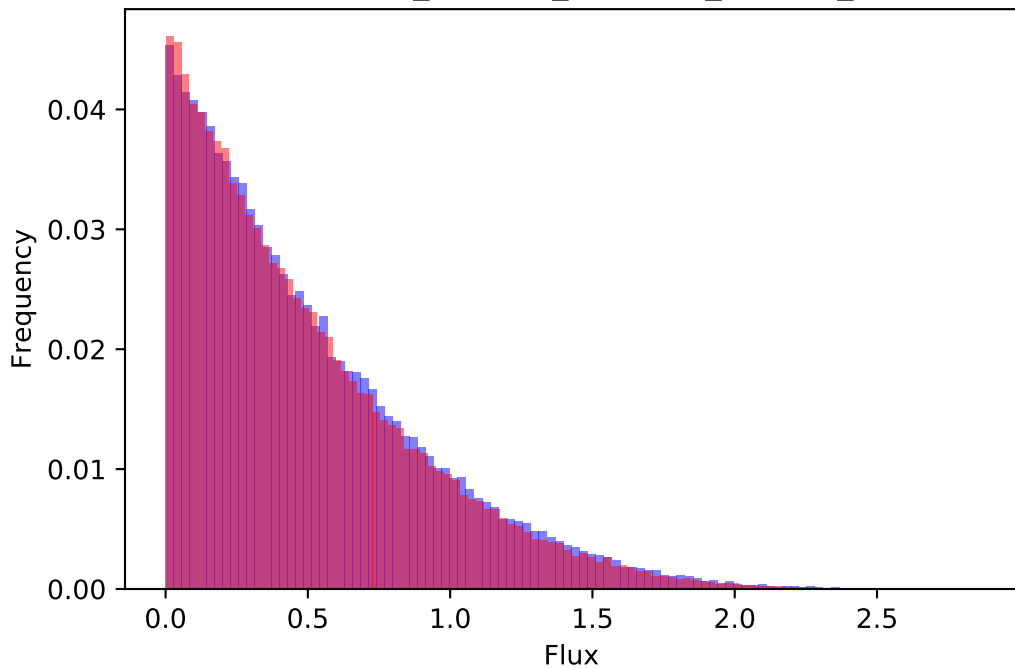
****42 : H2O_c + S6P_c --> Pi_c + Suc_c****



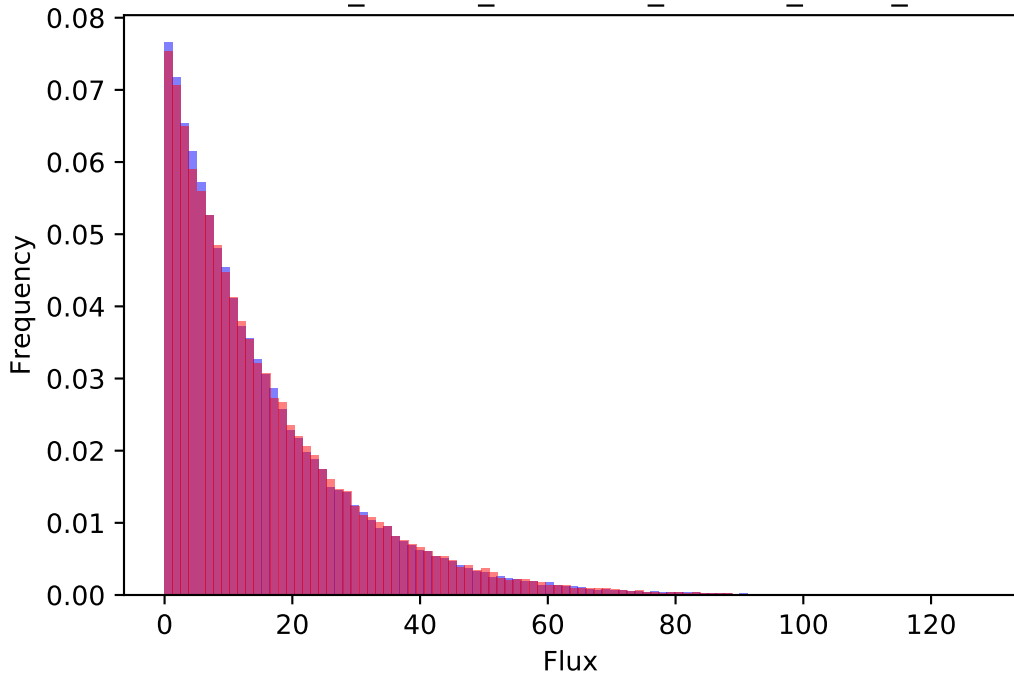
****43 : Suc_c + UDP_c <=> Frc_c + UDPG_c****



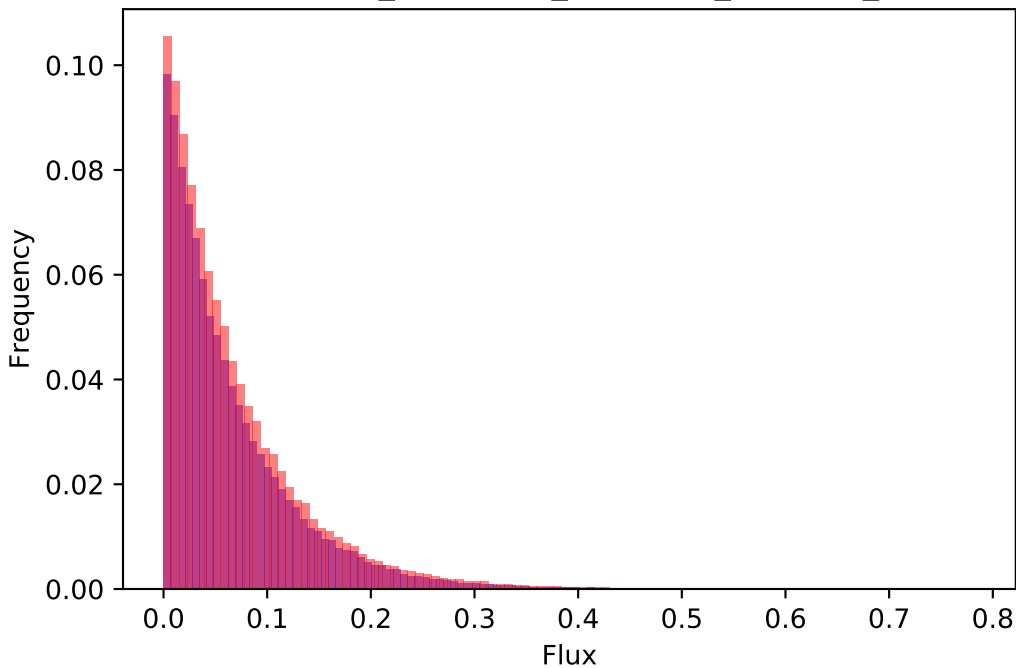
****44 : H2O_c + Suc_c --> Frc_c + Glc_c****



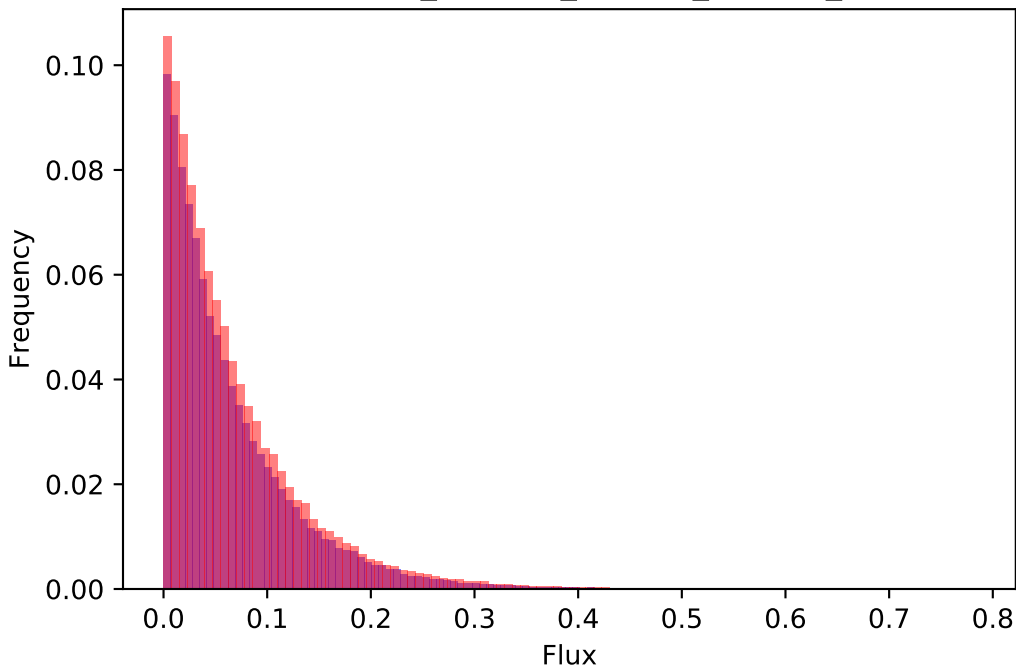
****45 : ATP_c + Frc_c --> ADP_c + F6P_c + H_c****



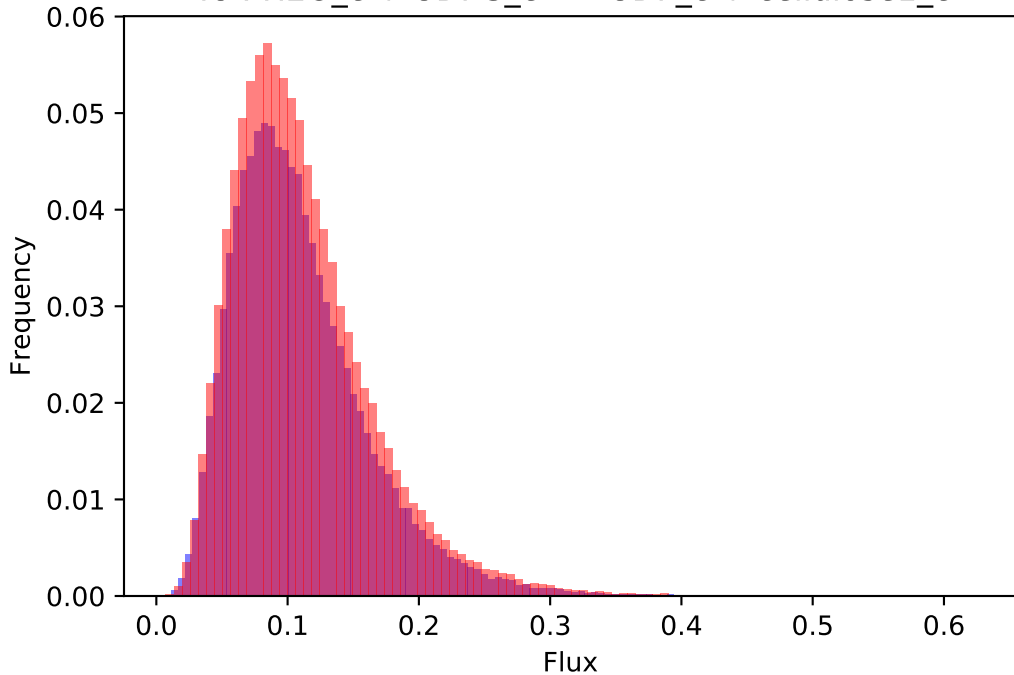
****46 : G6P_c + UDPG_c --> T6P_c + UDP_c****



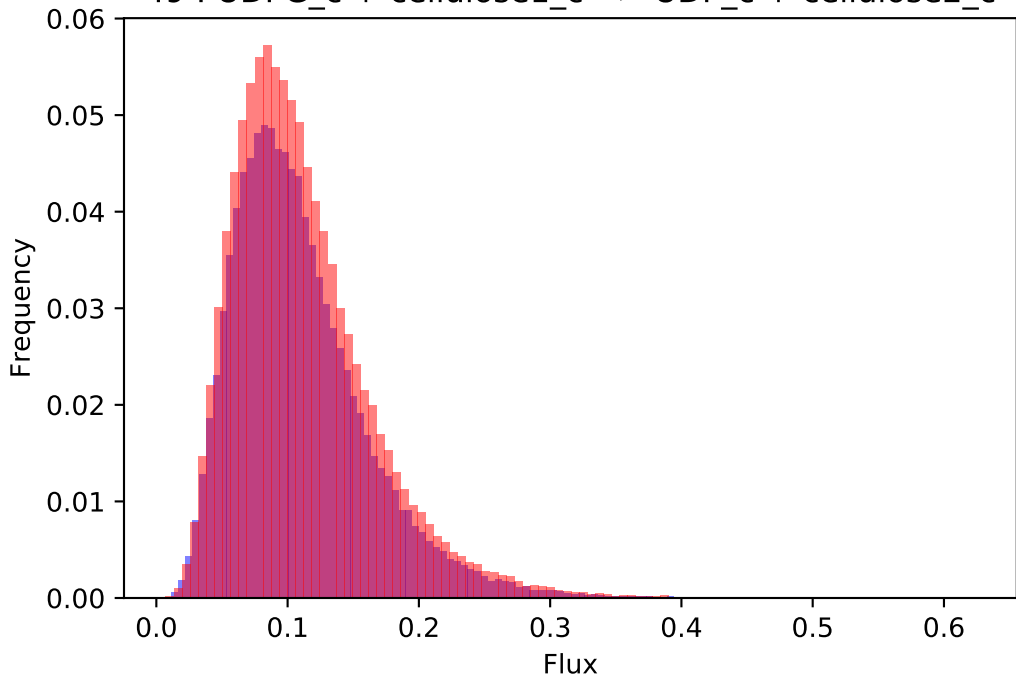
****47 : H2O_c + T6P_c --> Pi_c + Tre_c****



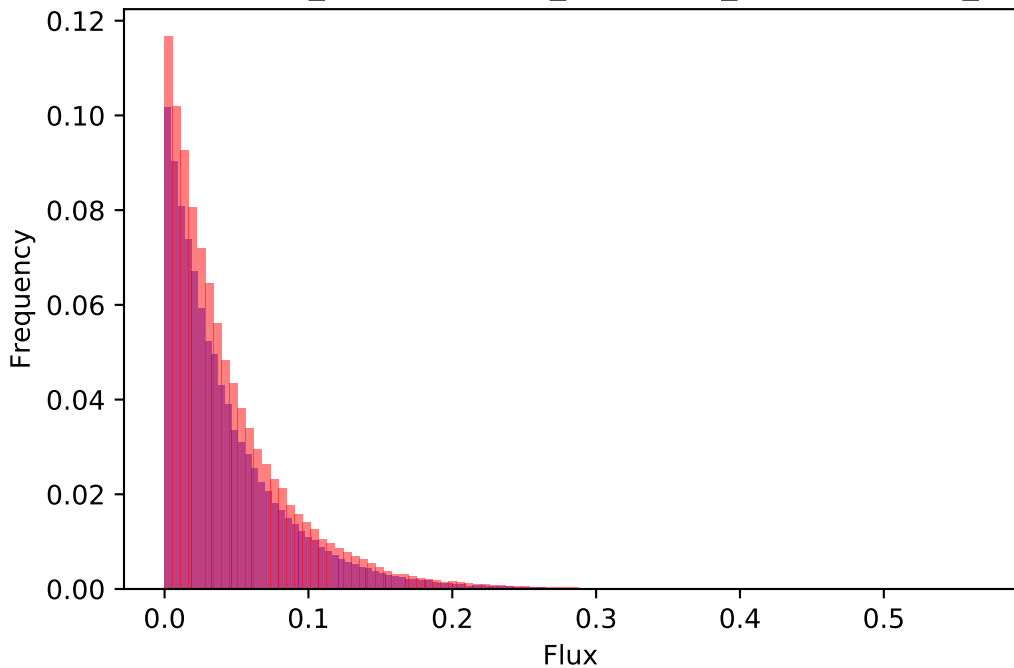
****48 : H2O_c + UDPG_c --> UDP_c + cellulose1_c****



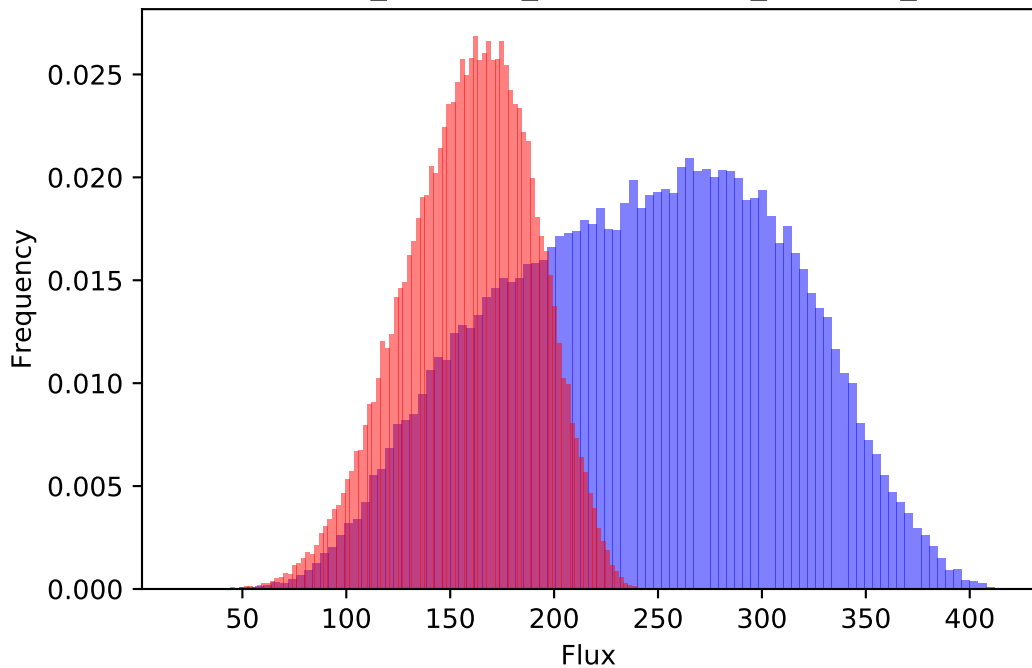
****49 : UDPG_c + cellulose1_c --> UDP_c + cellulose2_c****



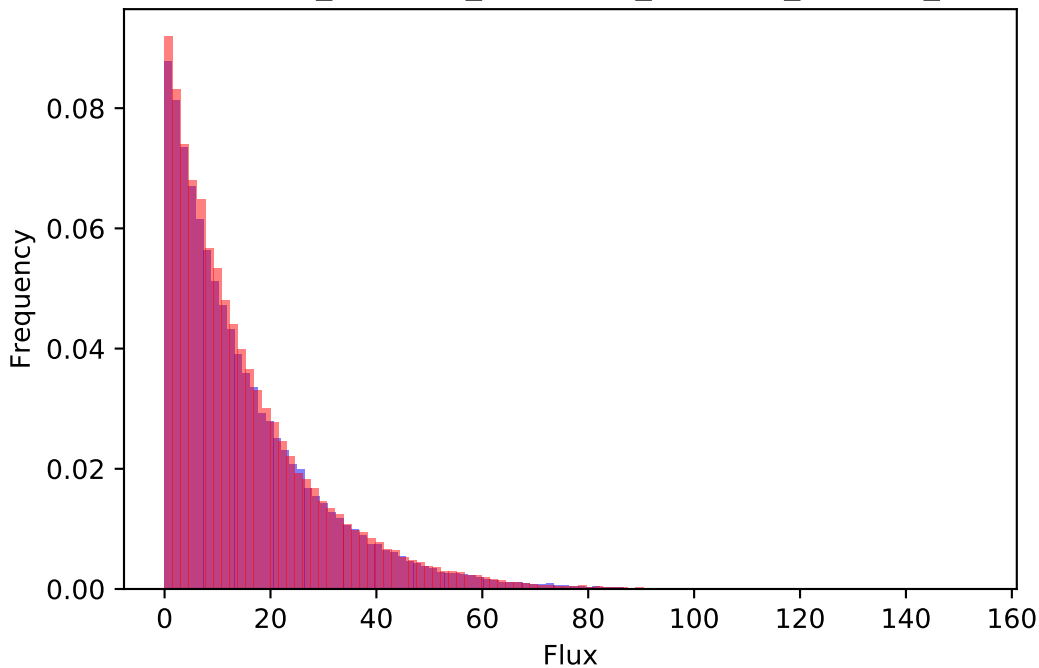
****50 : UDPG_c + cellulose2_c --> UDP_c + cellulose3_c****



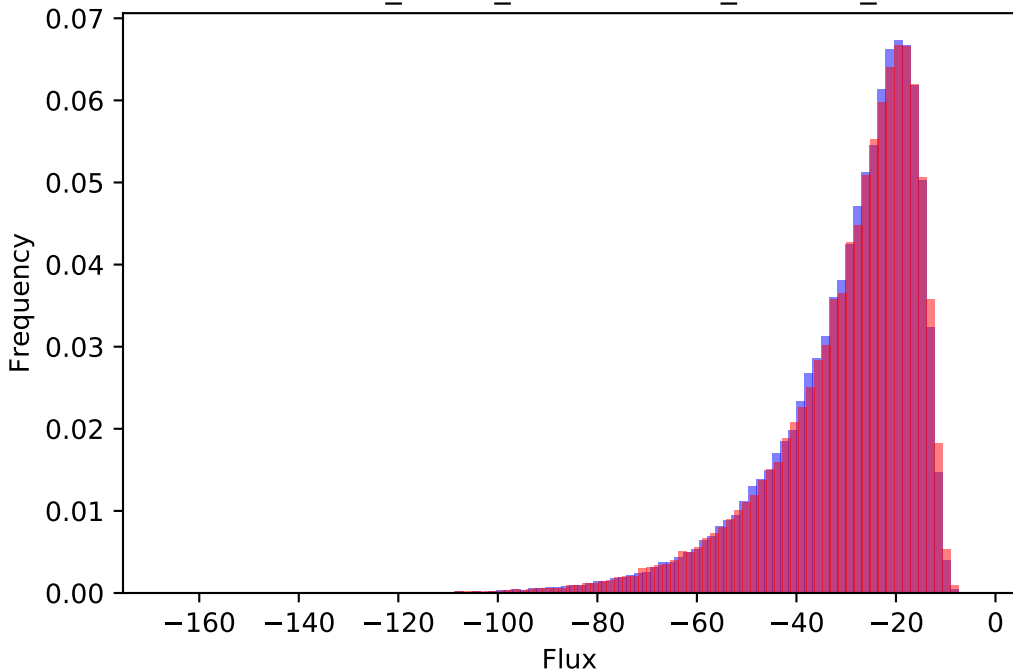
****51 : Mal_c + NAD_c <=> NADH_c + OAA_c****



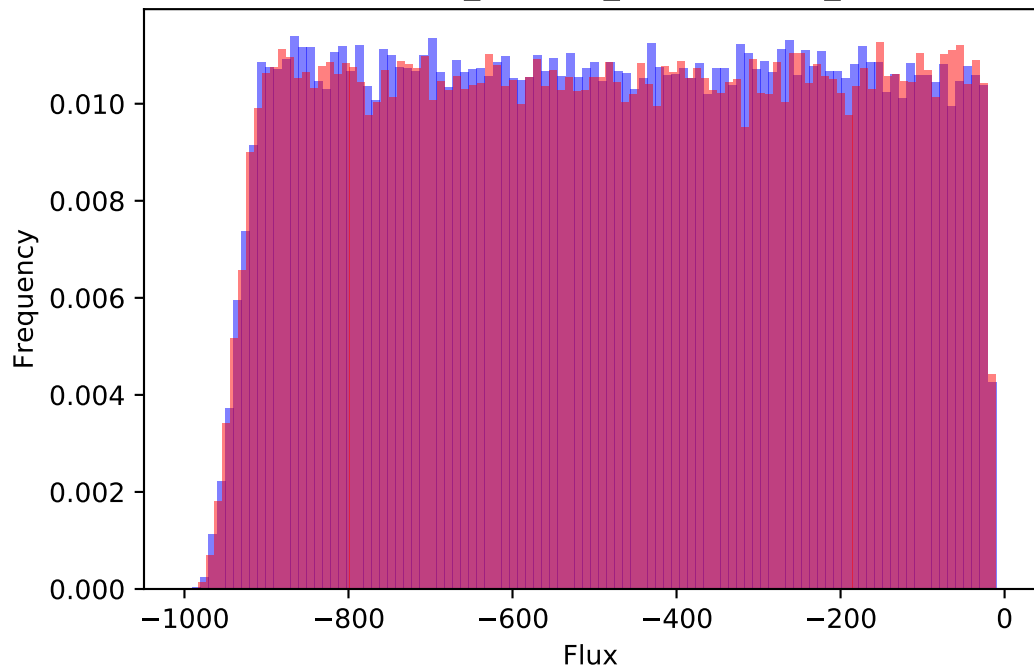
52 : ATP_c + OAA_c --> ADP_c + CO2_c + PEP_c



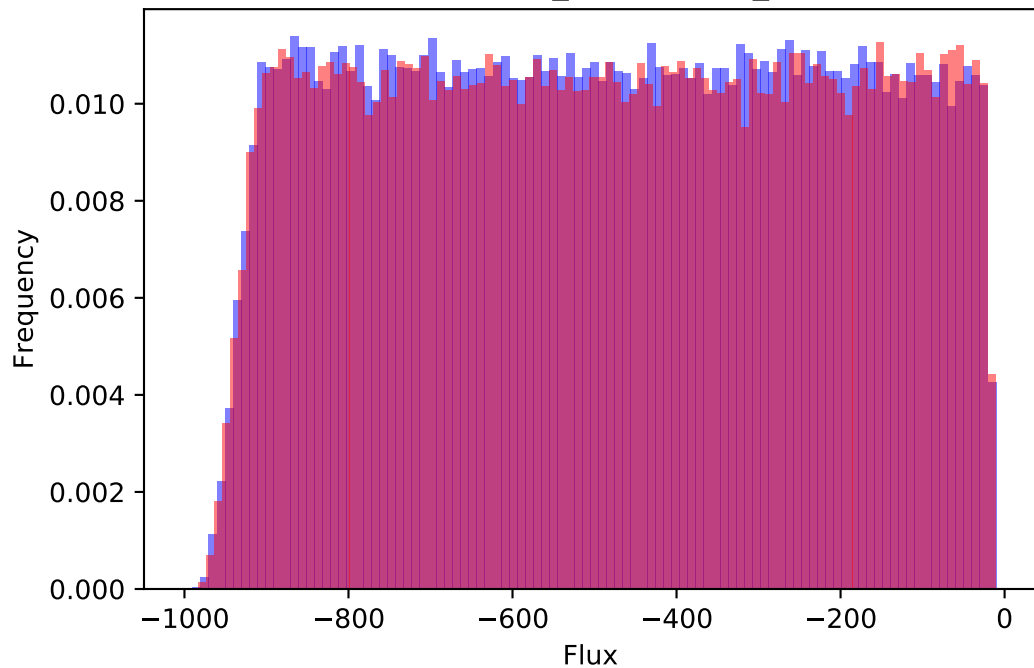
****53 : OAA_c + Pi_c <=> HCO3_c + PEP_c****



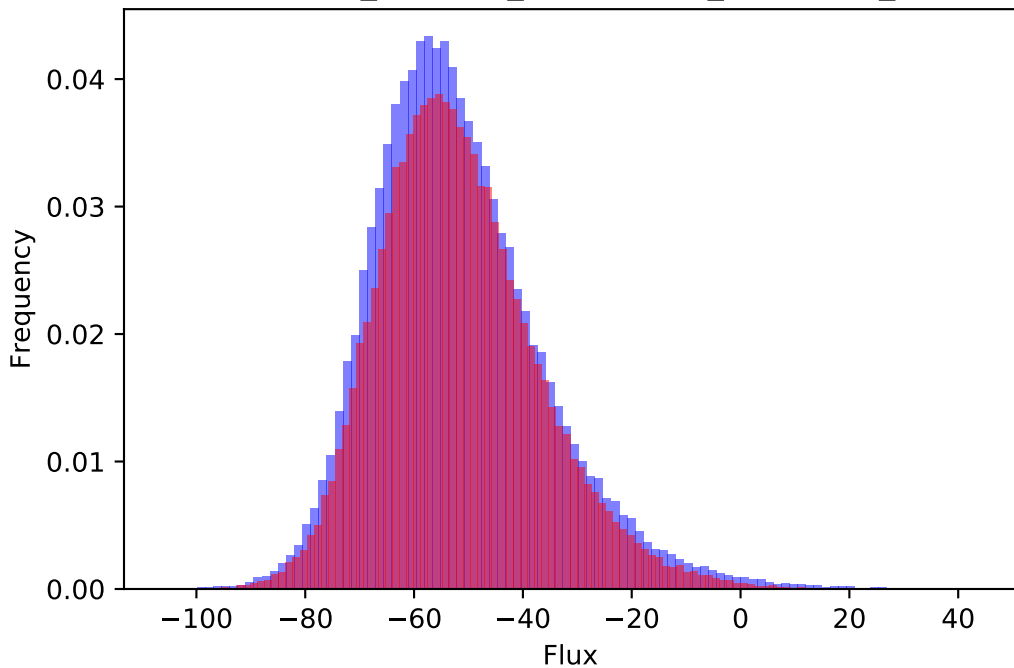
54 : H2O_c + PEP_c <=> 2PGA_c



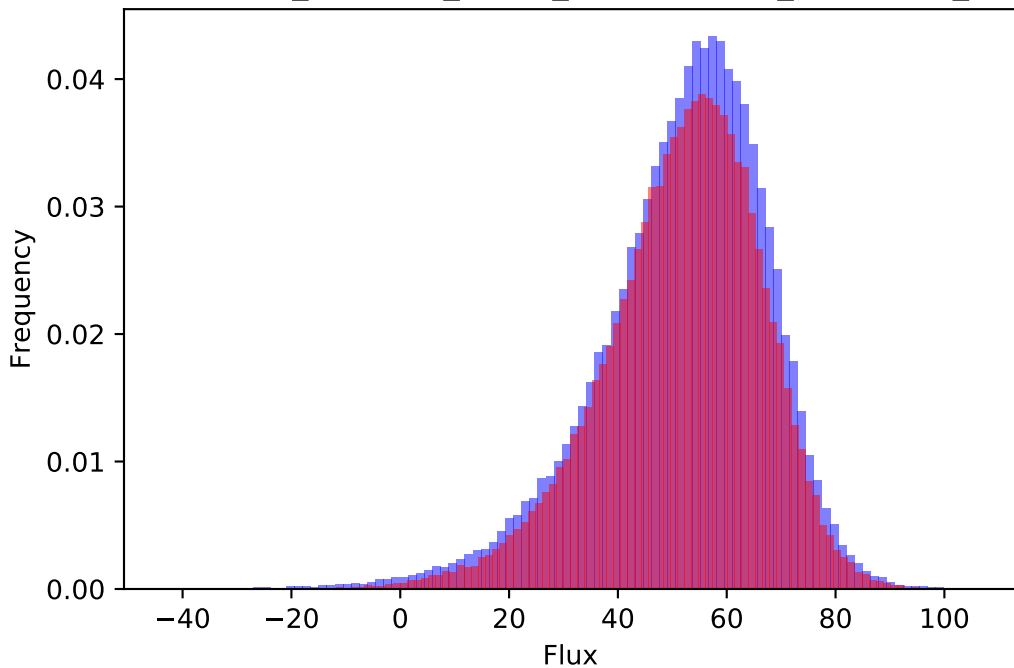
55 : 2PGA_c <=> PGA_c



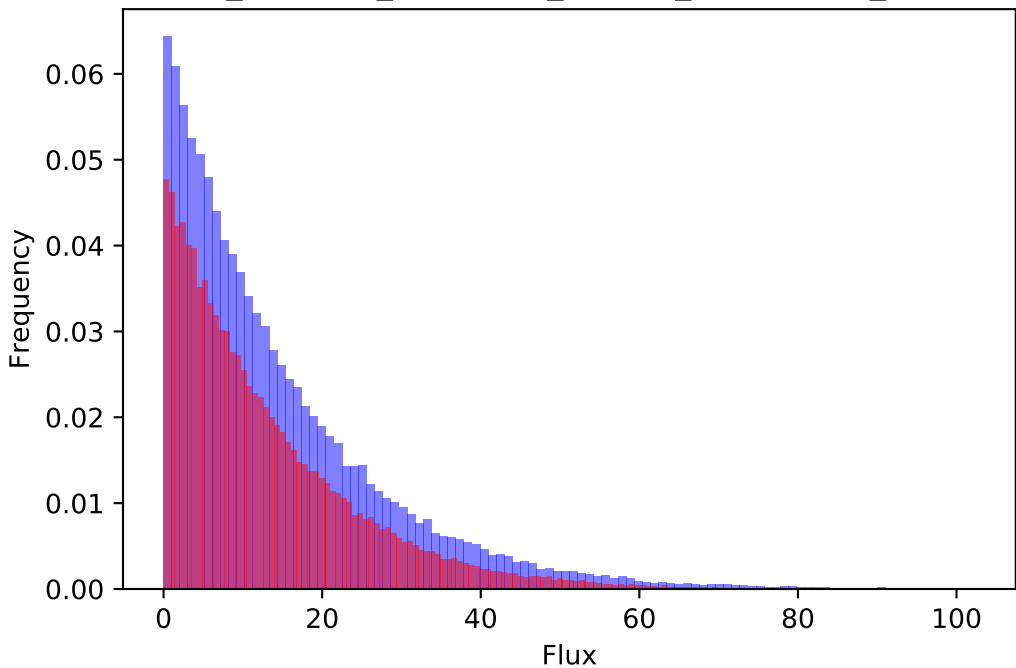
****56 : ATP_c + PGA_c <=> ADP_c + DPGA_c****



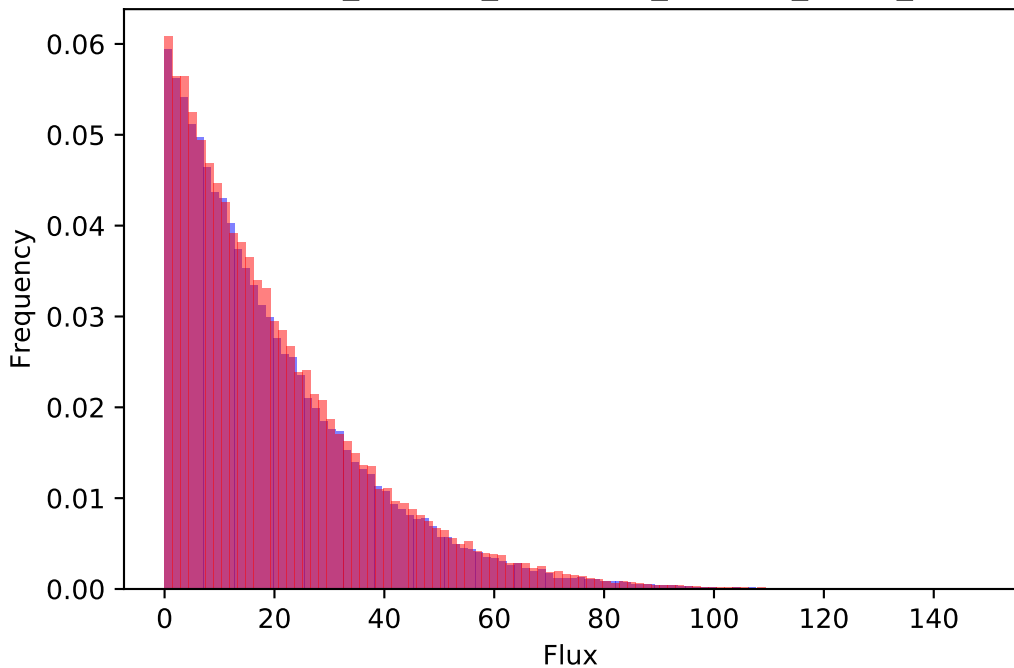
****57 : GAP_c + NAD_c + Pi_c <=> DPGA_c + NADH_c****

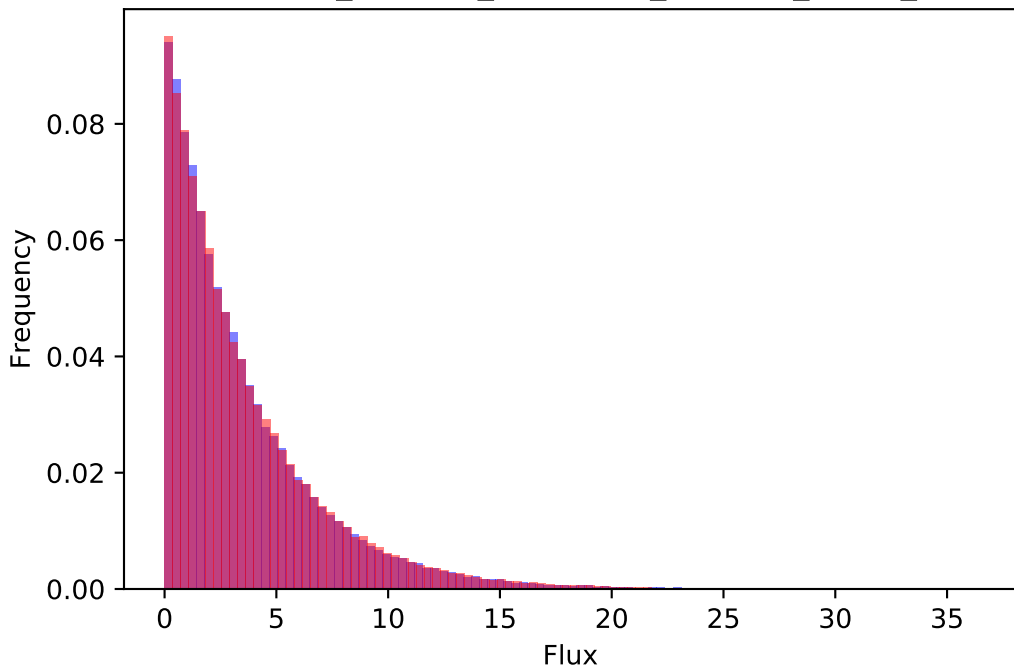
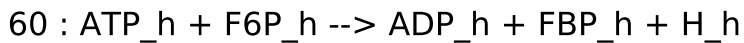


****58 : GAP_c + H2O_c + NADP_c --> H_c + NADPH_c + PGA_c****

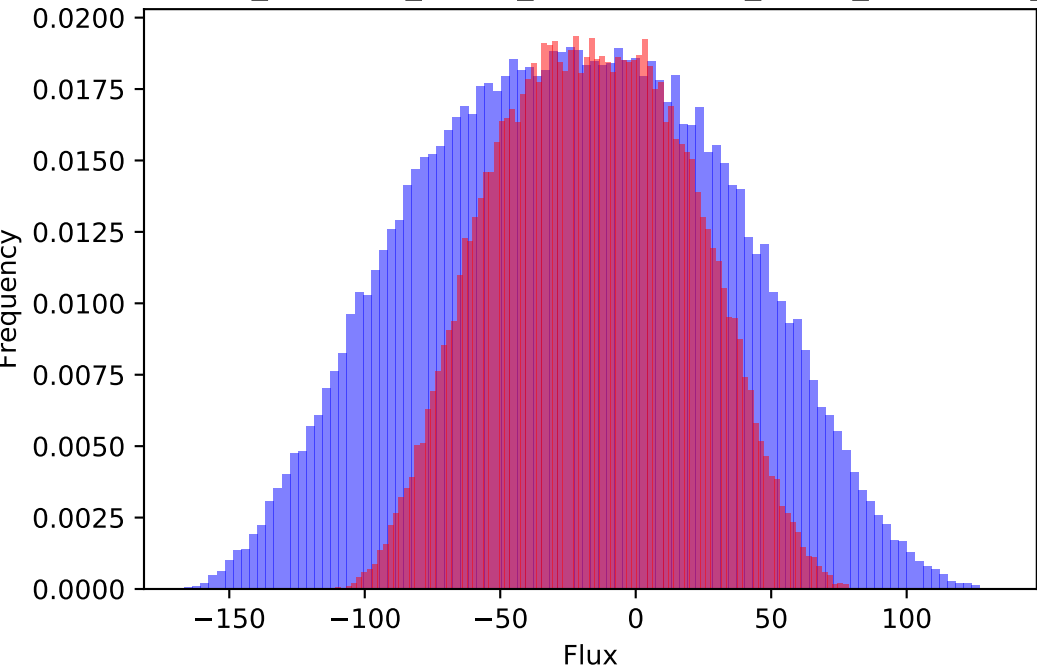


****59 : ATP_c + F6P_c --> ADP_c + FBP_c + H_c****

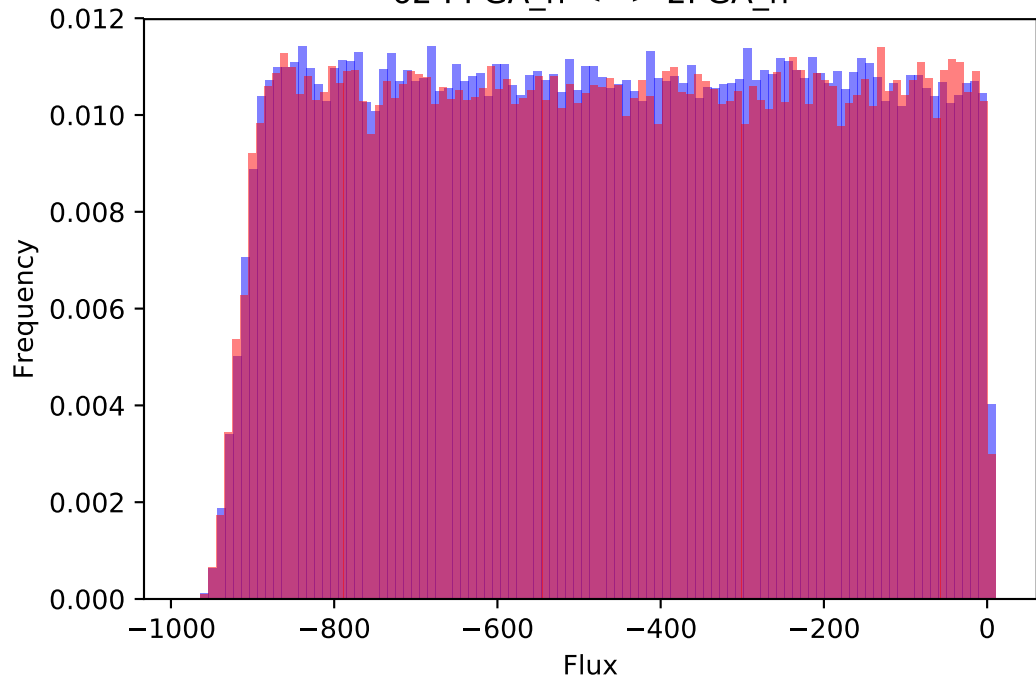




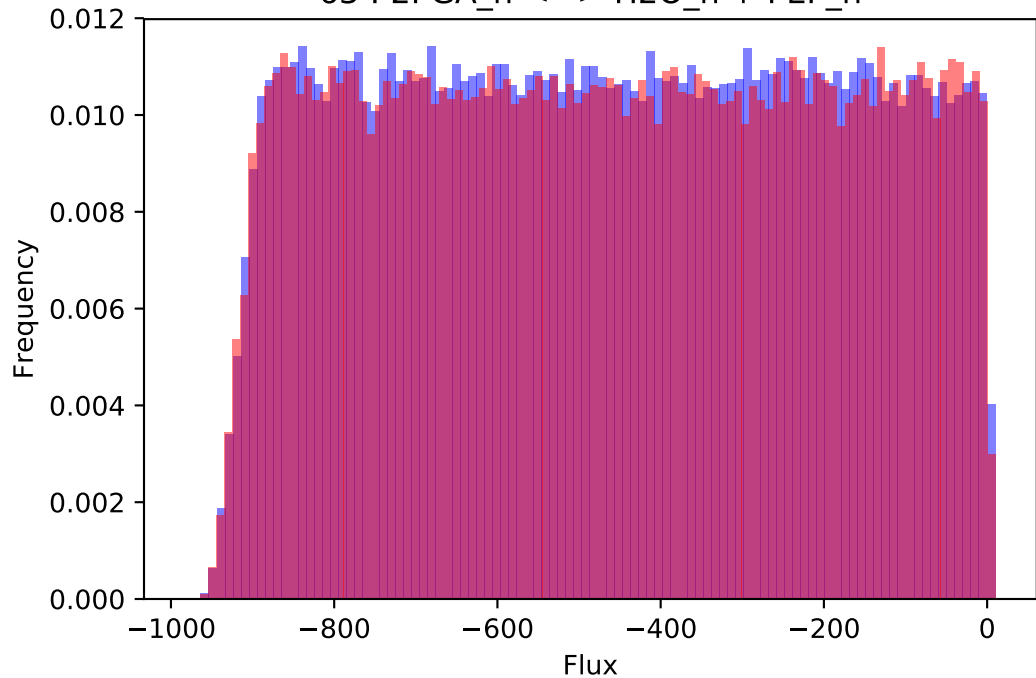
****61 : GAP_h + NAD_h + Pi_h <=> DPGA_h + H_h + NADH_h****



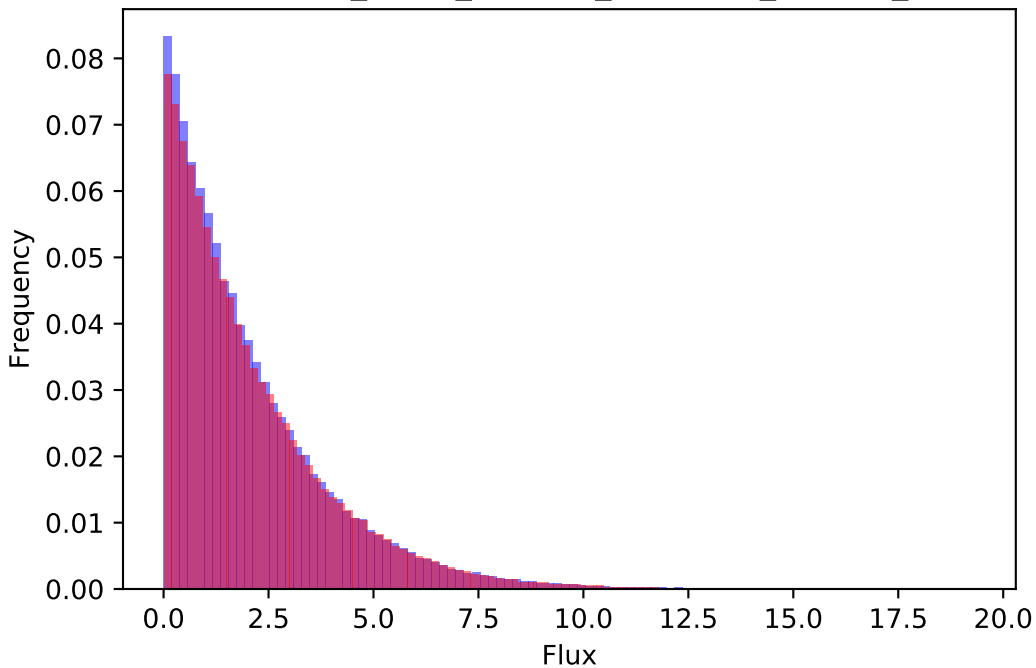
62 : PGA_h \leq 2PGA_h



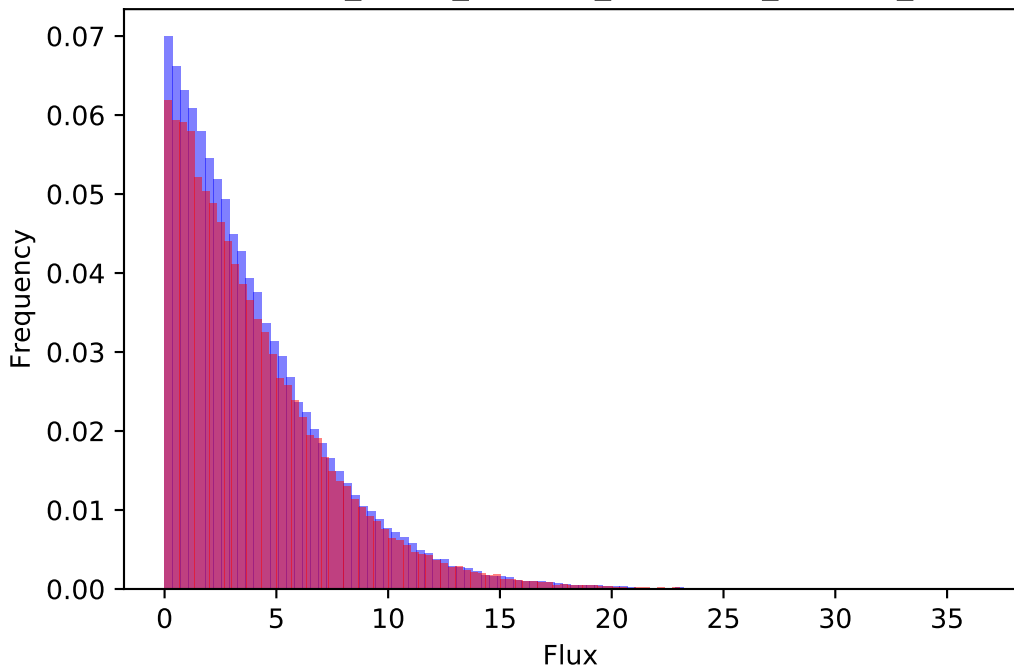
63 : 2PGA_h <=> H2O_h + PEP_h



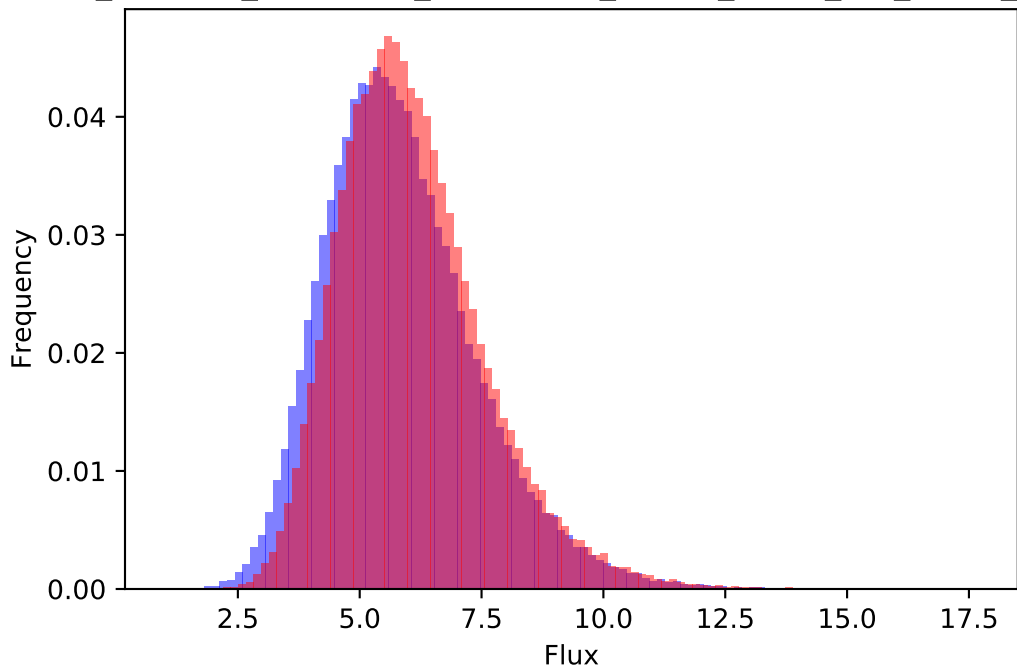
****64 : ADP_c + H_c + PEP_c --> ATP_c + Pyr_c****



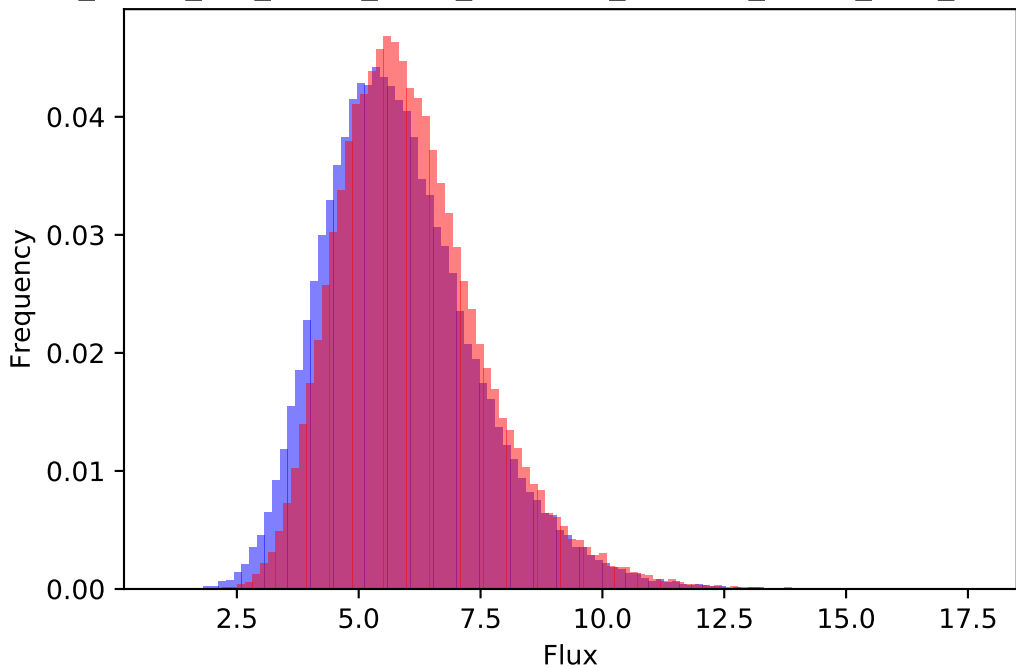
65 : ADP_h + H_h + PEP_h --> ATP_h + Pyr_h



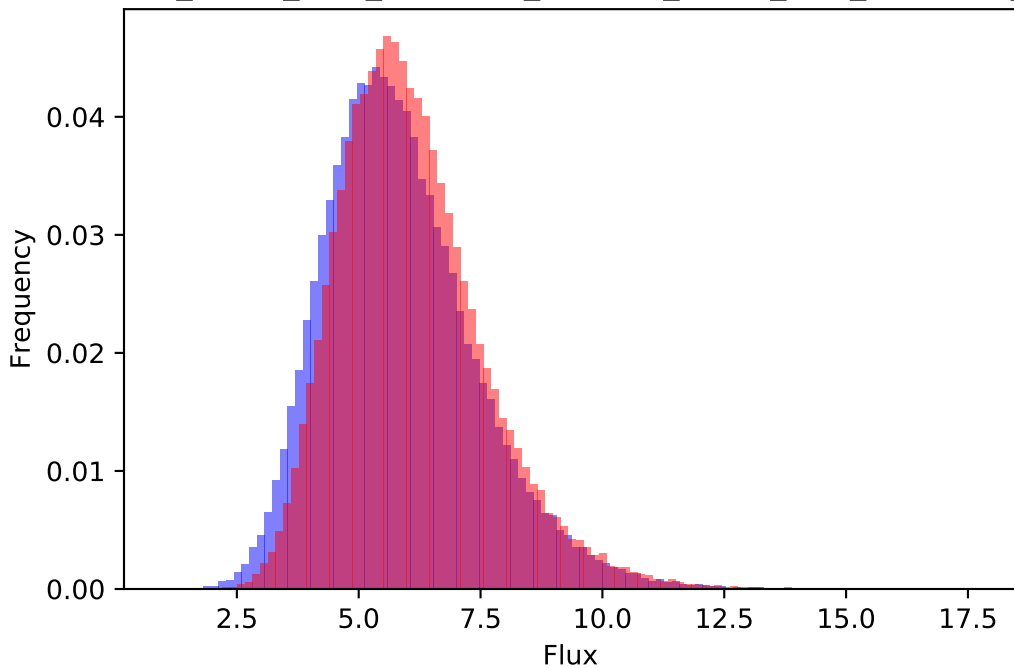
*66 : H_m + Pyr_m + ThPP_m --> CO2_m + H_DASH_Eth_DASH_ThPP_m



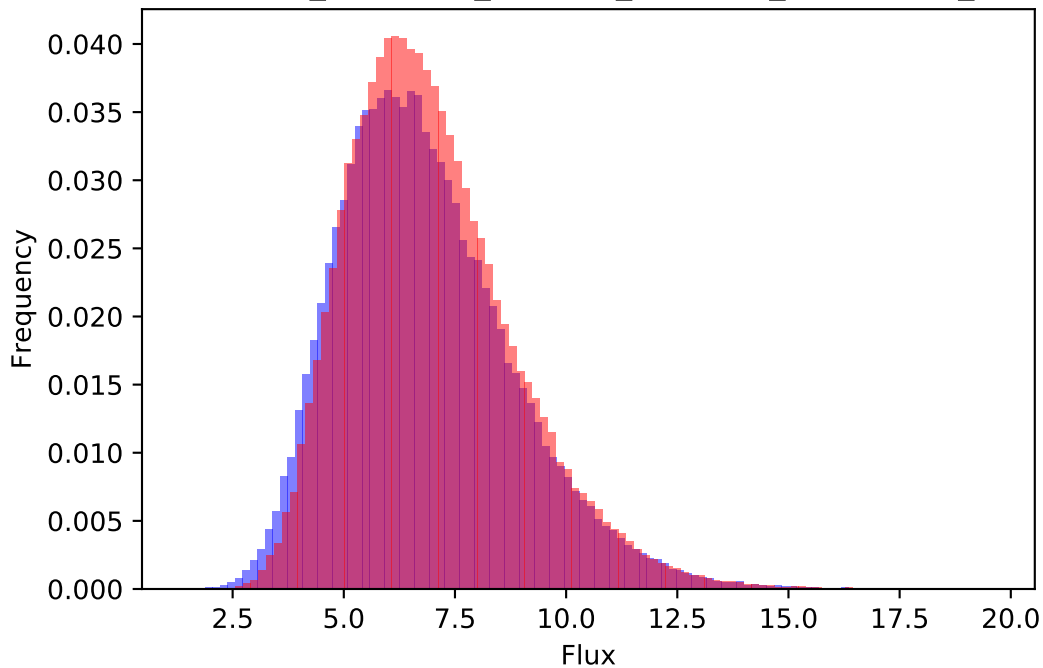
67 : H_DASH_Eth_DASH_ThPP_m + LPA_m --> A_DASH_DHL_m + ThPP_m



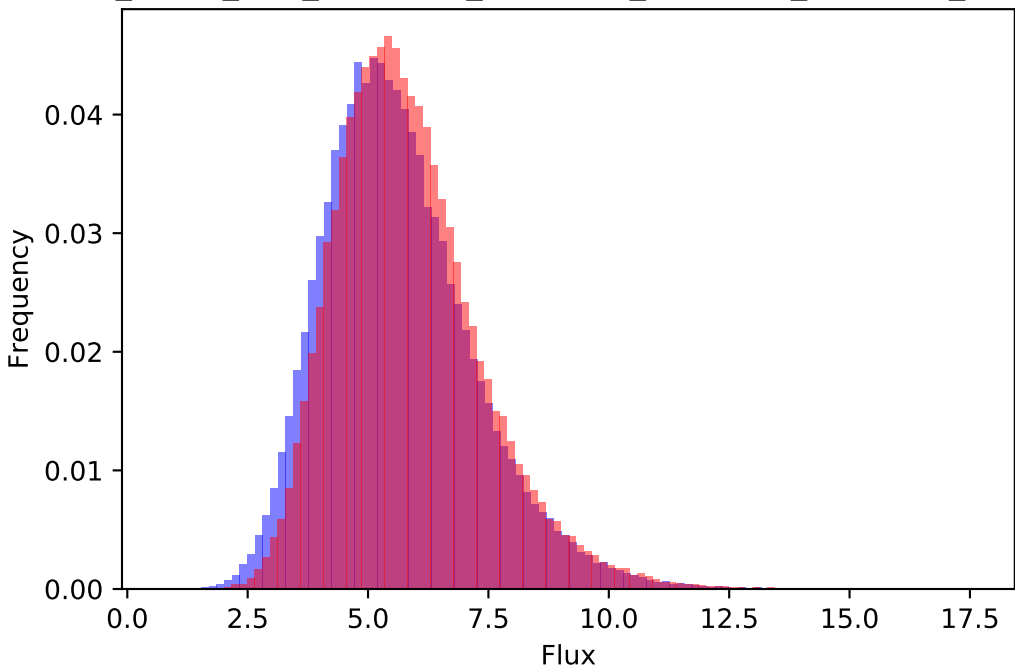
****68 : A_DASH_DHL_m + CoA_m --> A_DASH_CoA_m + DHL_m****



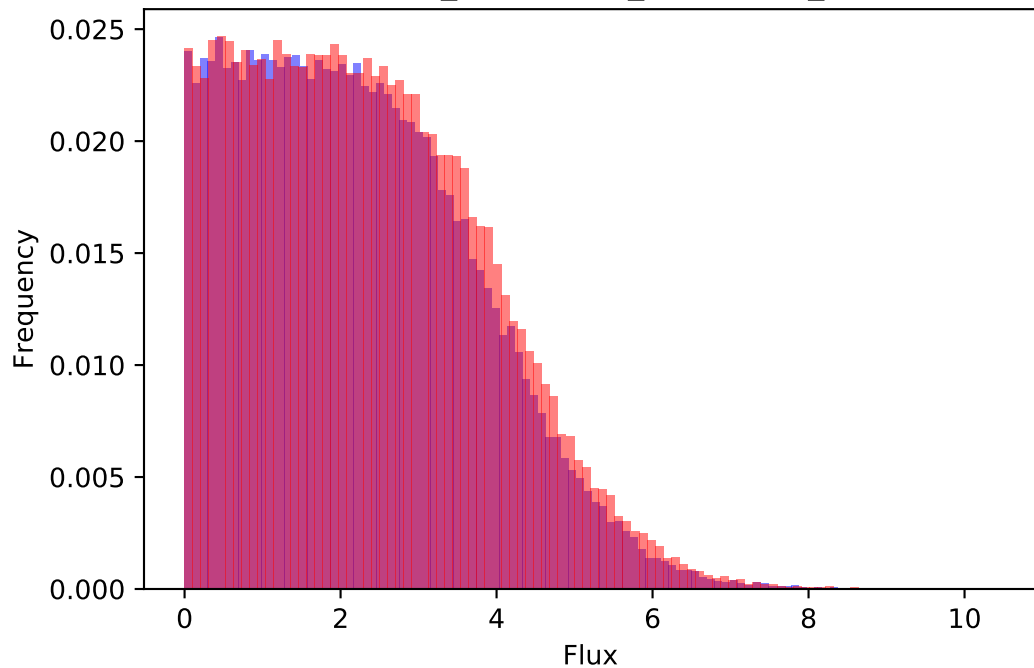
****69 : DHL_m + NAD_m --> H_m + LPA_m + NADH_m****



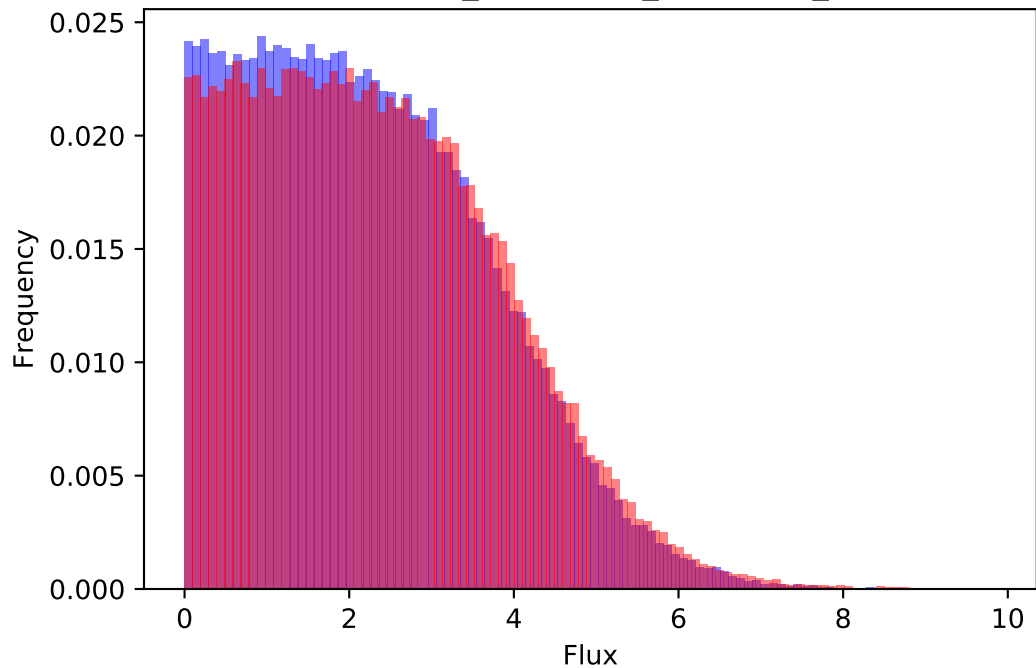
****70 : A_DASH_CoA_m + H2O_m + OAA_m --> Cit_m + CoA_m + H_m***



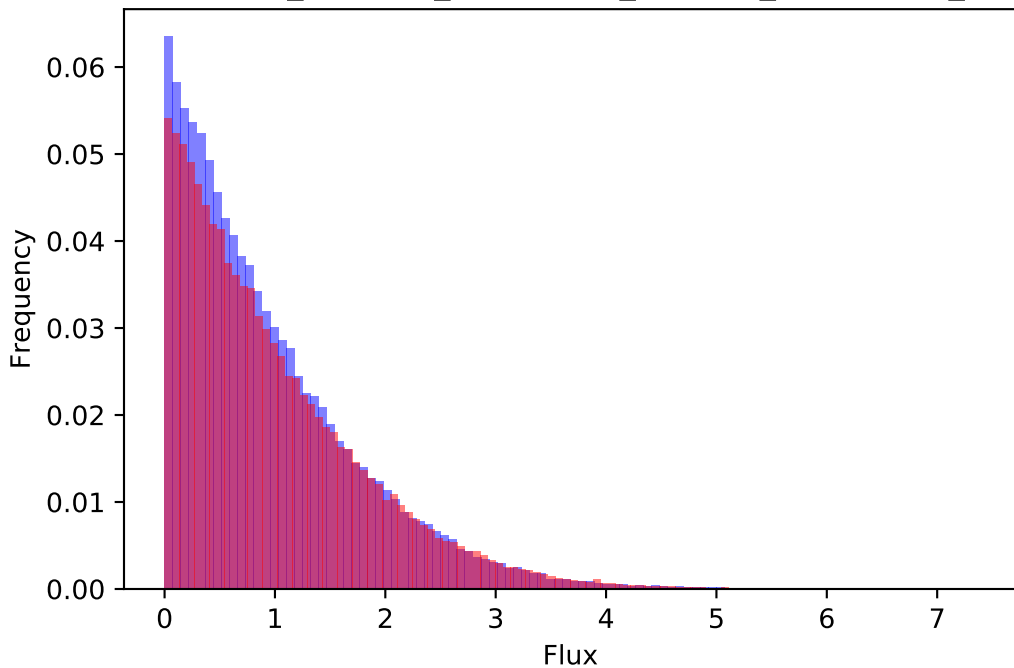
****71 : Cit_m --> H2O_m + cACN_m****



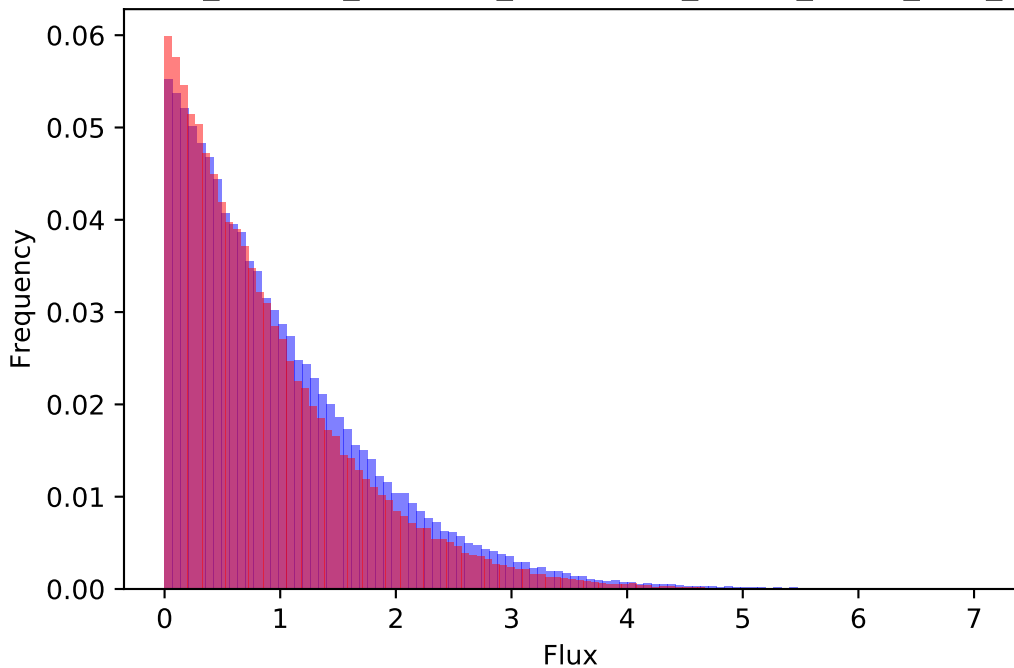
****72 : H2O_m + cACN_m --> iCit_m****



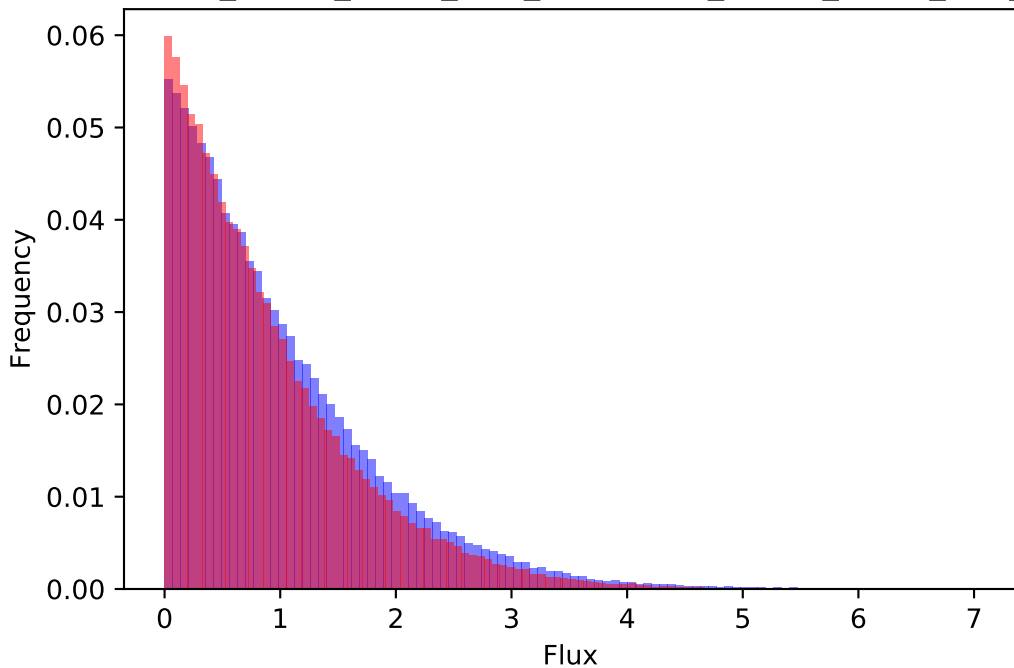
****73 : NAD_m + iCit_m --> CO2_m + KG_m + NADH_m****



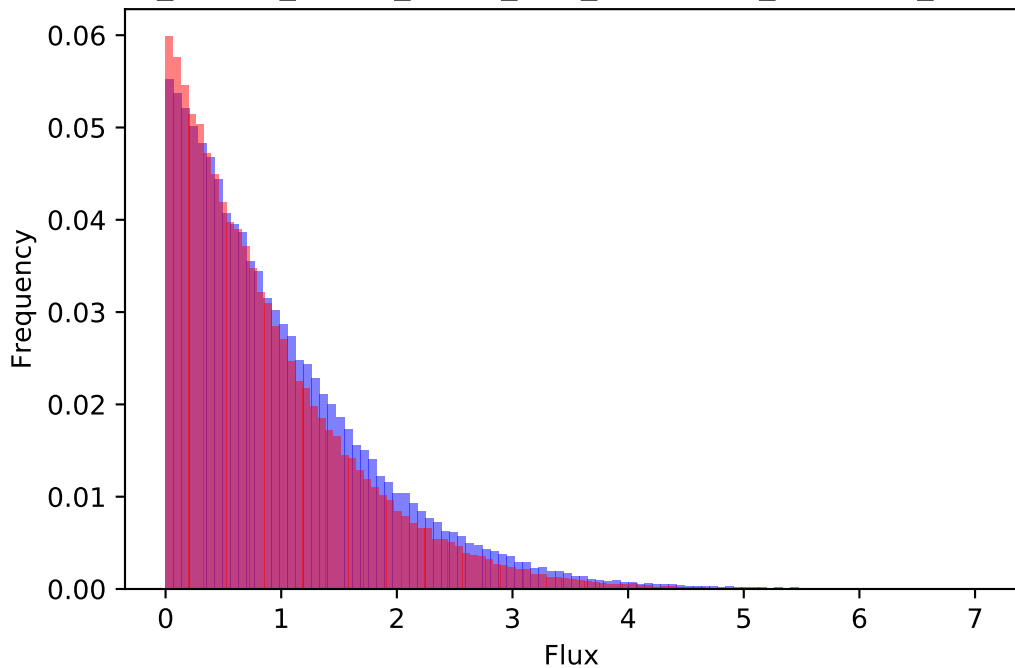
****74 : H_m + KG_m + LPA_m --> CO2_m + S_DASH_DHL_m****



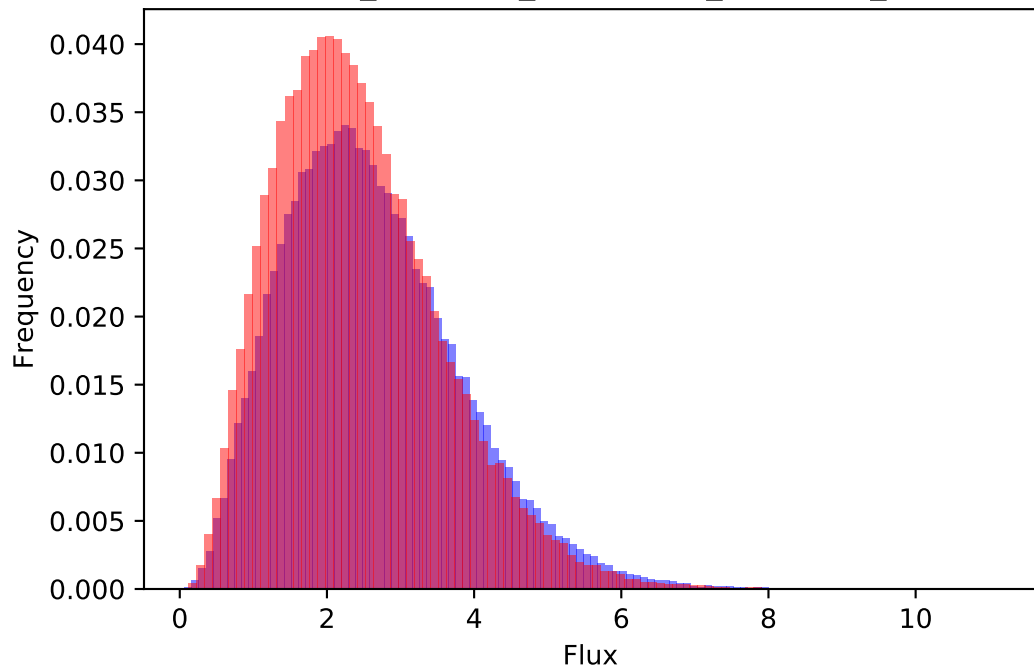
****75 : CoA_m + S_DASH_DHL_m --> DHL_m + S_DASH_CoA_m****



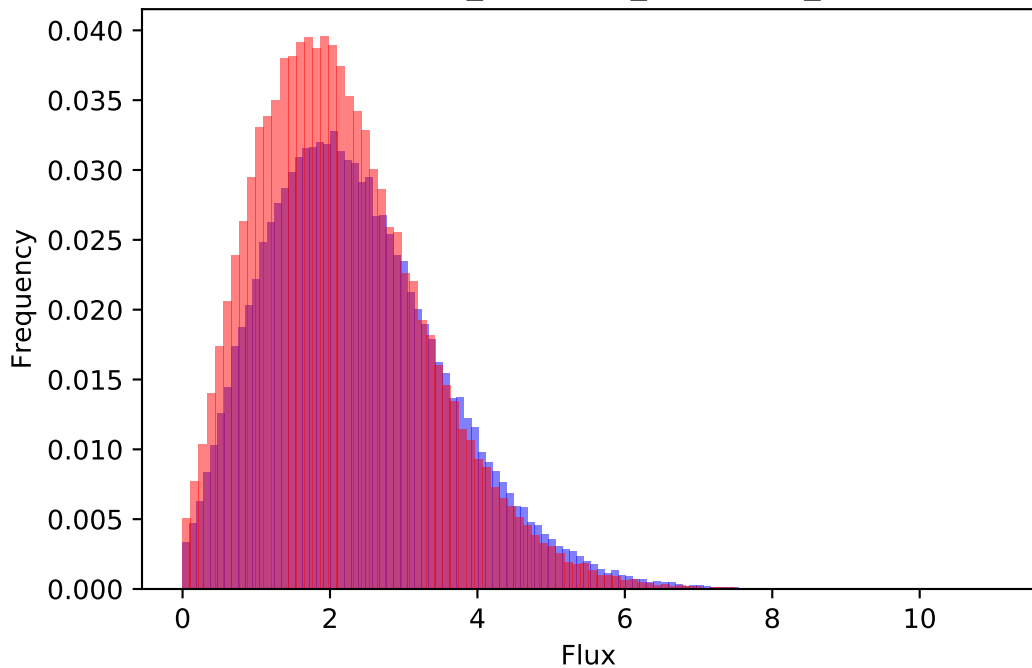
****76 : ADP_m + Pi_m + S_DASH_CoA_m --> ATP_m + CoA_m + SCA_m***



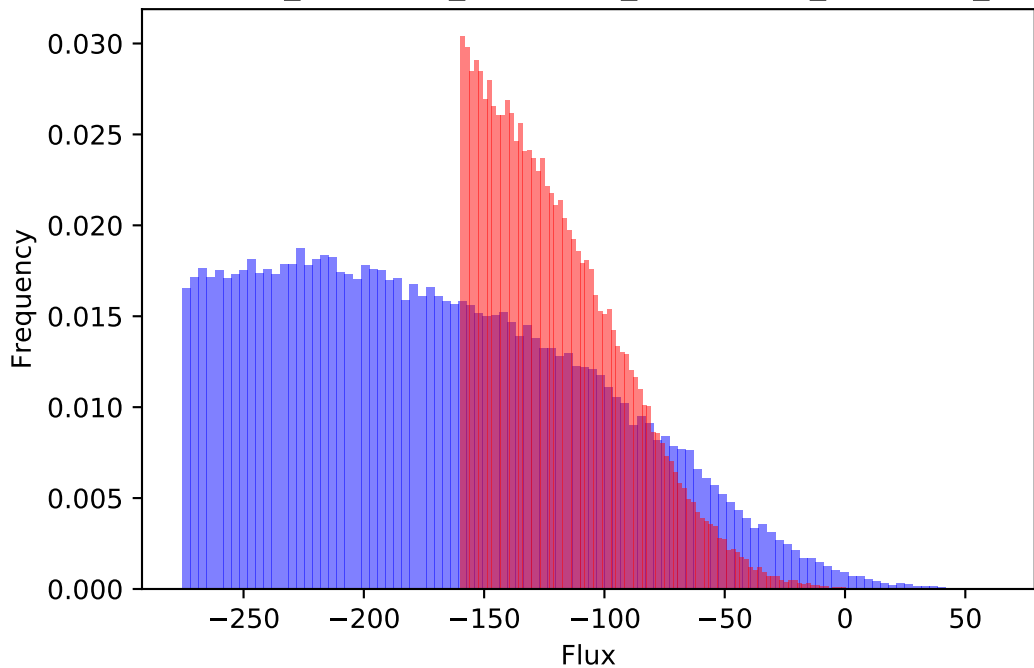
****77 : Q_m + SCA_m --> Fum_m + QH2_m****



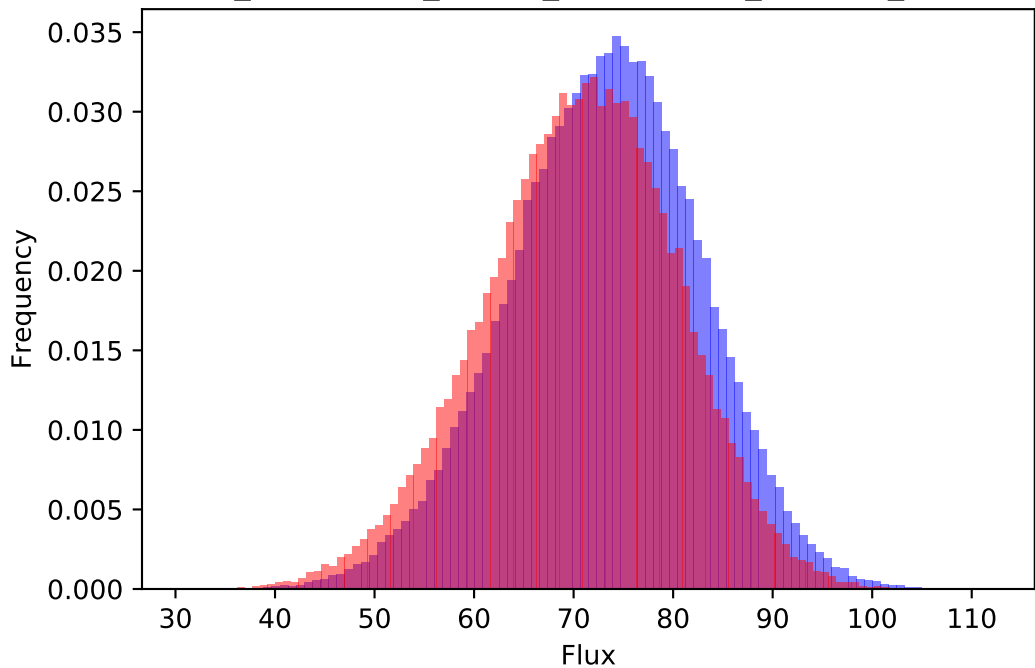
****78 : Fum_m + H2O_m --> Mal_m****



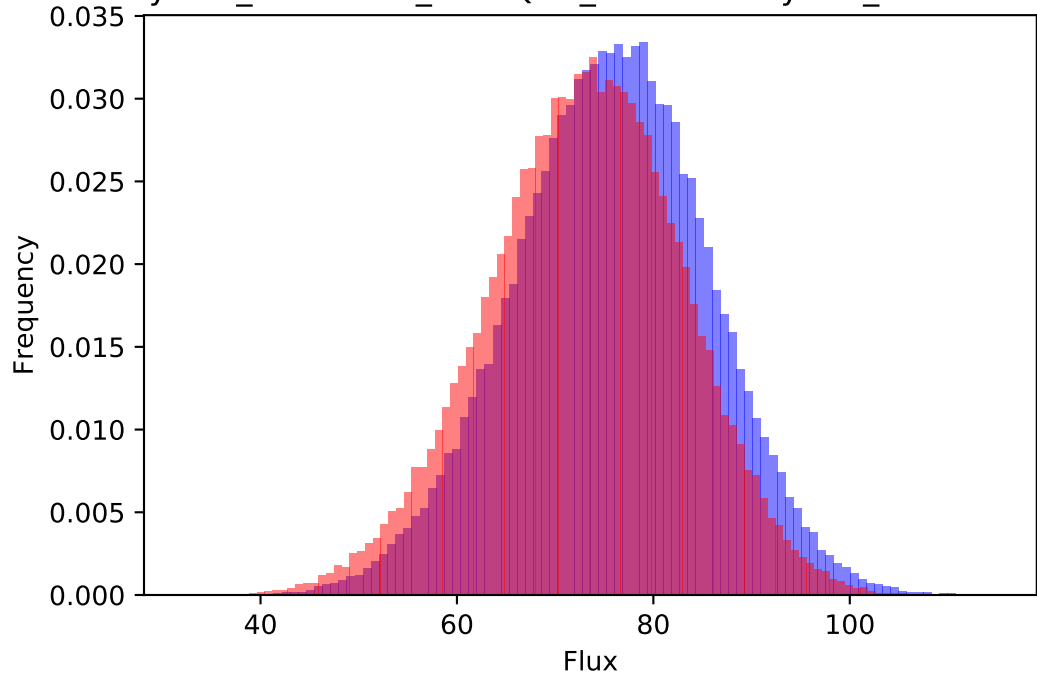
****79 : Mal_m + NAD_m <=> H_m + NADH_m + OAA_m****



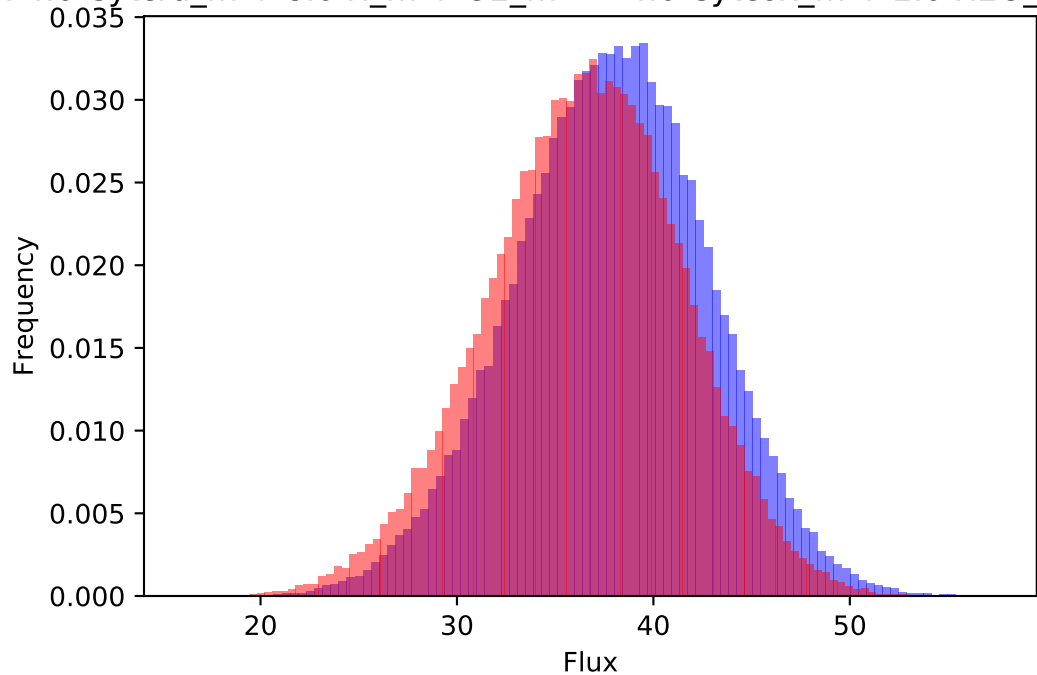
****80 : 5.0 H_m + NADH_m + Q_m --> 4.0 H_i + NAD_m + QH2_m****



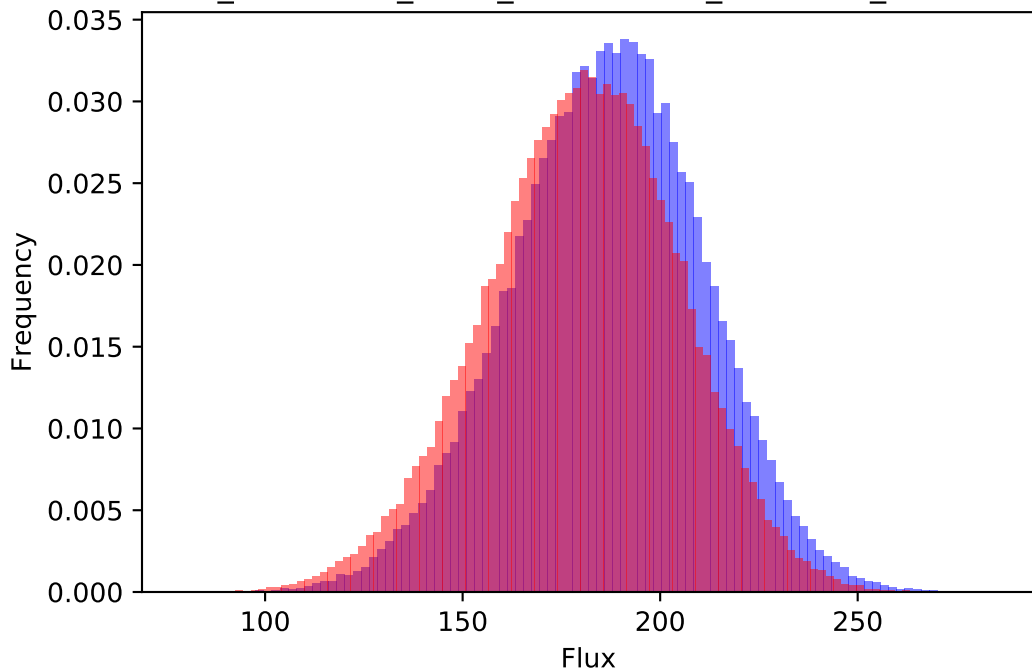
B1 : 2.0 Cytcox_m + 2.0 H_m + QH2_m --> 2.0 Cytcrd_m + 4.0 H_i + Q_



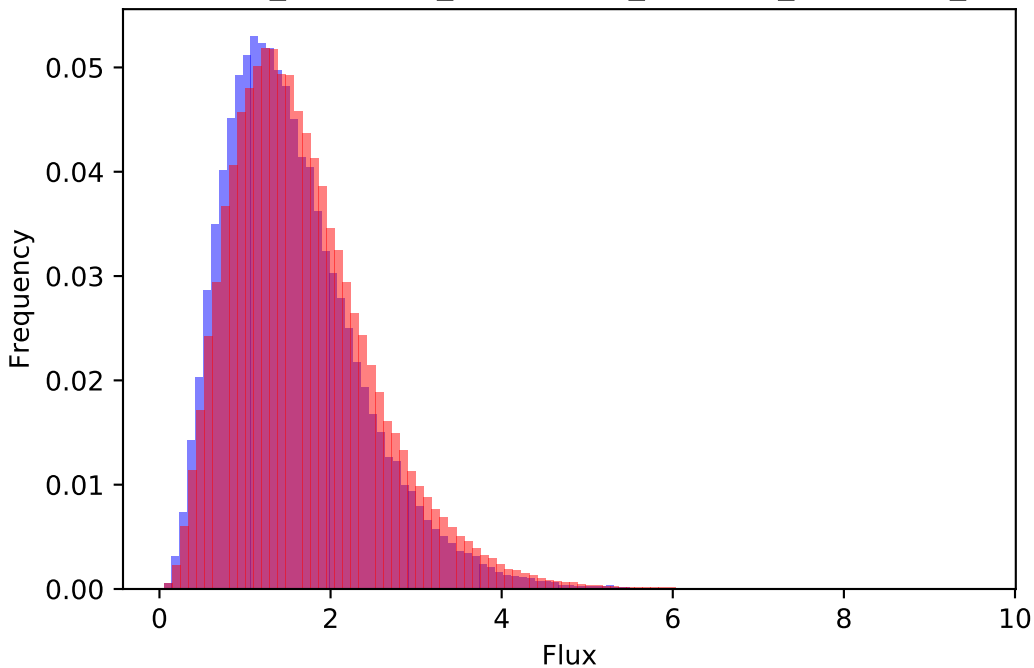
: 4.0 Cytcrd_m + 8.0 H_m + O2_m --> 4.0 Cytcox_m + 2.0 H2O_m + 4.0



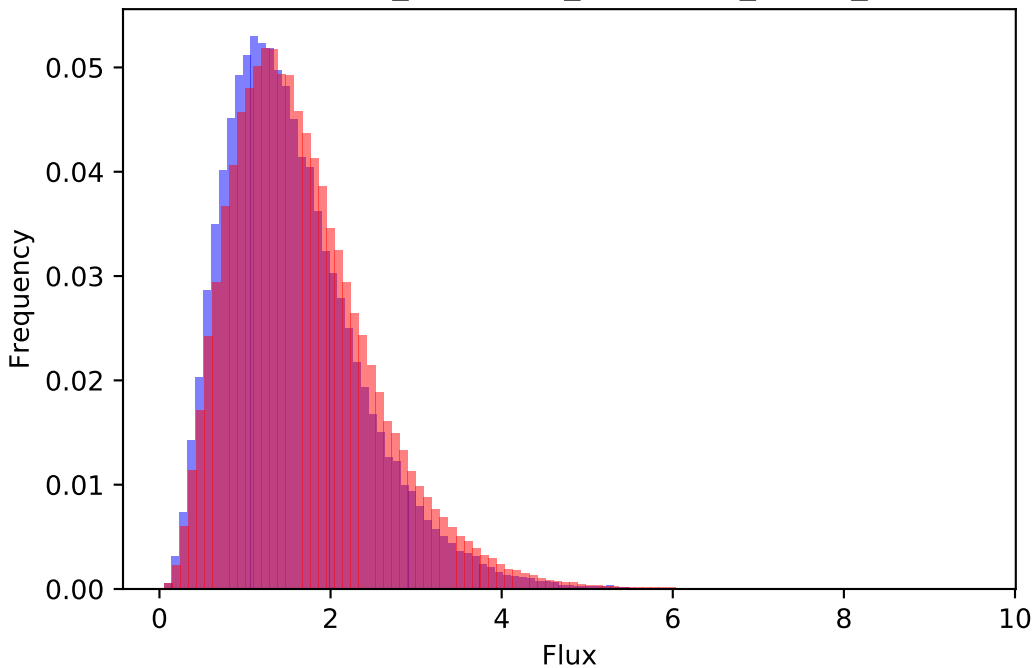
****83 : ADP_m + 4.0 H_i + Pi_m <=> ATP_m + H2O_m + 3.0 H_m****



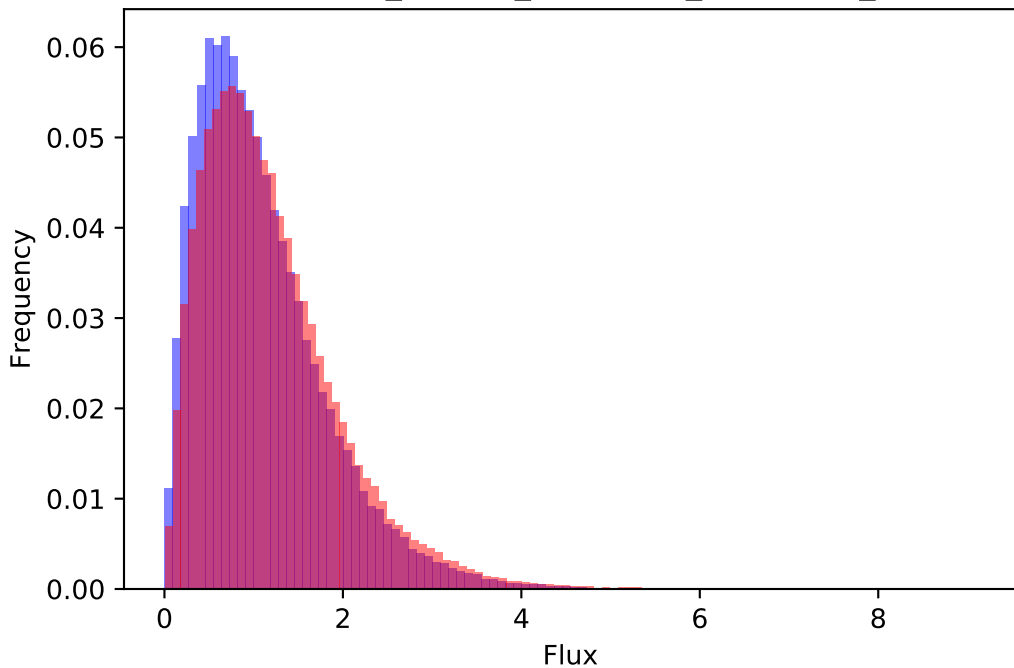
****84 : O2_h + RuBP_h --> 2.0 H_h + PGA_h + PGCA_h****



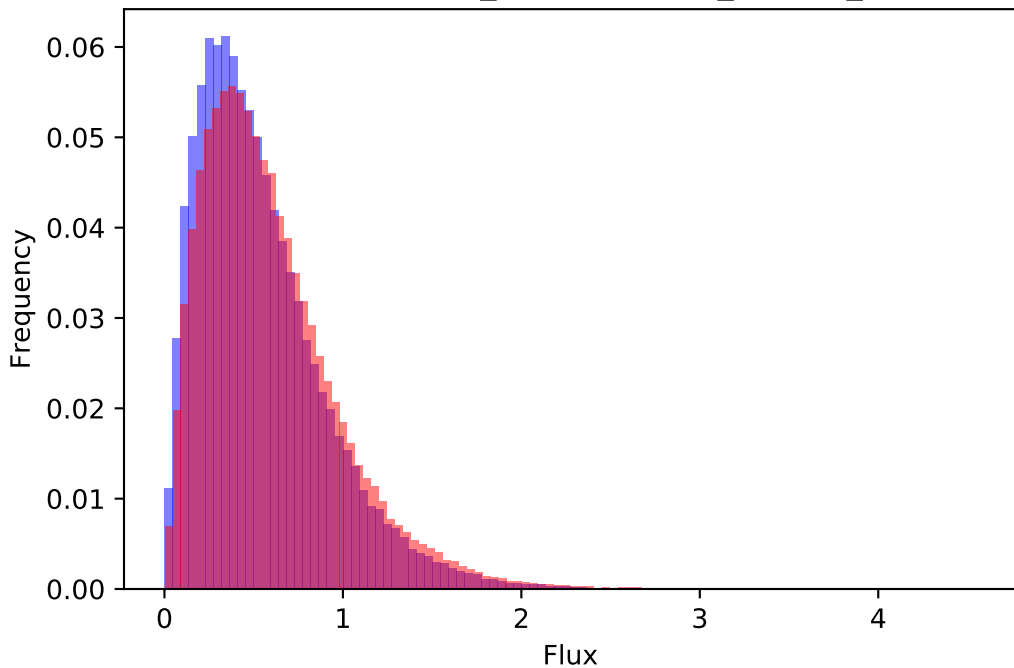
****85 : H2O_h + PGCA_h --> GCA_h + Pi_h****



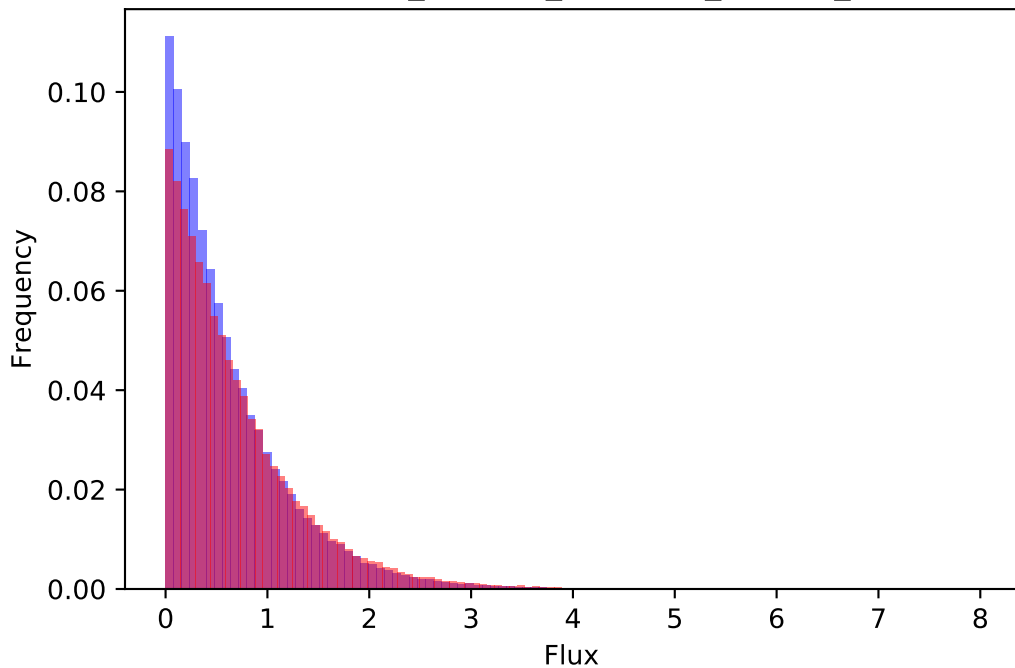
****86 : GCA_p + O2_p --> GLX_p + H2O2_p****



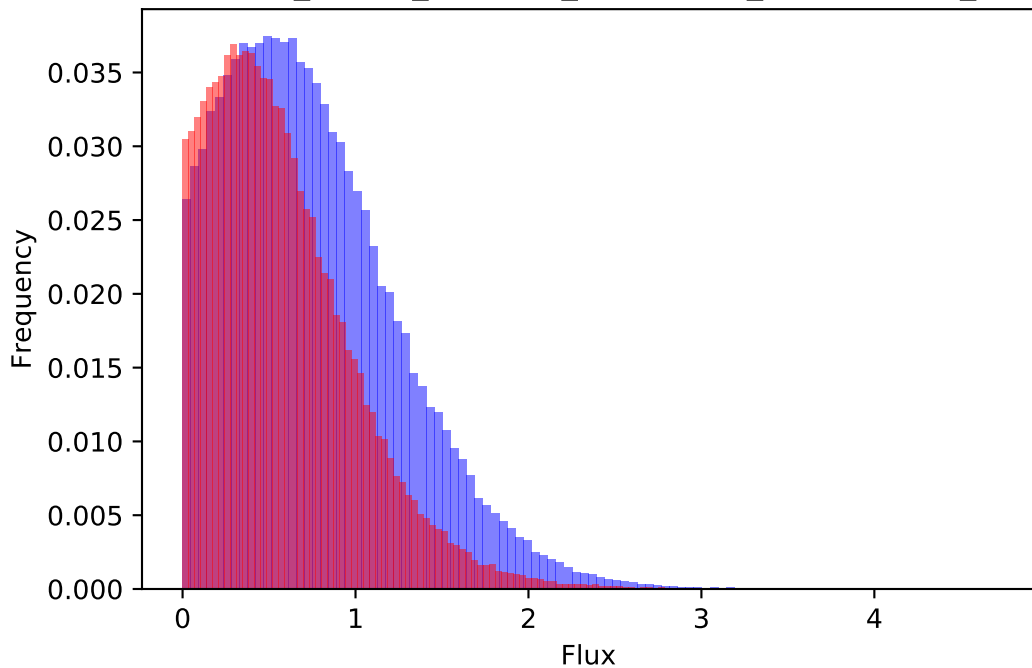
****87 : 2.0 H2O2_p --> 2.0 H2O_p + O2_p****



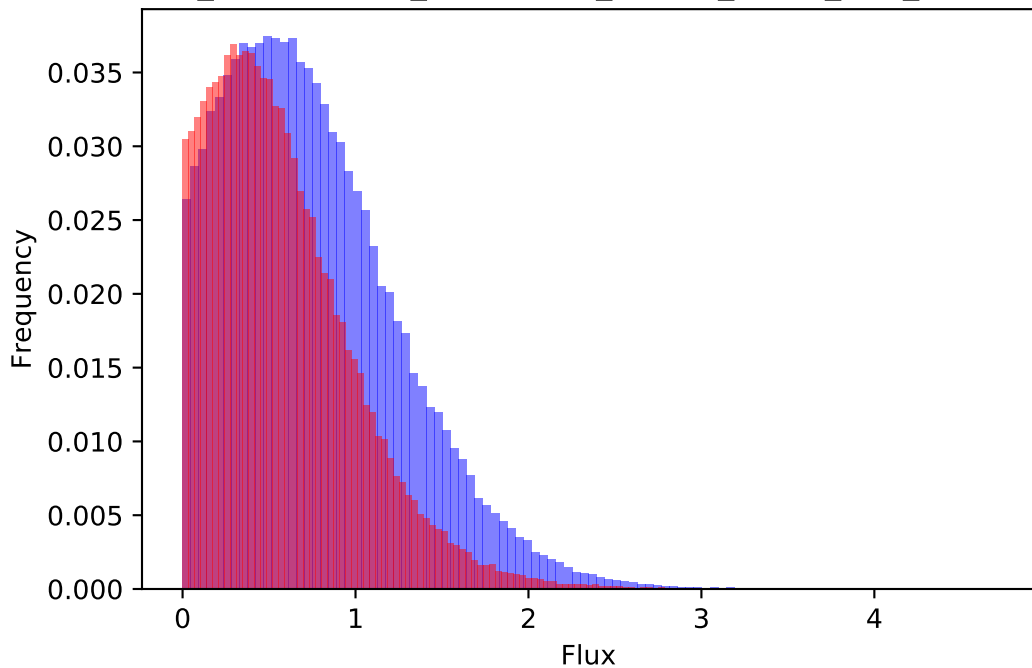
****88 : GLX_p + Glu_p --> Gly_p + KG_p****



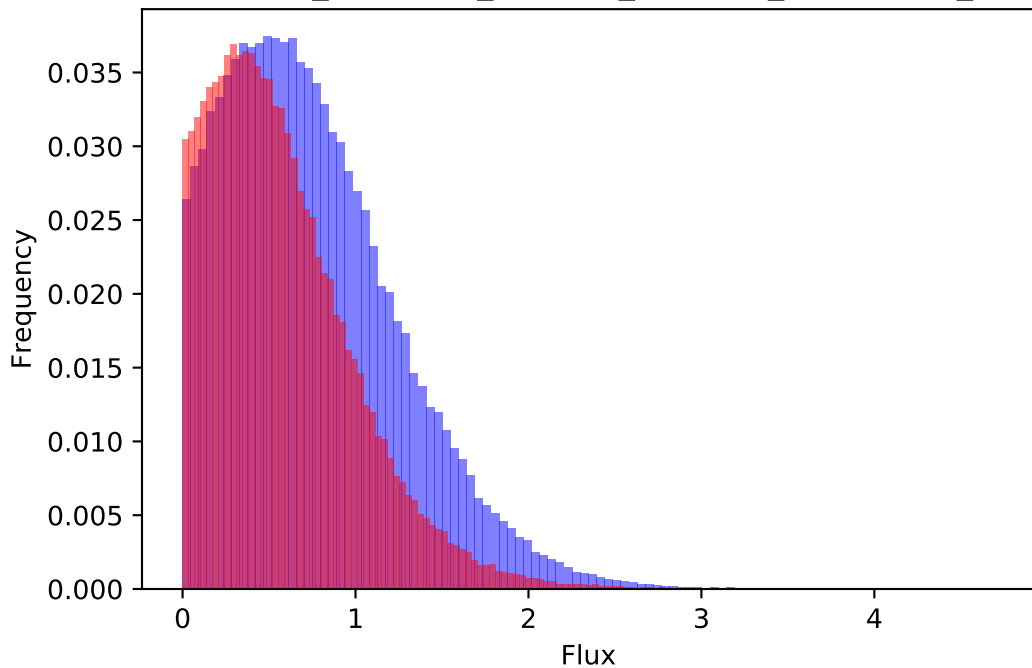
****89 : Gly_m + H_m + LPL_m --> CO2_m + amDHP_m****



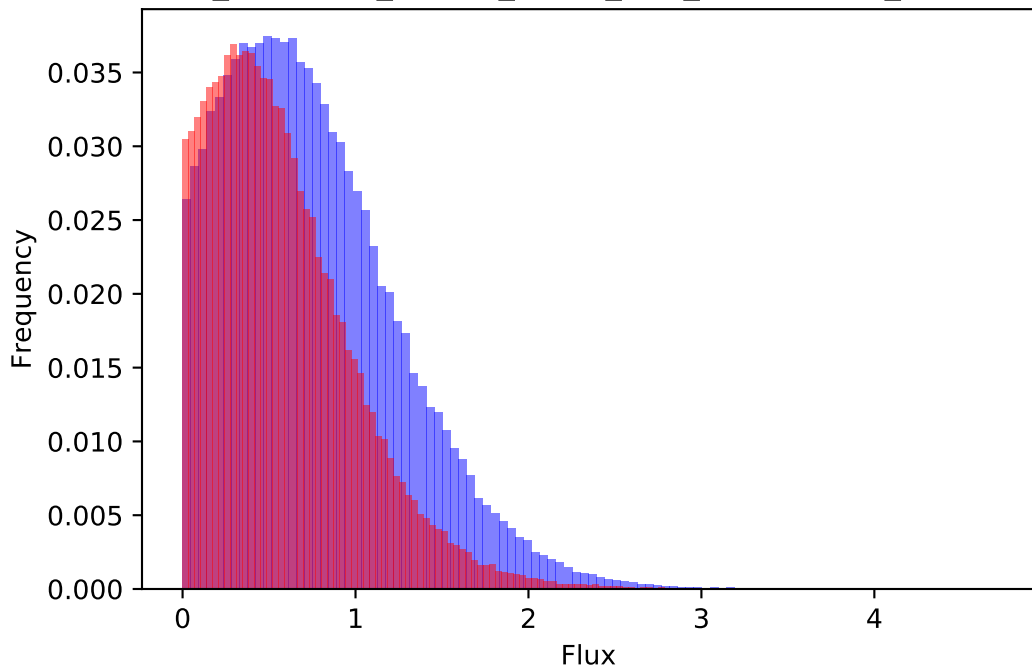
****90 : THF_m + amDHP_m --> DHP_m + M_DASH_THF_m + NH4_m****



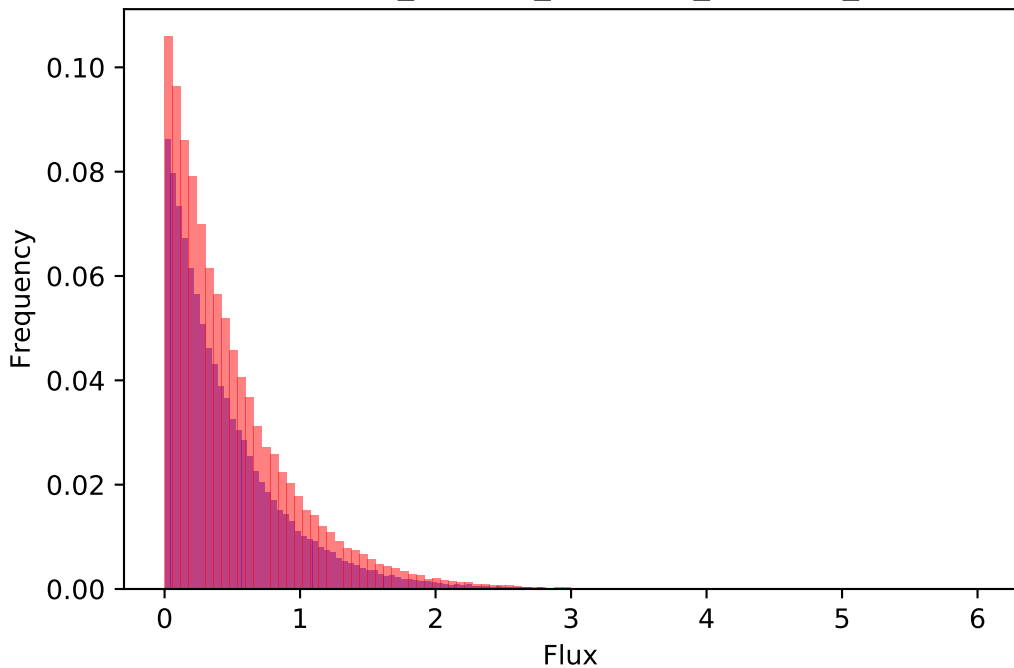
****91 : DHP_m + NAD_m --> H_m + LPL_m + NADH_m****



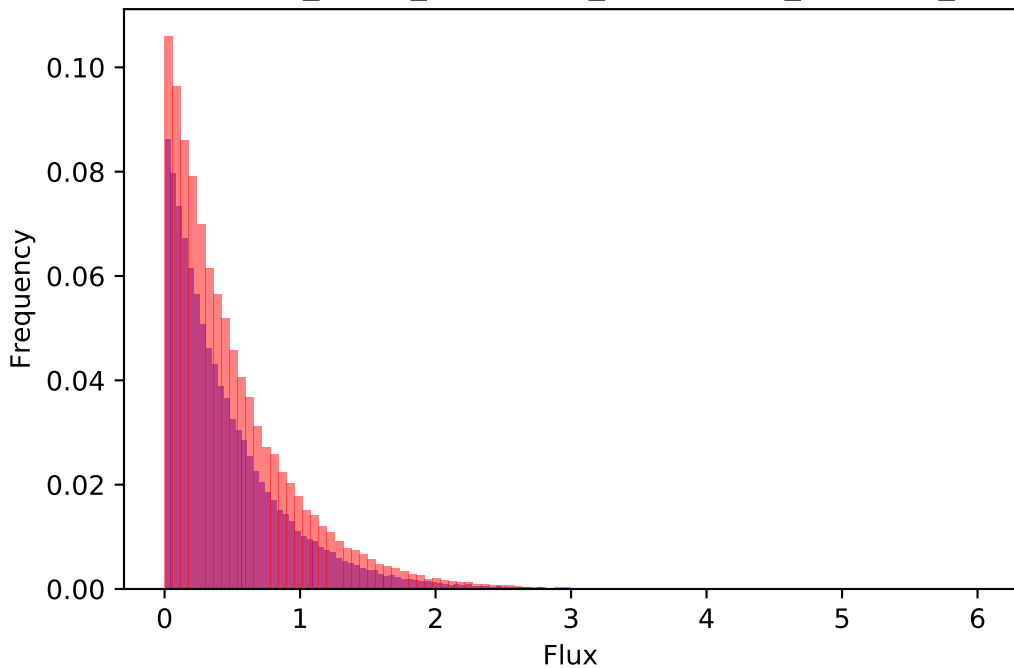
****92 : Gly_m + H2O_m + M_DASH_THF_m <=> Ser_m + THF_m****



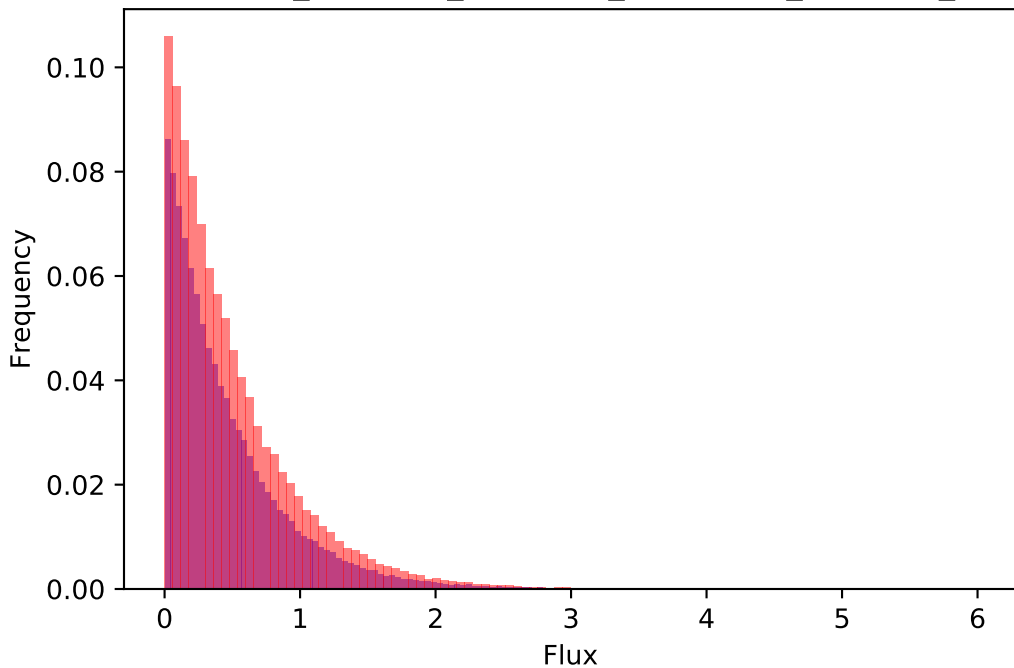
****93 : GLX_p + Ser_p --> Gly_p + HPR_p****



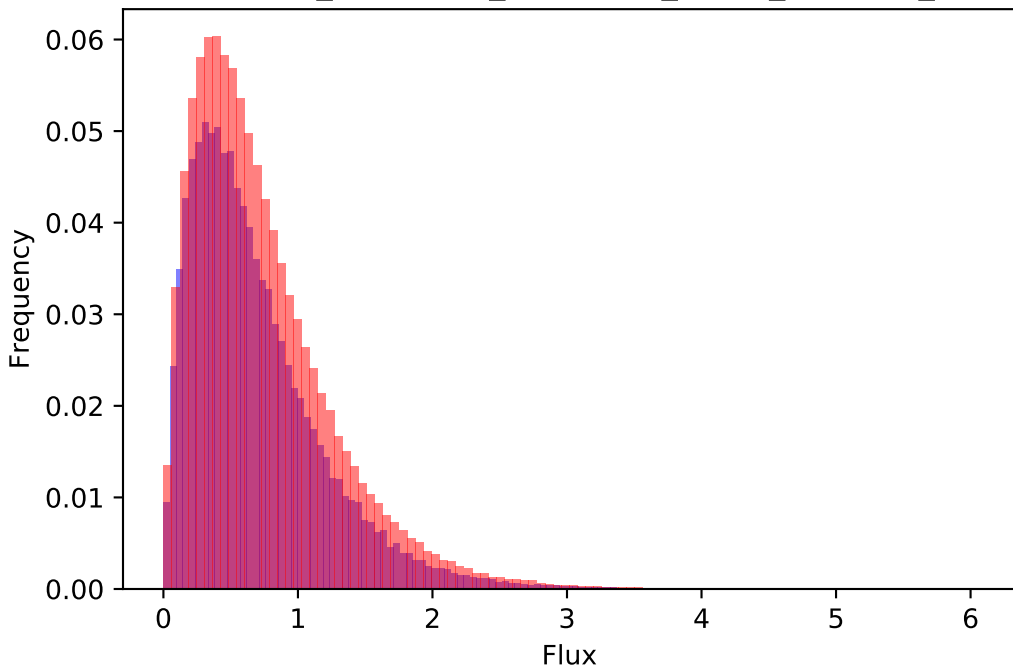
****94 : HPR_p + H_p + NADH_p --> GCEA_p + NAD_p****



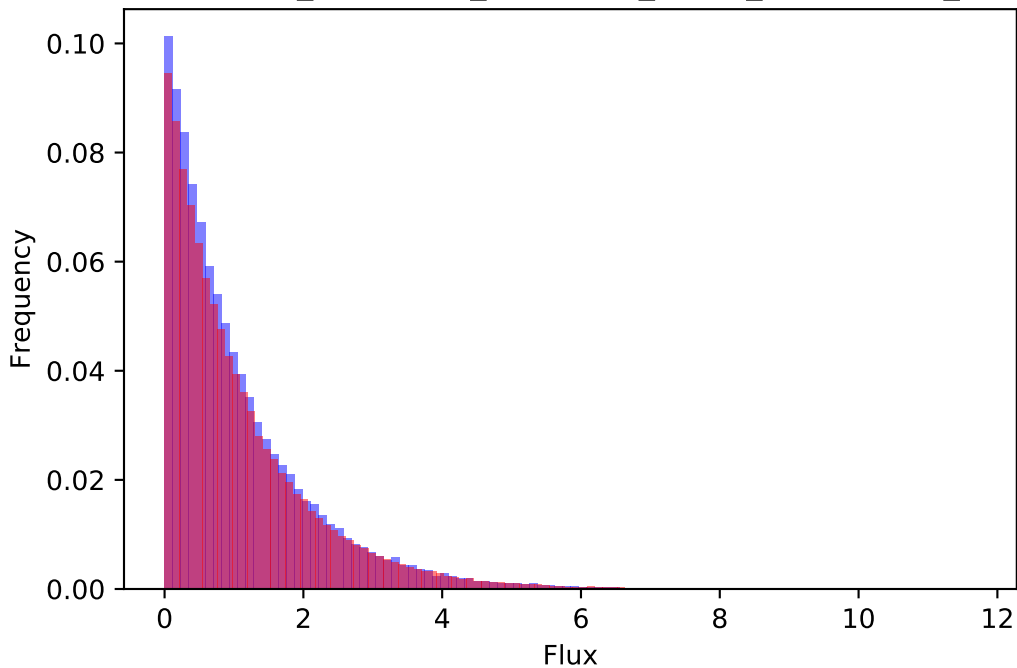
****95 : Mal_p + NAD_p <=> H_p + NADH_p + OAA_p****



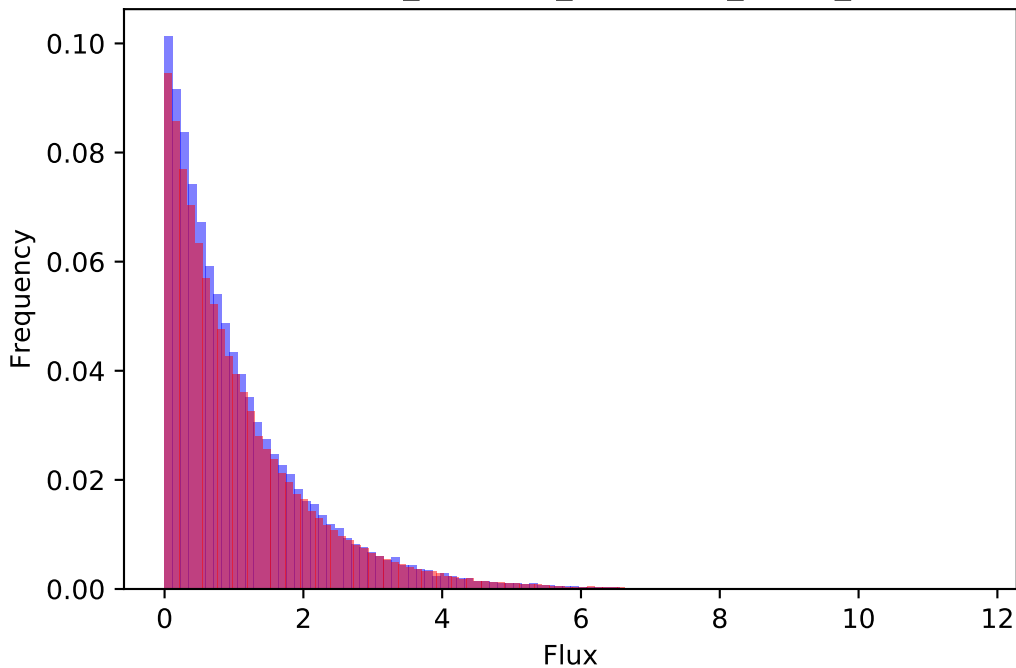
****96 : ATP_h + GCEA_h --> ADP_h + H_h + PGA_h****



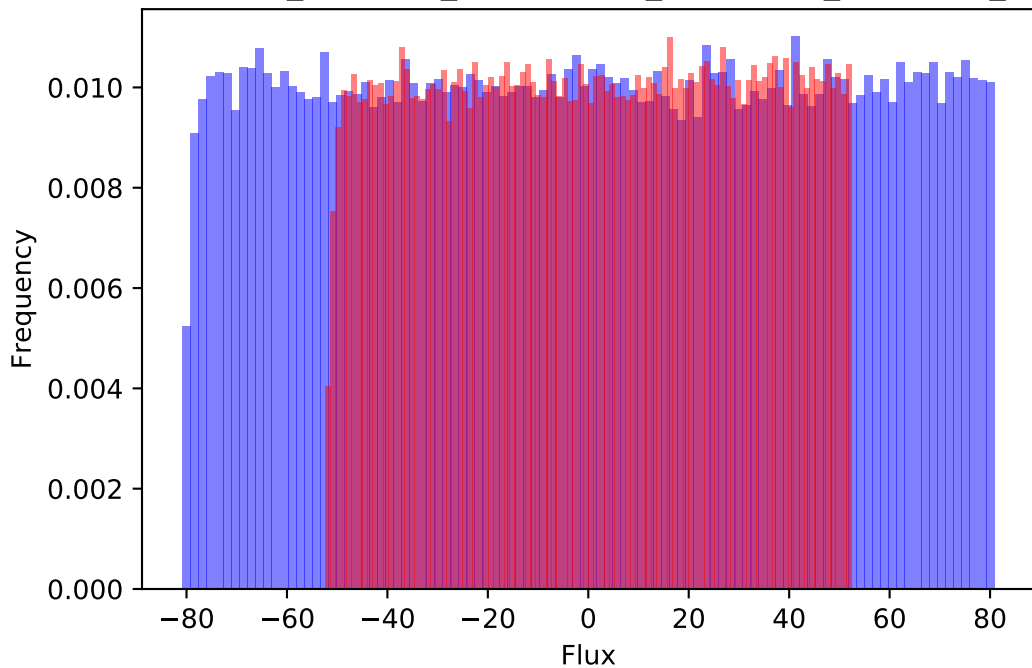
97 : G6P_h + NADP_h --> GLP_h + H_h + NADPH_h



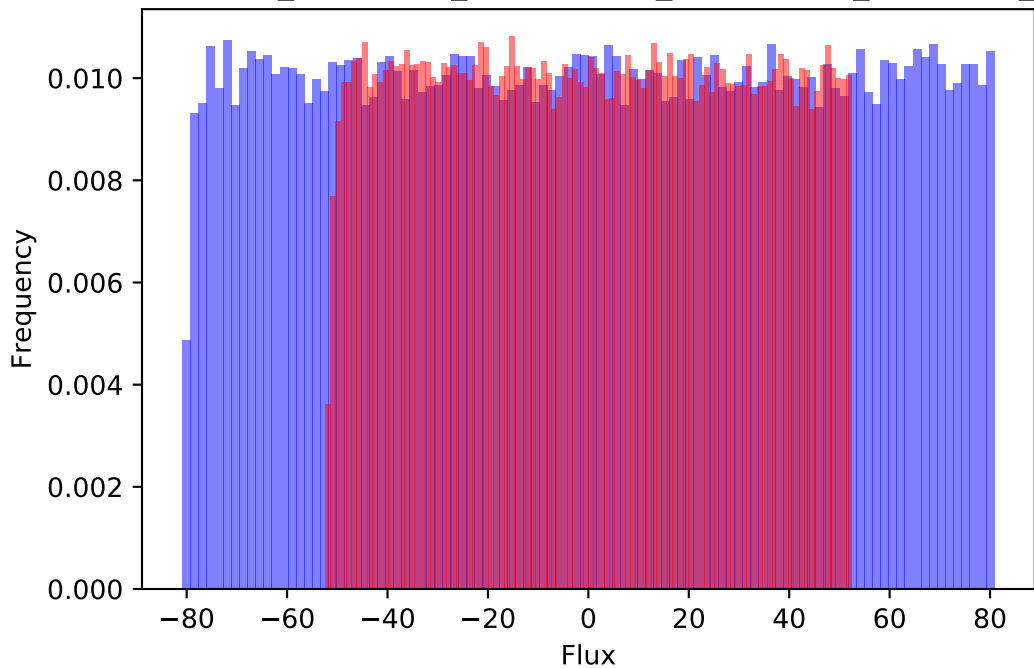
98 : GLP_h + H2O_h --> 6PG_h + H_h



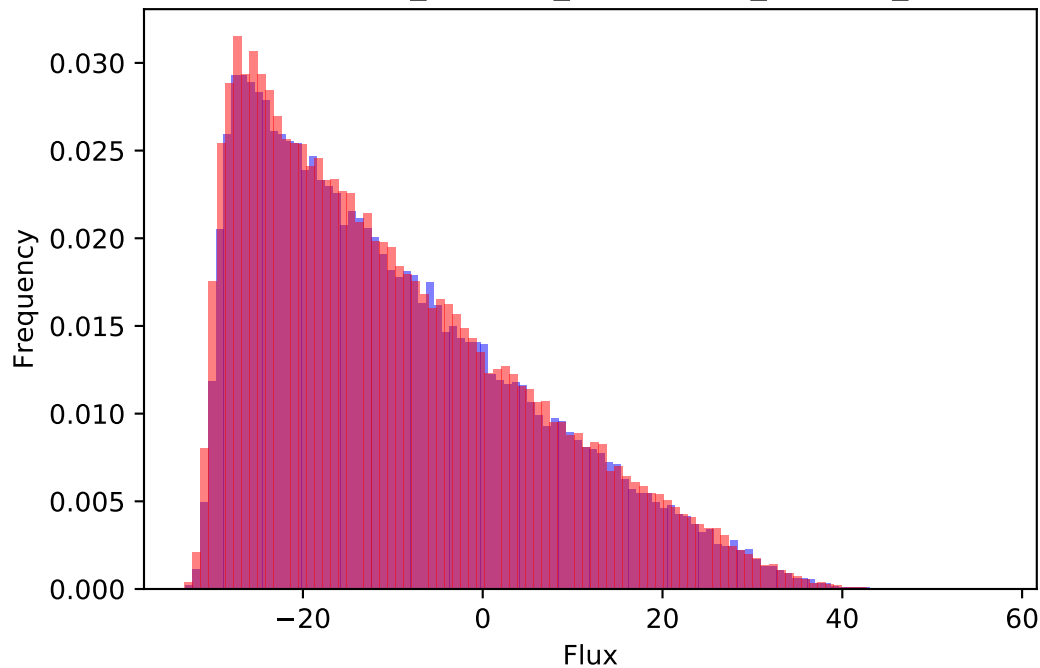
99 : 6PG_h + NAD_h <=> CO2_h + NADH_h + Ru5P_h



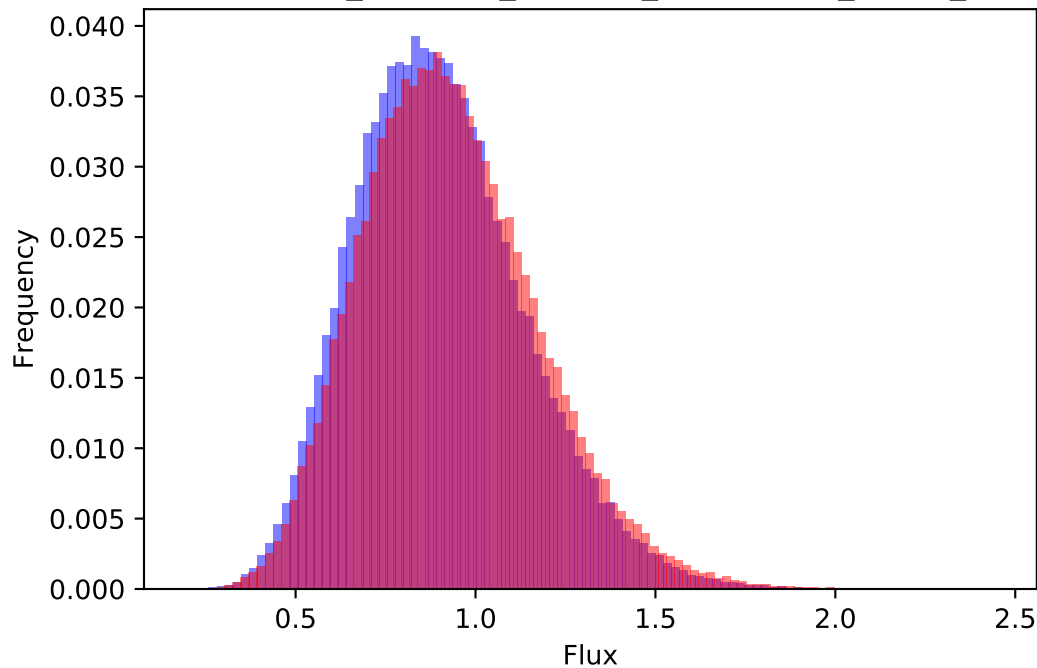
100 : 6PG_h + NADP_h <=> CO2_h + NADPH_h + Ru5P_h



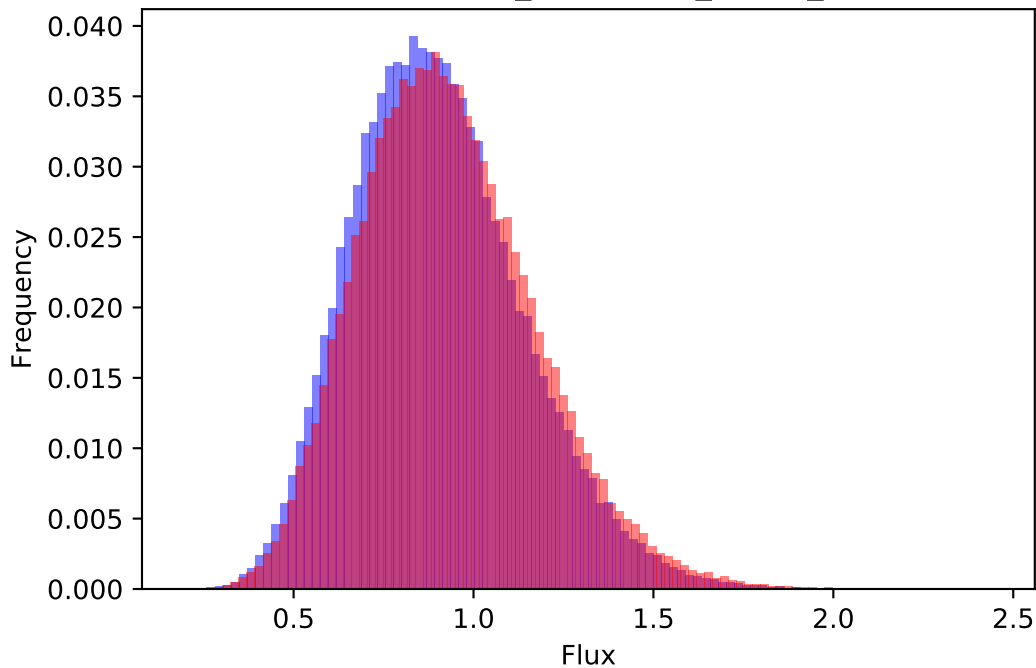
****101 : GAP_h + S7P_h <=> E4P_h + F6P_h****



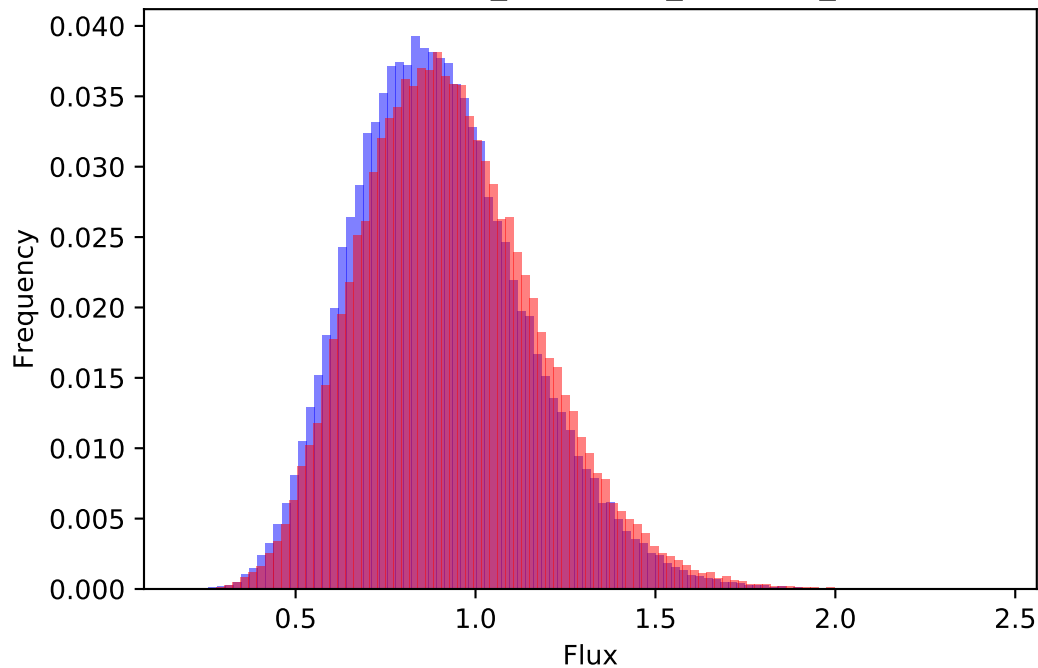
****102 : E4P_h + H2O_h + PEP_h --> DAHP_h + Pi_h****



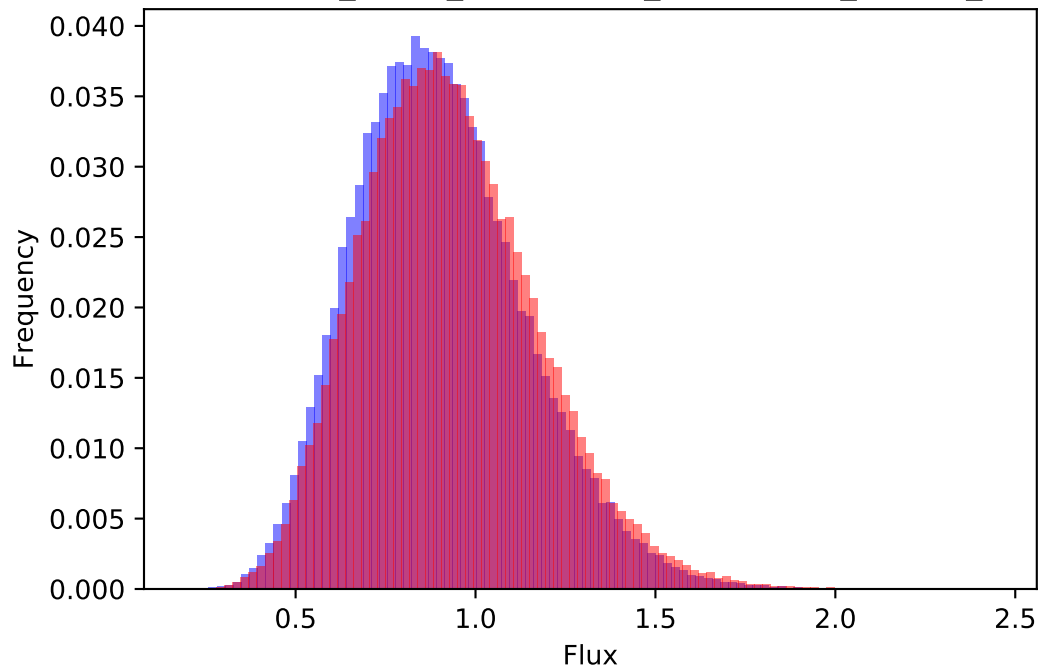
****103 : DAHP_h --> DHQ_h + Pi_h****



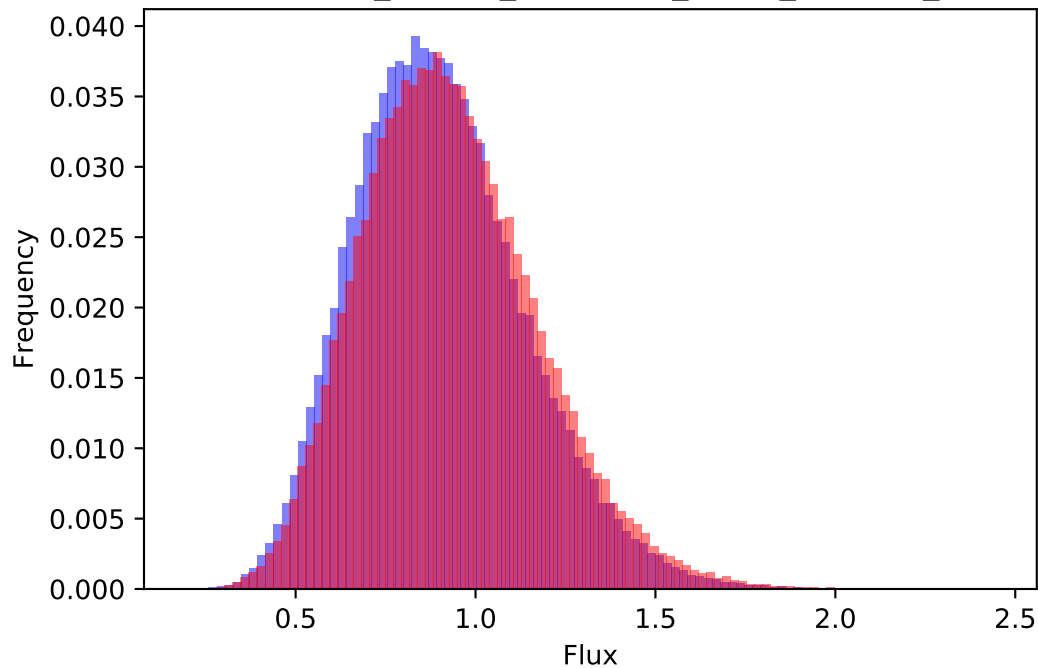
****104 : DHQ_h --> DHS_h + H2O_h****



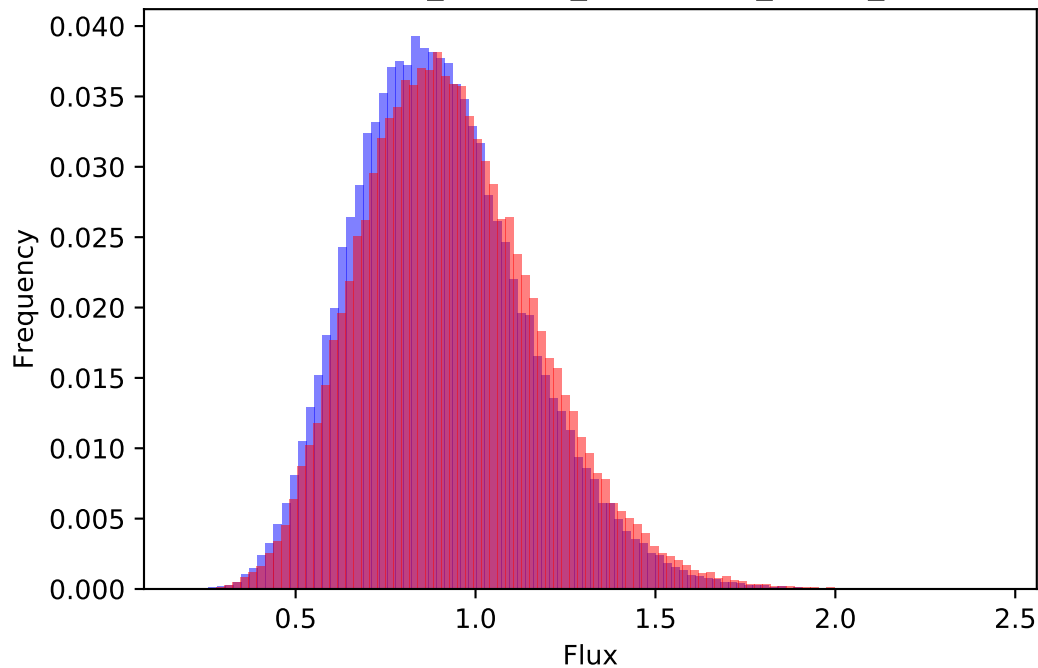
****105 : DHS_h + H_h + NADPH_h --> NADP_h + SA_h****



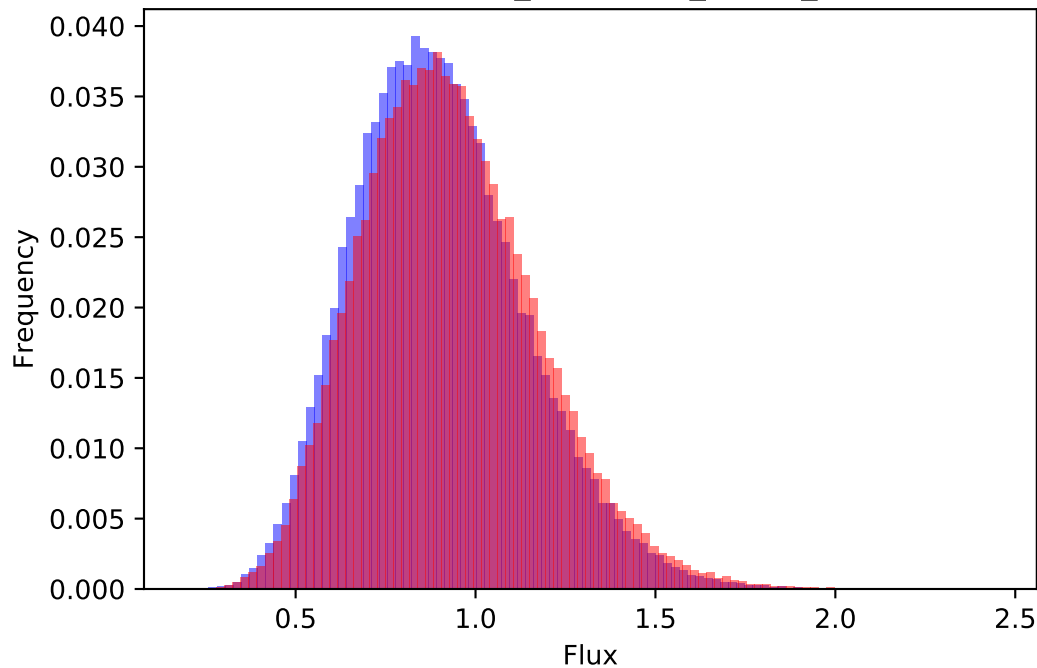
****106 : ATP_h + SA_h --> ADP_h + H_h + S3P_h****



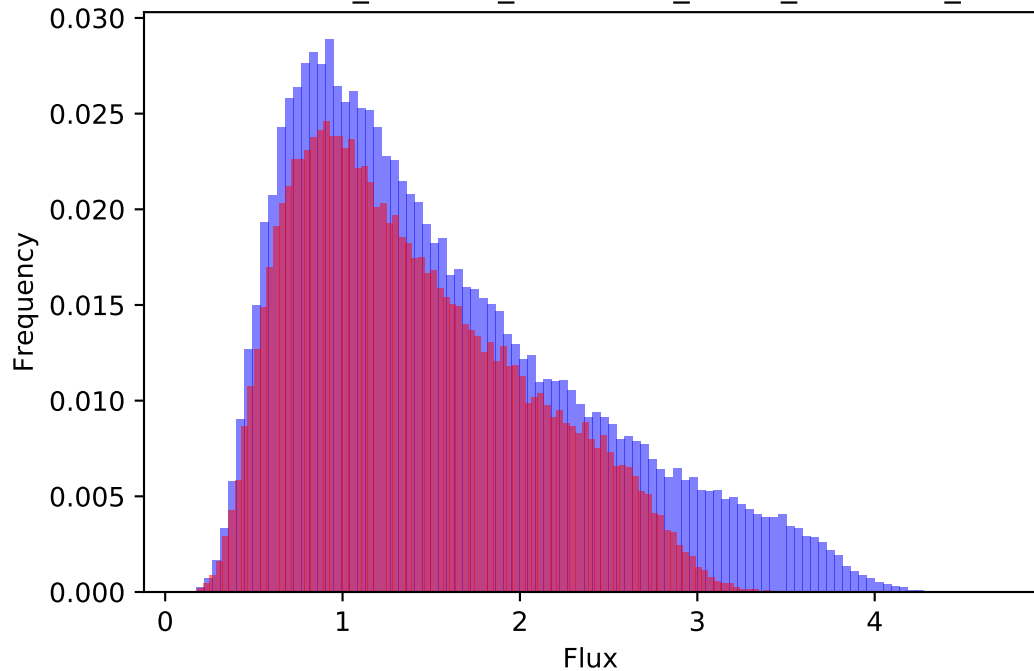
****107 : PEP_h + S3P_h --> EPSP_h + Pi_h****



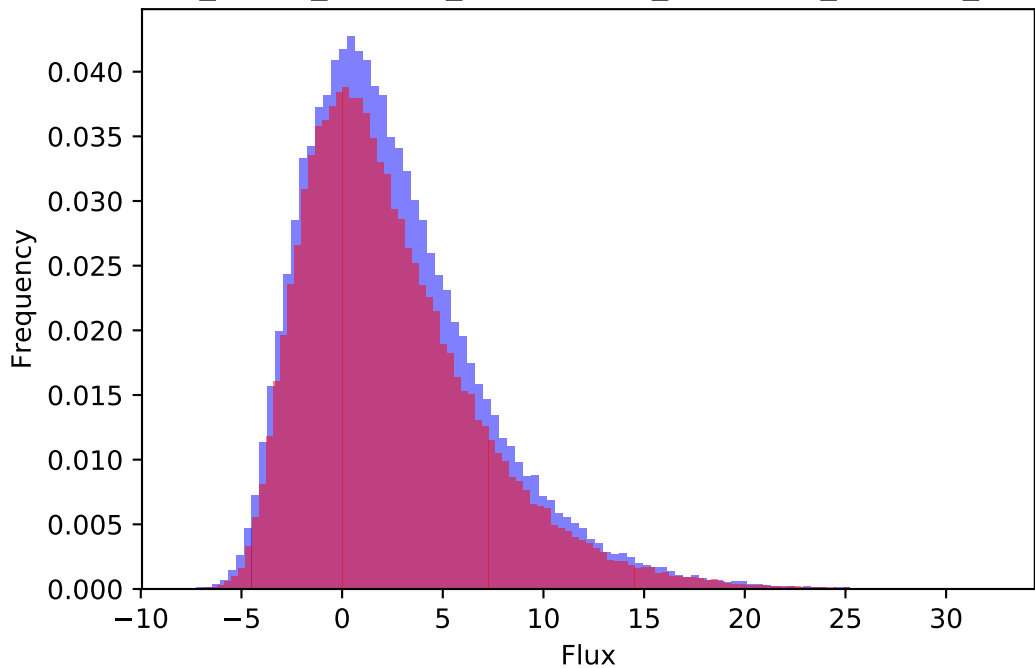
****108 : EPSP_h --> CHR_h + Pi_h****



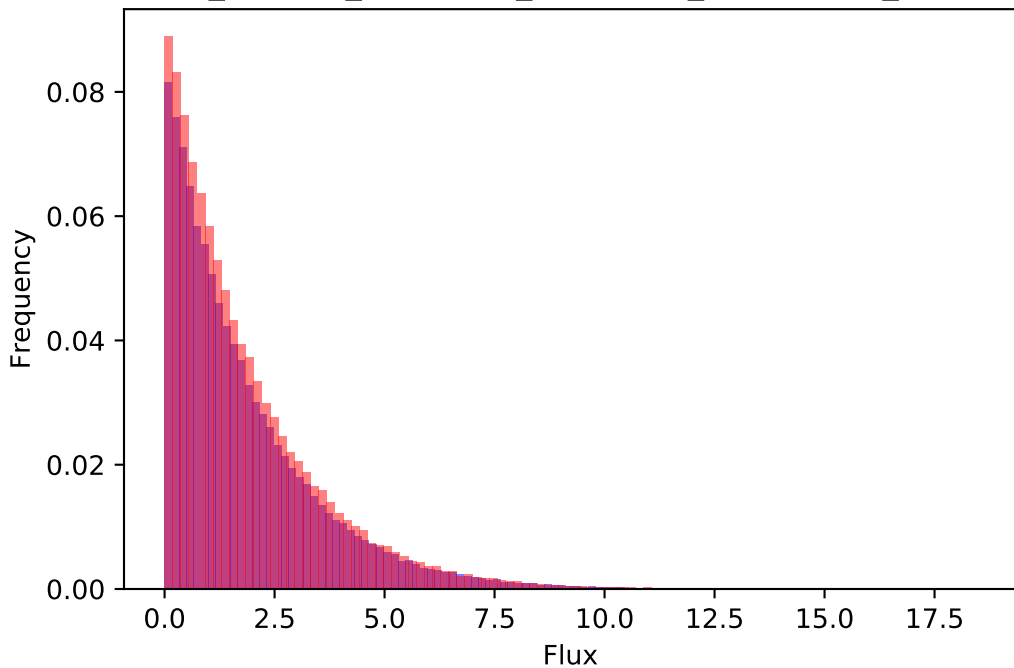
****109 : ATP_h + R5P_h --> AMP_h + H_h + PRPP_h****



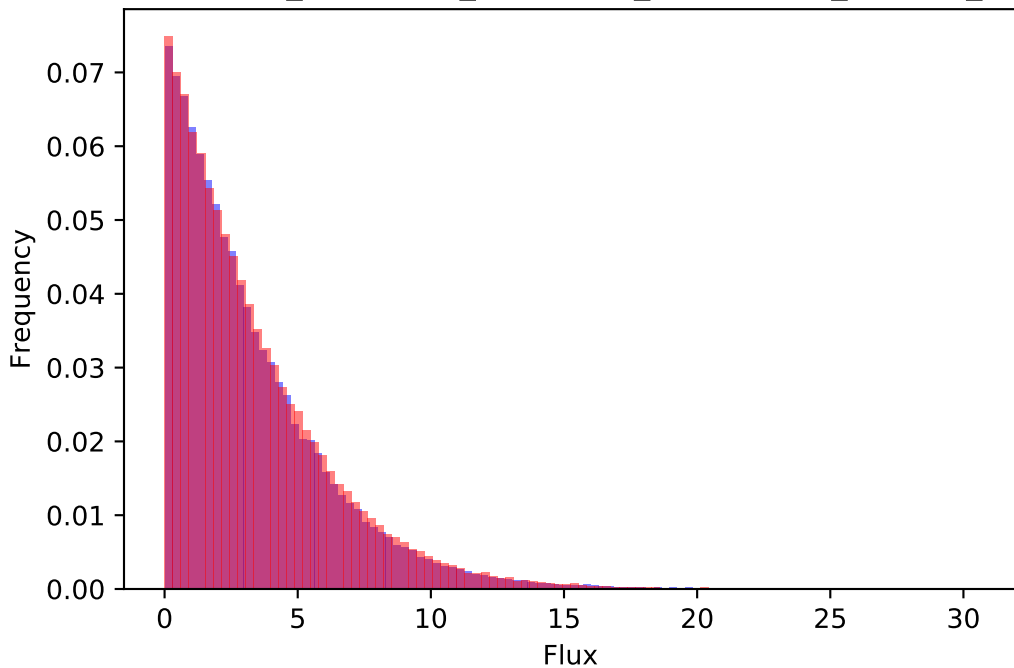
****110 : $\text{ATP}_h + \text{Pi}_h + \text{Pyr}_h \rightleftharpoons \text{AMP}_h + 2.0 \text{H}_h + \text{PEP}_h + \text{PPi}_h$ ***



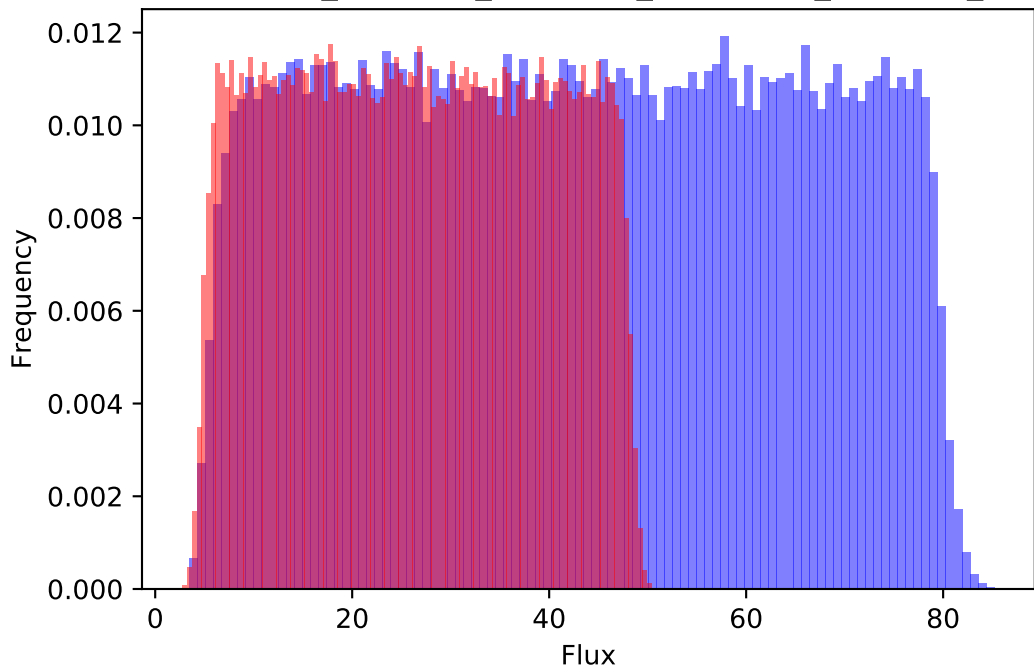
111 : H_c + Mal_c + NADP_c --> CO2_c + NADPH_c + Pyr_c



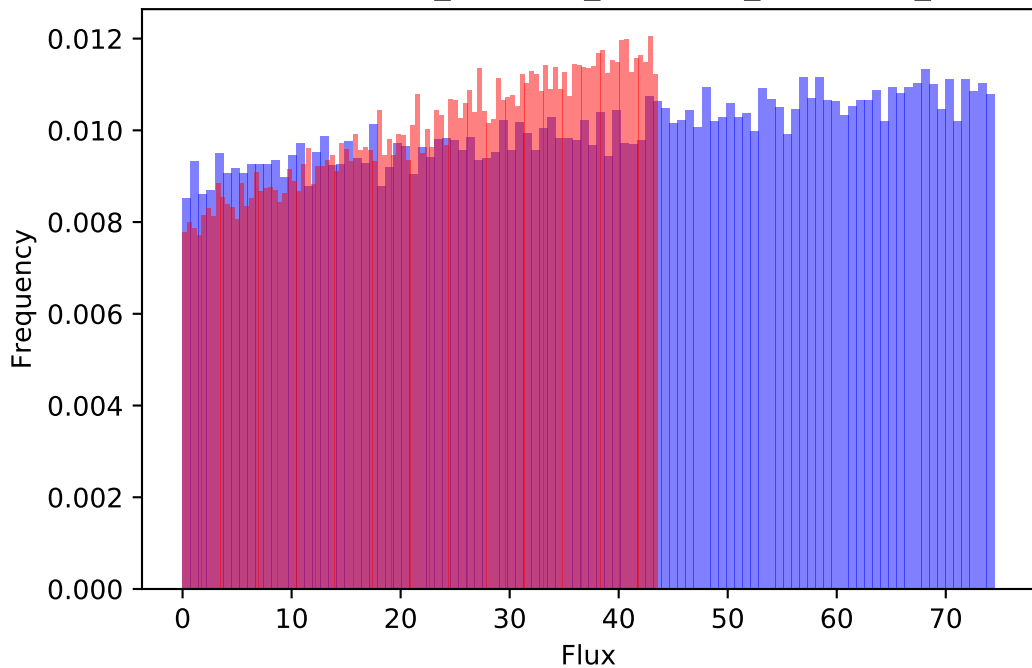
****112 : Mal_h + NADP_h --> CO2_h + NADPH_h + Pyr_h****



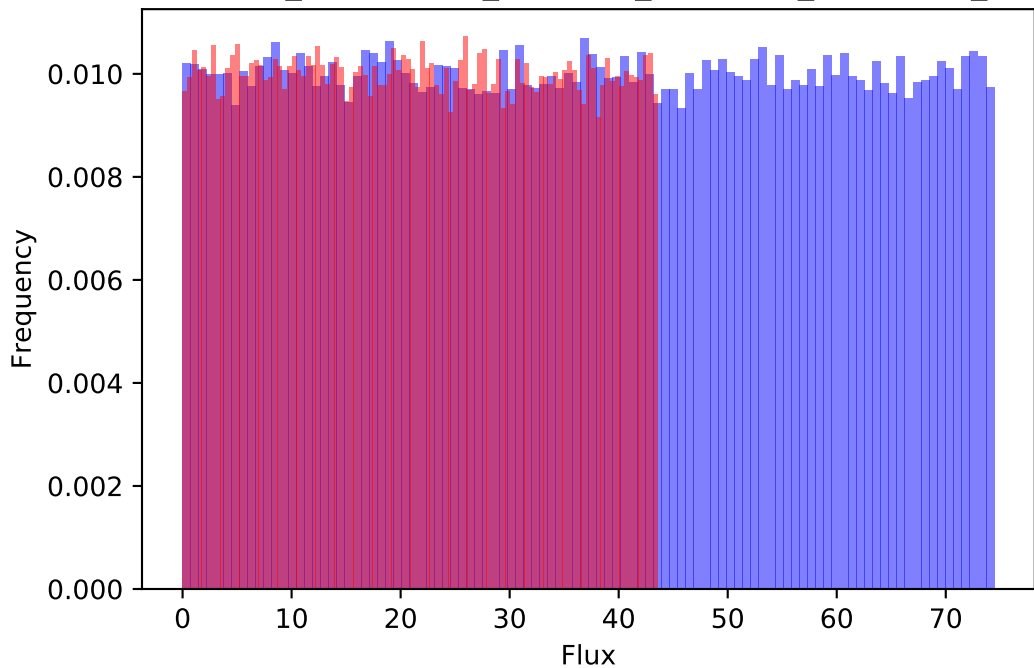
****113 : Mal_h + NAD_h <=> H_h + NADH_h + OAA_h****



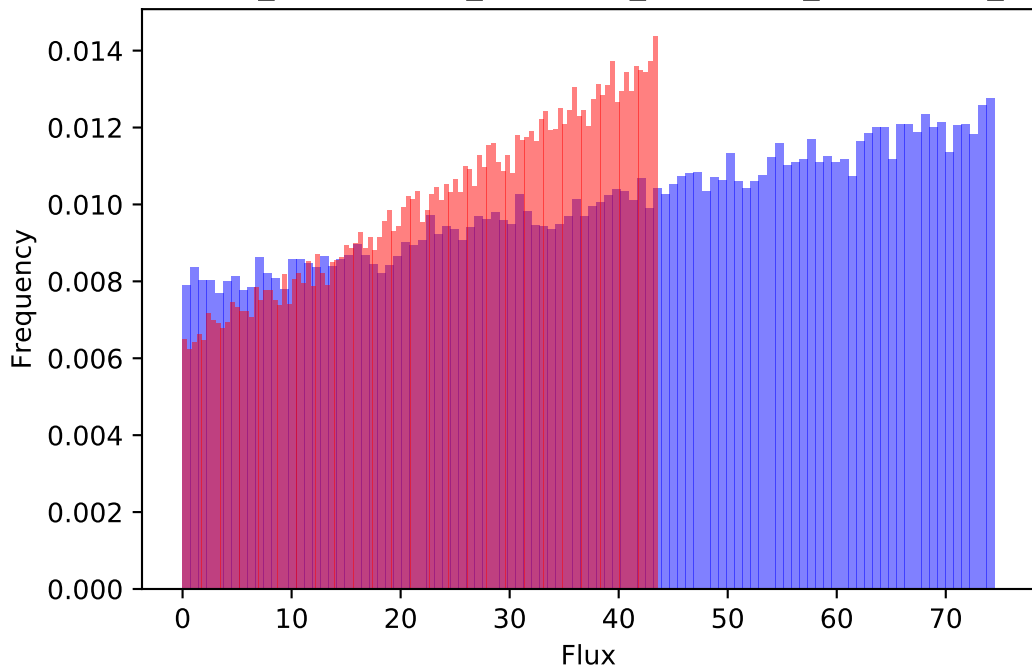
****114 : NADPH_c + OAA_c --> Mal_c + NADP_c****



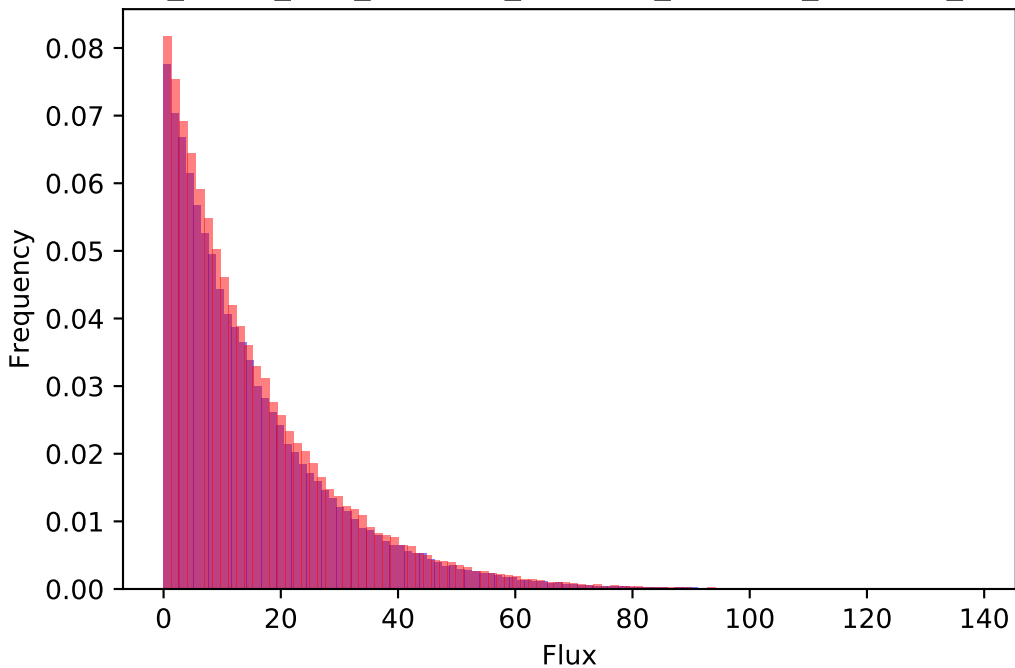
****115 : H_h + NADPH_h + OAA_h --> Mal_h + NADP_h****



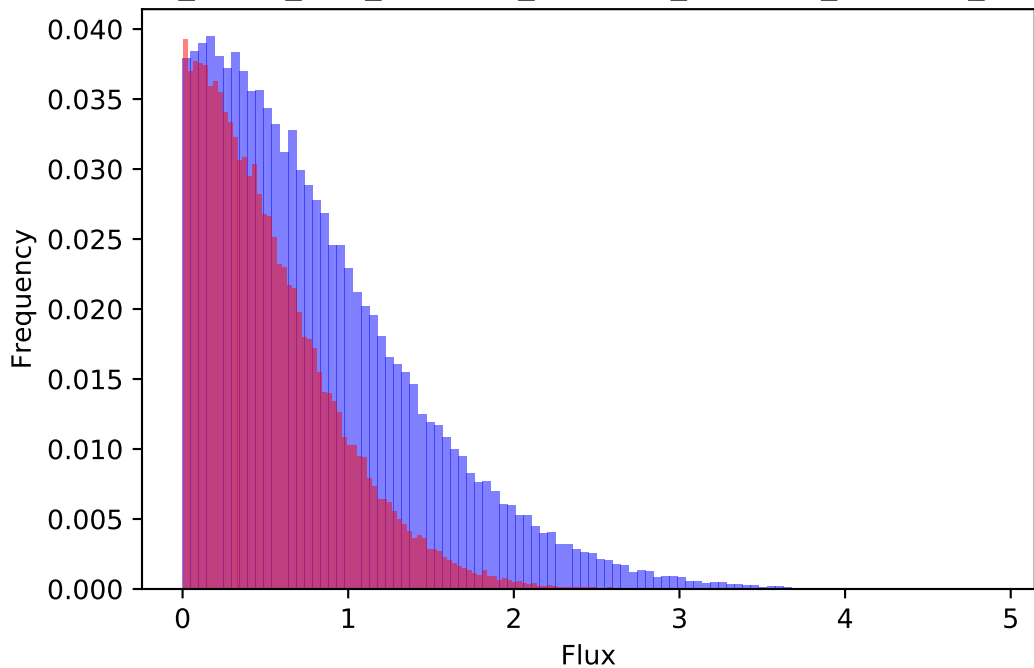
****116 : H_m + NADPH_m + OAA_m --> Mal_m + NADP_m****



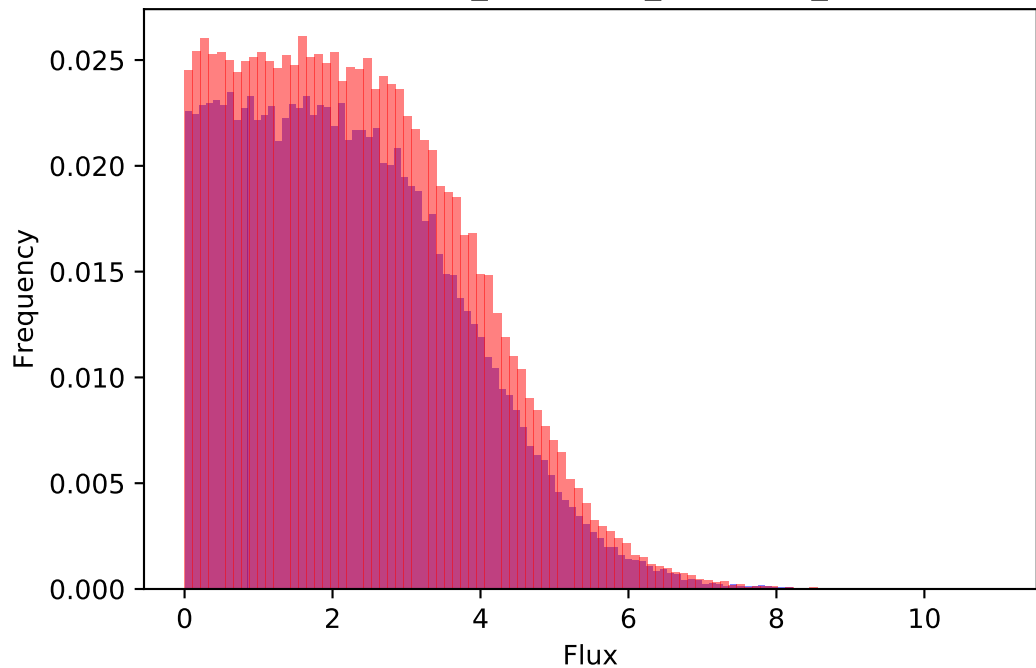
117 : A_DASH_CoA_c + H2O_c + OAA_c --> Cit_c + CoA_c + H_c



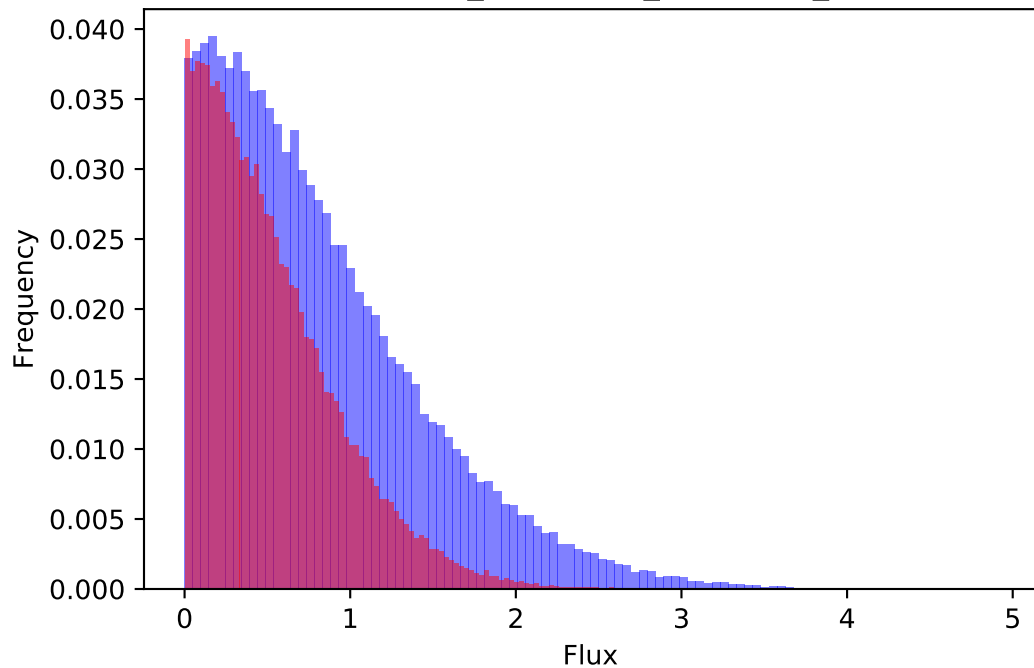
****118 : A_DASH_CoA_h + H2O_h + OAA_h --> Cit_h + CoA_h + H_h****



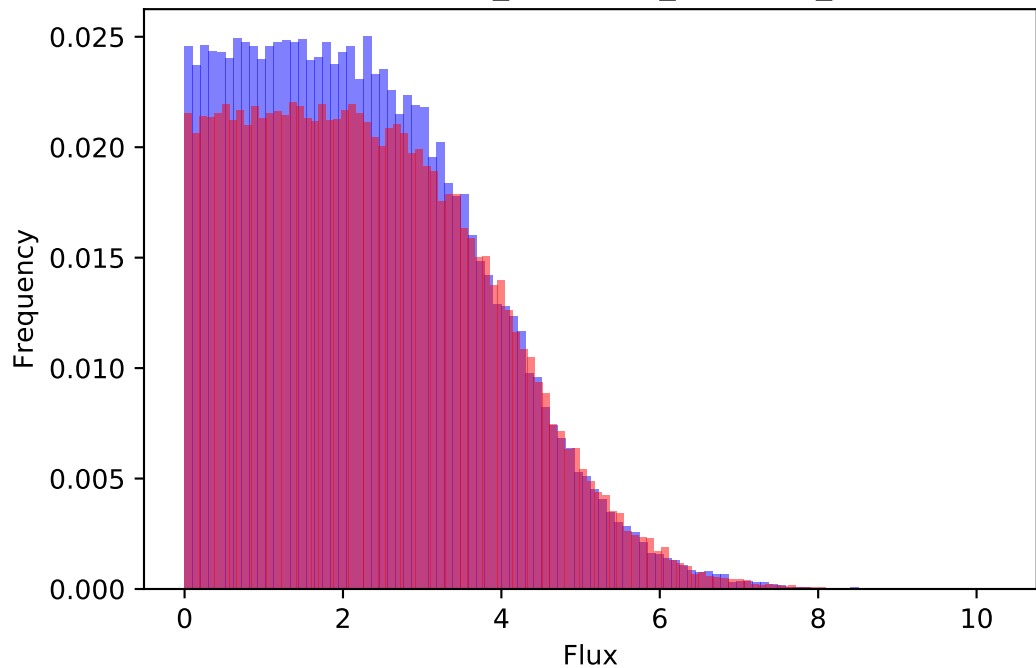
****119 : Cit_c --> H2O_c + cACN_c****



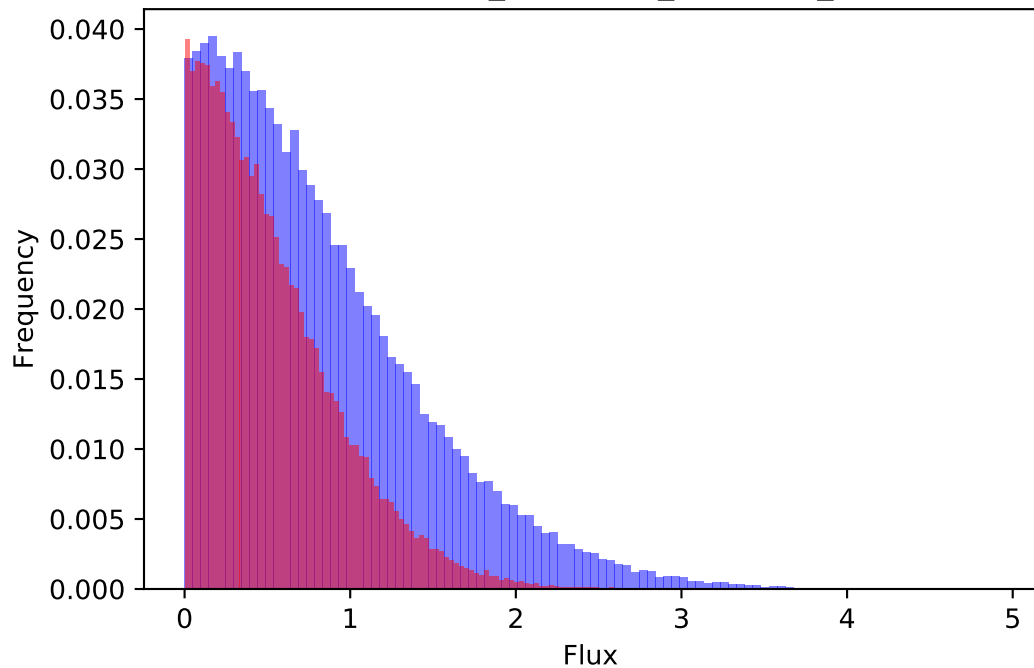
****120 : Cit_h --> H2O_h + cACN_h****



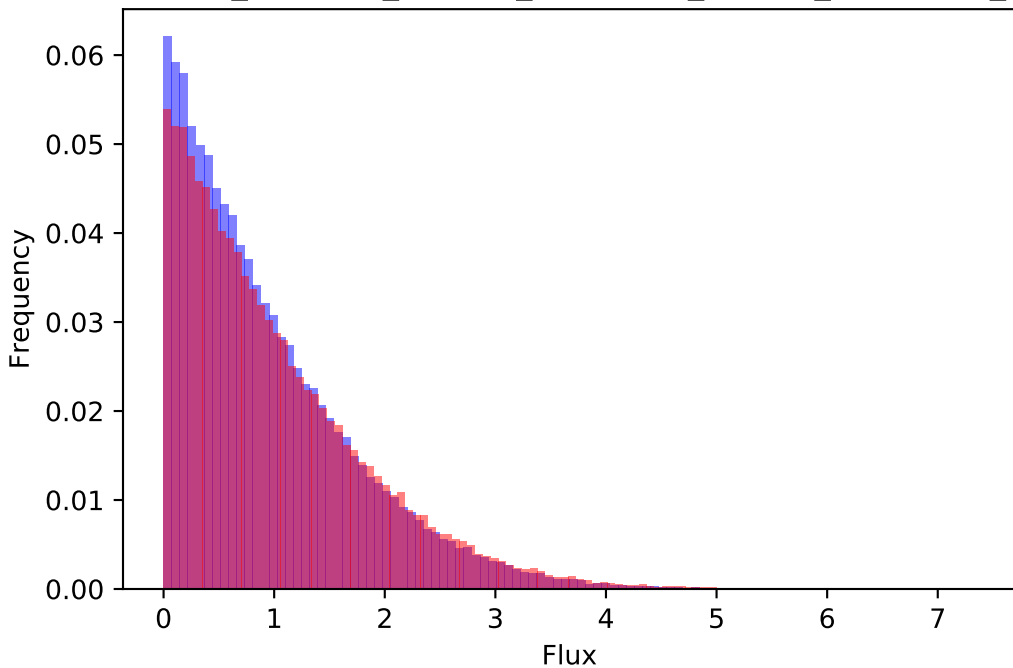
****121 : H2O_c + cACN_c --> iCit_c****



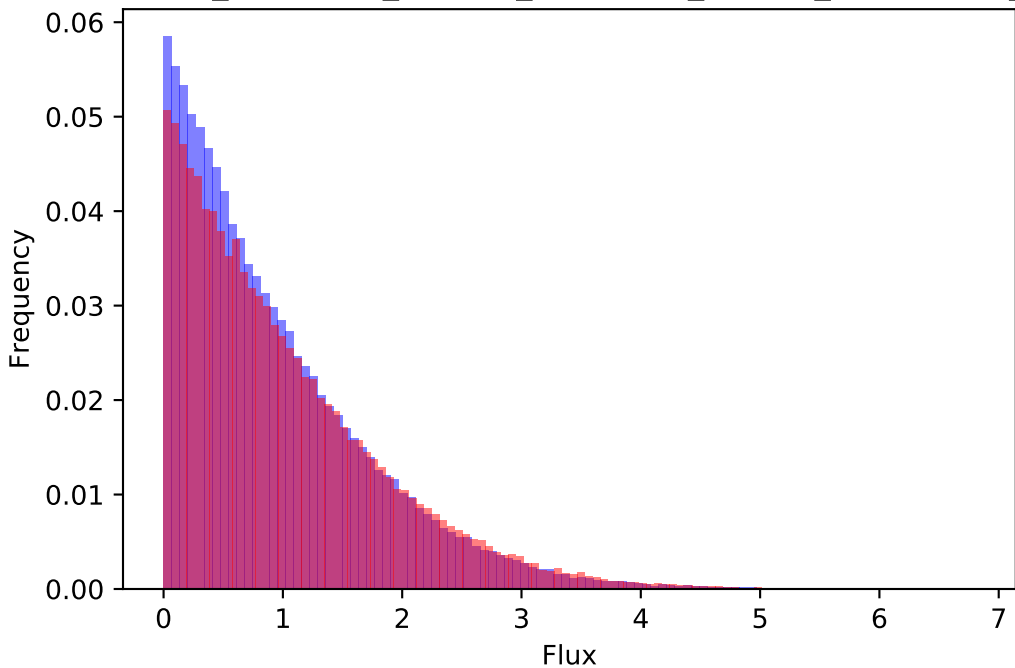
****122 : H2O_h + cACN_h --> iCit_h****



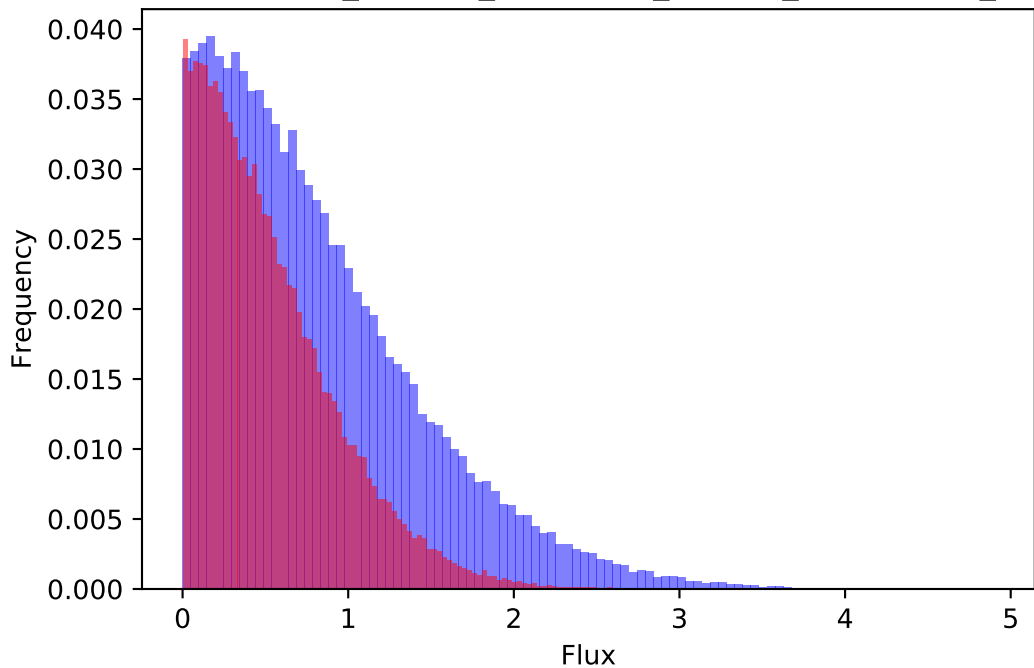
****123 : H_c + NAD_c + iCit_c --> CO2_c + KG_c + NADH_c****



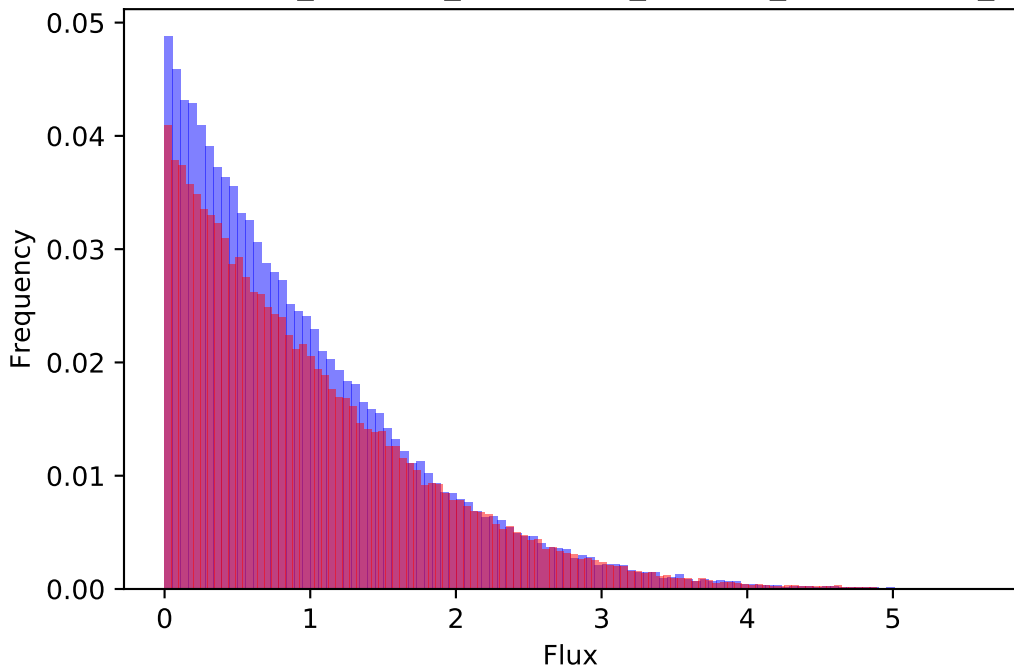
****124 : H_c + NADP_c + iCit_c --> CO2_c + KG_c + NADPH_c****



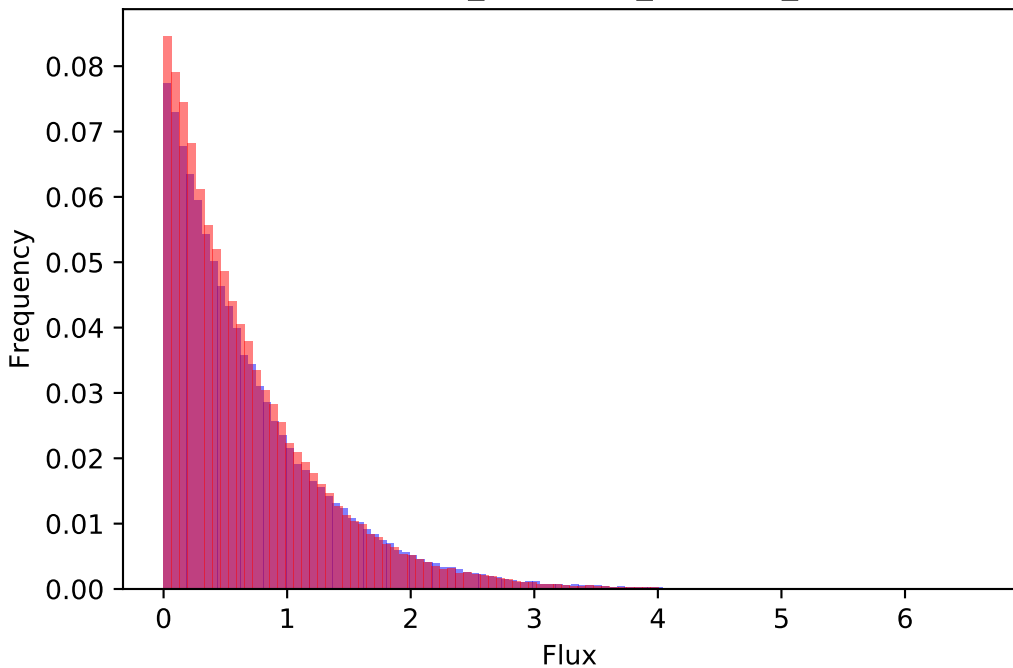
****125 : NADP_h + iCit_h --> CO2_h + KG_h + NADPH_h****



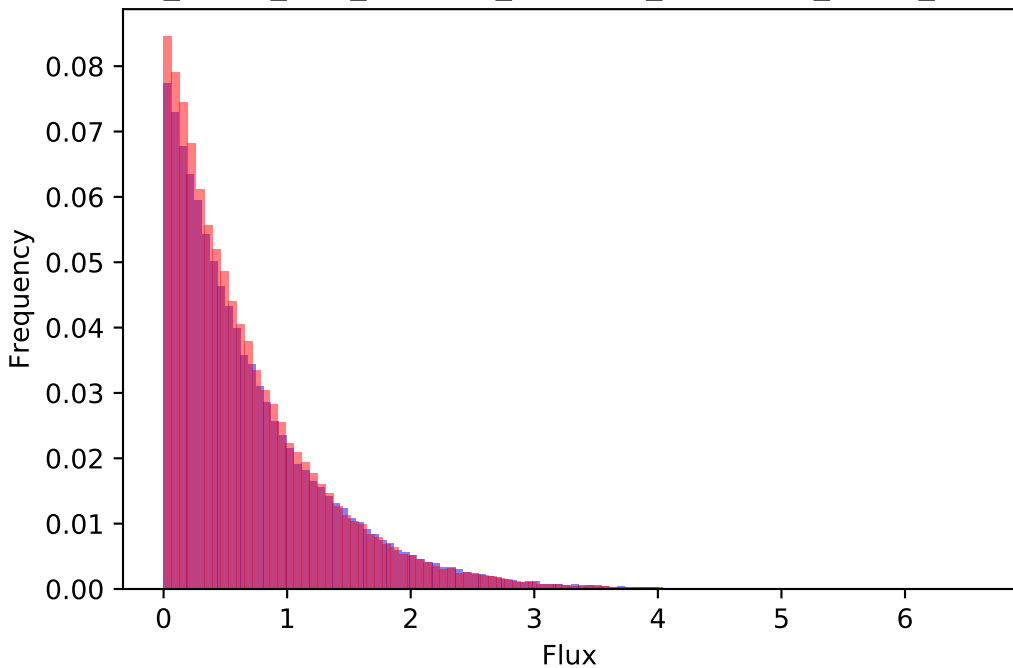
****126 : NADP_m + iCit_m --> CO2_m + KG_m + NADPH_m****



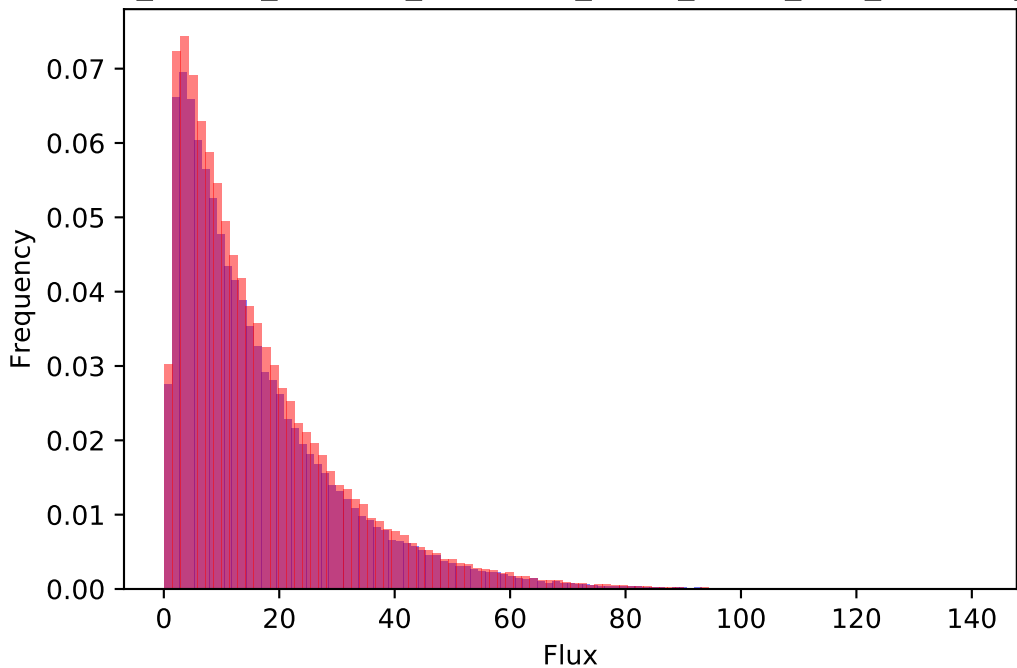
****127 : iCit_c --> GLX_c + SCA_c****



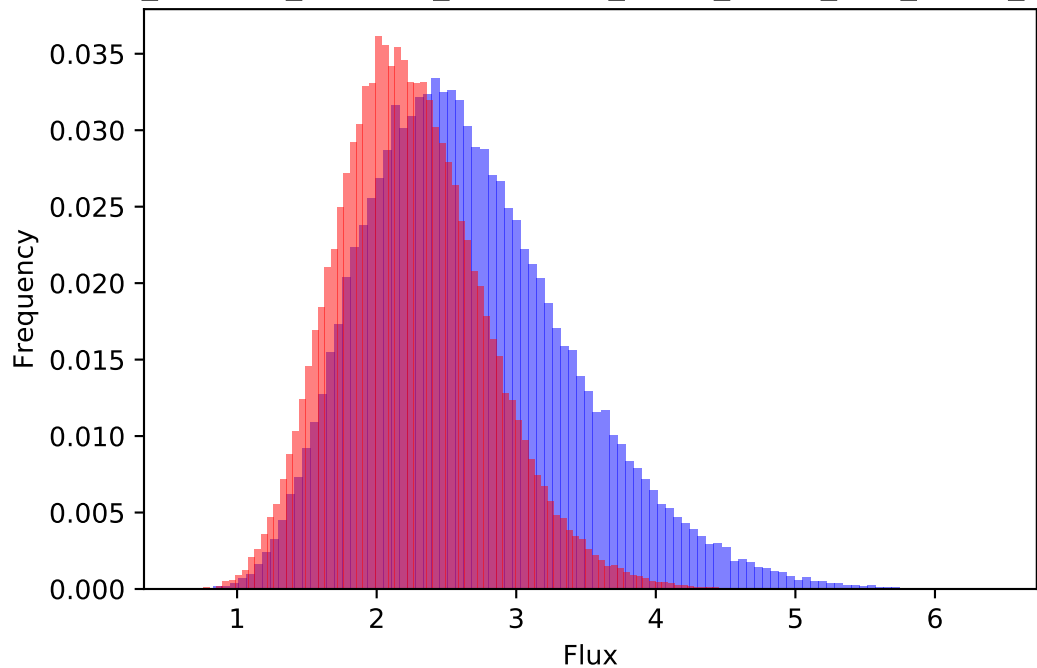
****128 : A_DASH_CoA_c + GLX_c + H2O_c --> CoA_c + H_c + Mal_c****



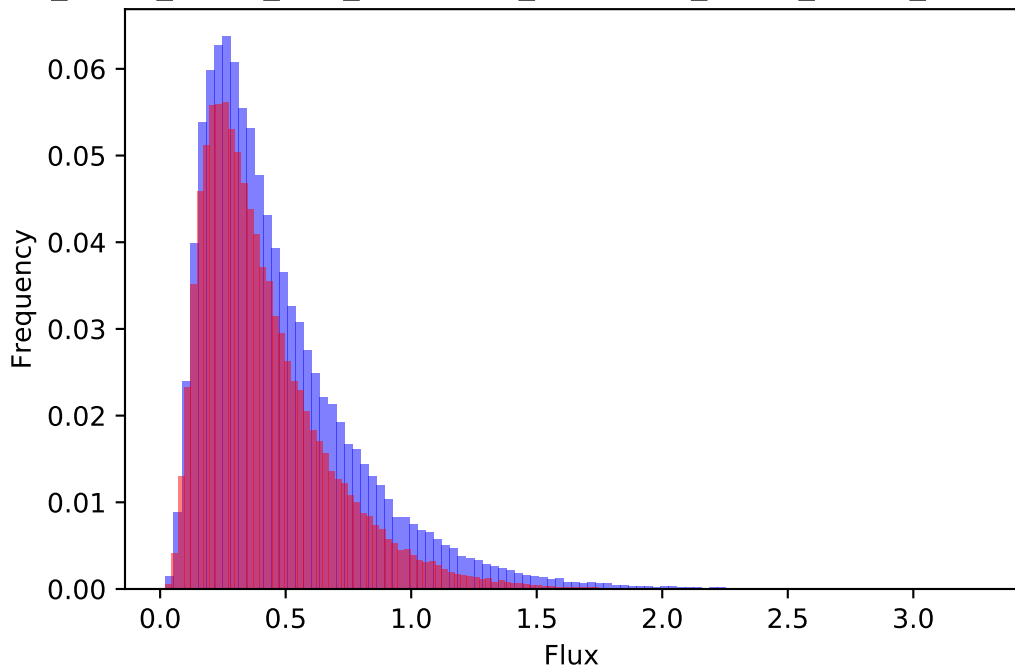
F129 : $\text{ATP_c} + \text{Cit_c} + \text{CoA_c} \rightarrow \text{ADP_c} + \text{A_DASH_CoA_c} + \text{OAA_c} + \text{Pi_c}$



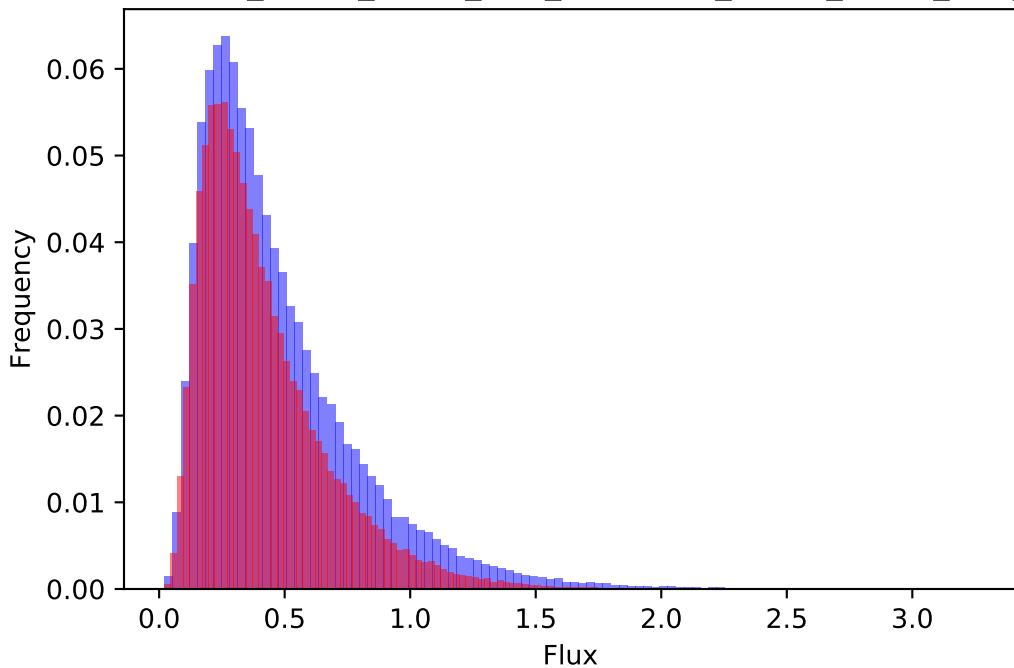
130 : AC_h + ATP_h + CoA_h --> AMP_h + A_DASH_CoA_h + H_h + PPi_h



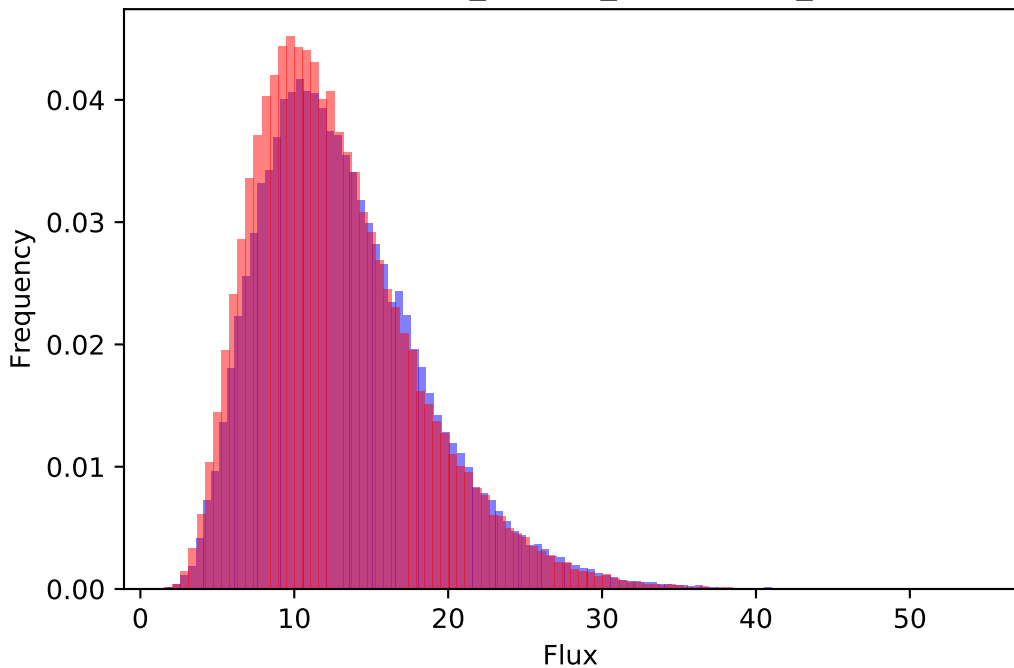
ATP_h + A_DASH_CoA_h + HCO3_h --> ADP_h + H_h + M_DASH_CoA_h



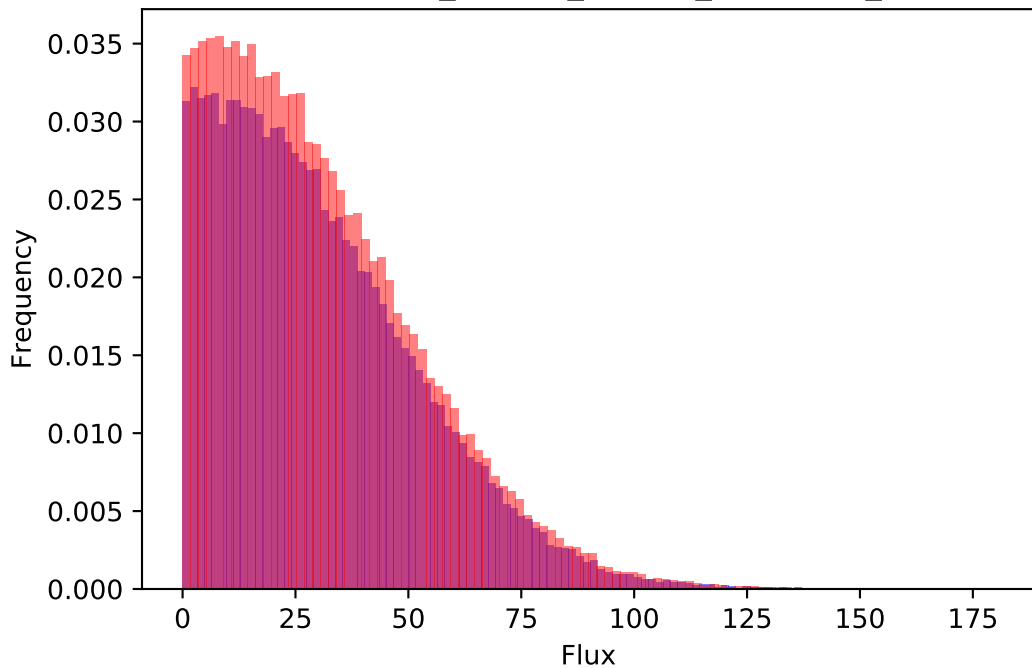
****132 : ACP_h + M_DASH_CoA_h --> CoA_h + M_DASH_ACP_h****



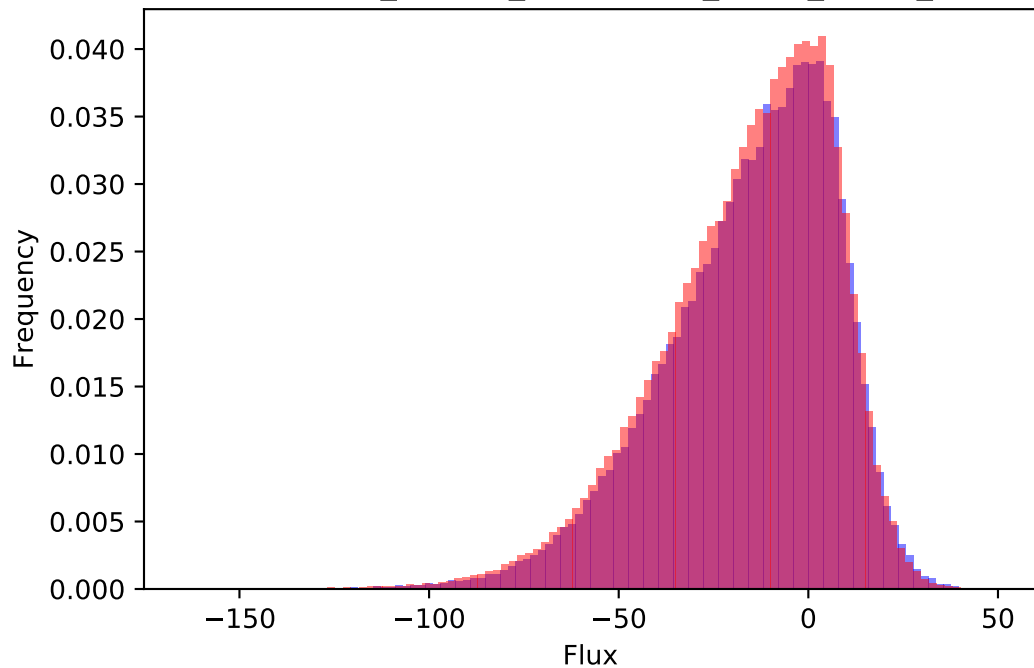
****133 : H2O_h + PPI_h --> 2.0 Pi_h****



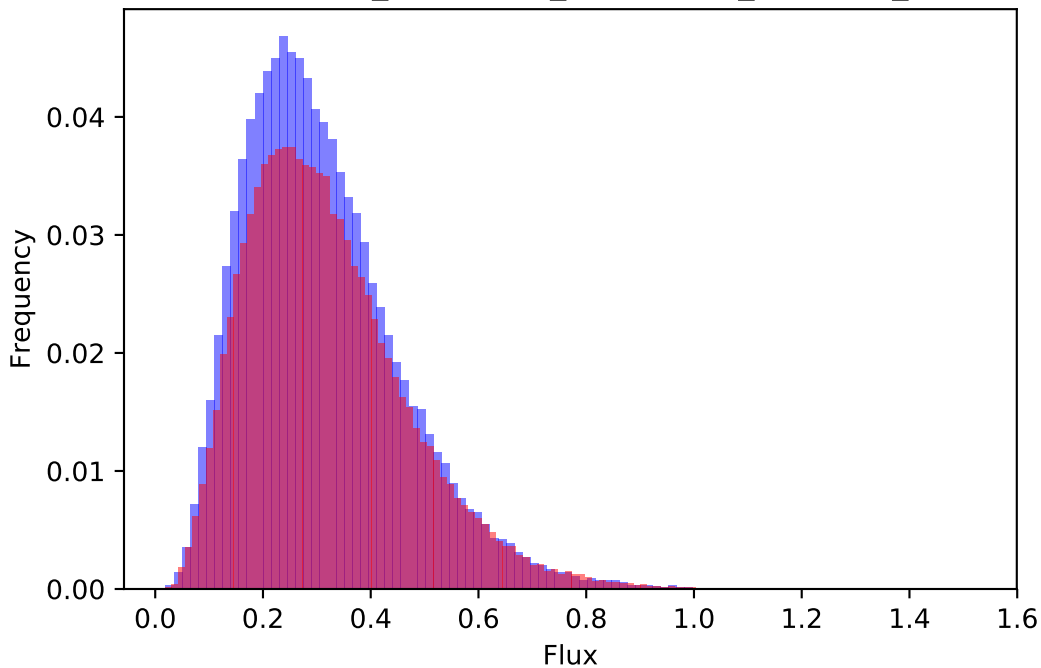
134 : H₂O_c + P*Pi*_c --> H_c + 2.0 *Pi*_c



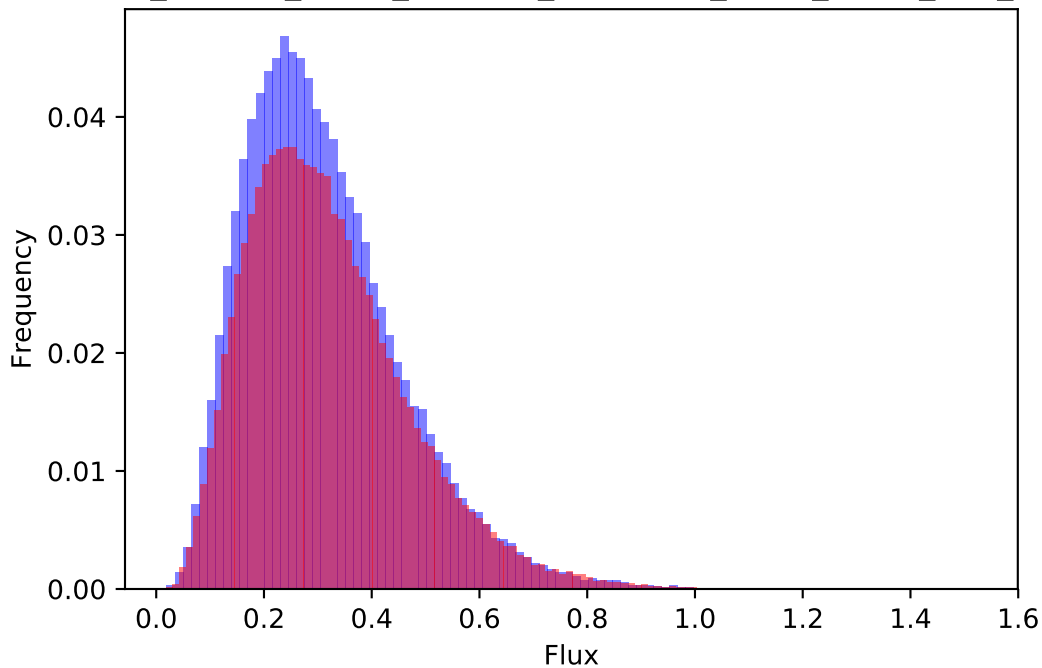
****135 : F6P_c + PPI_c <=> FBP_c + H_c + Pi_c****



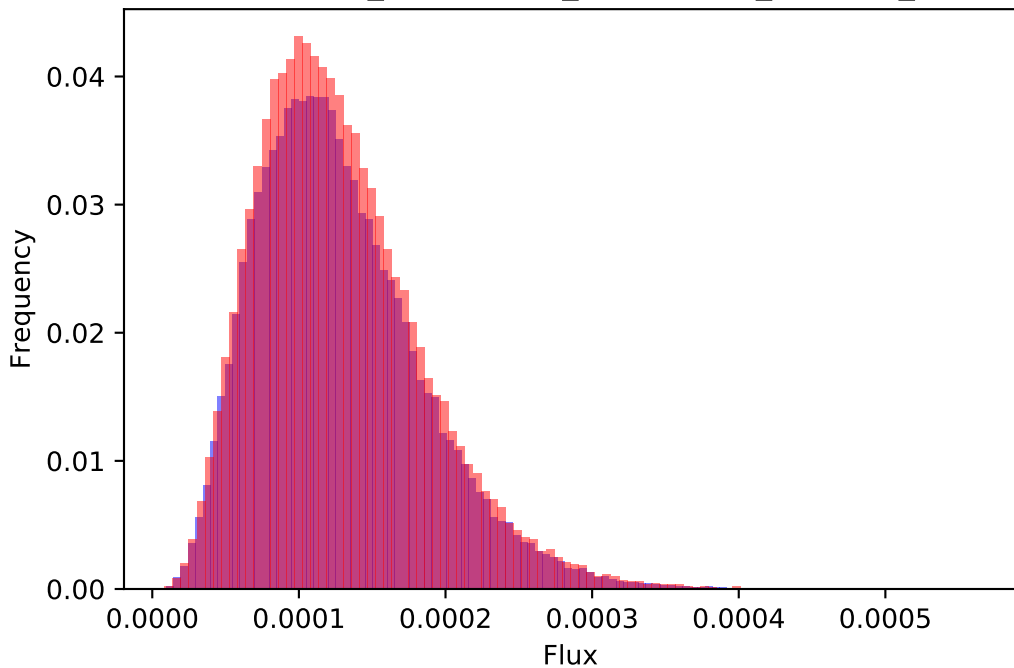
****136 : CO2_h + NADH_h <=> For_h + NAD_h****



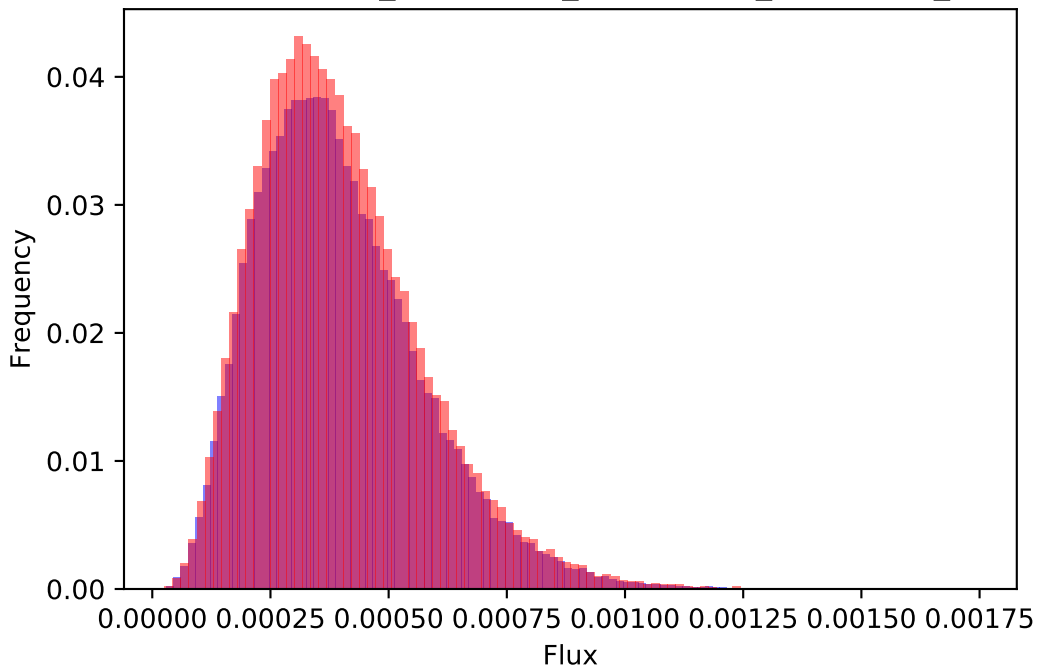
*137 : $\text{ATP_h} + \text{For_h} + \text{H_h} + \text{THF_h} \rightarrow \text{ADP_h} + \text{F_DASH_THF_h} + \text{Pi_h}$



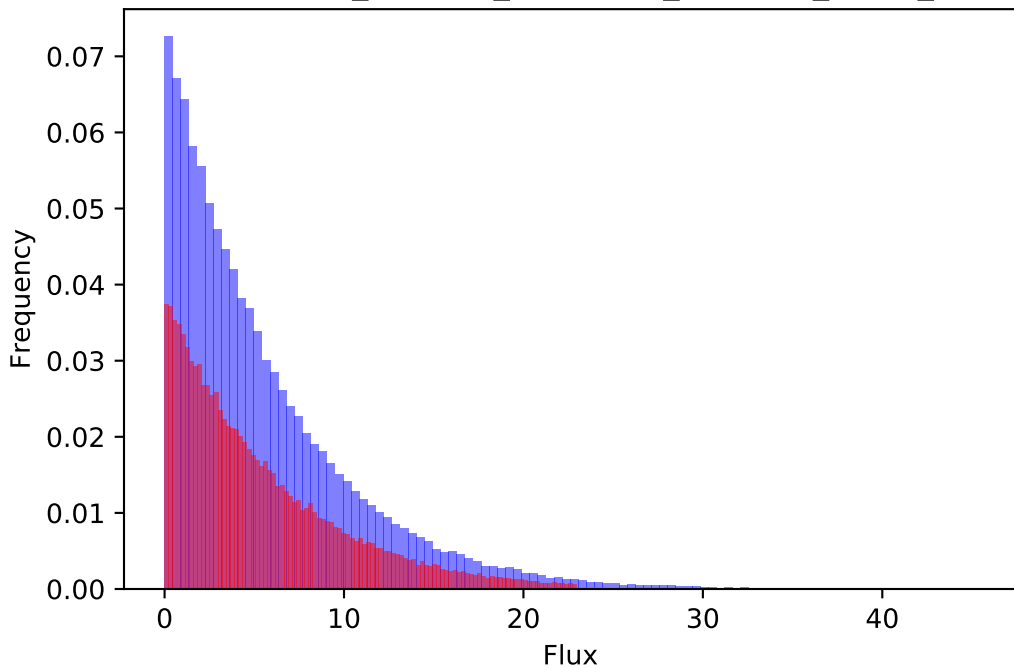
138 : DHF_c + NADPH_c --> NADP_c + THF_c



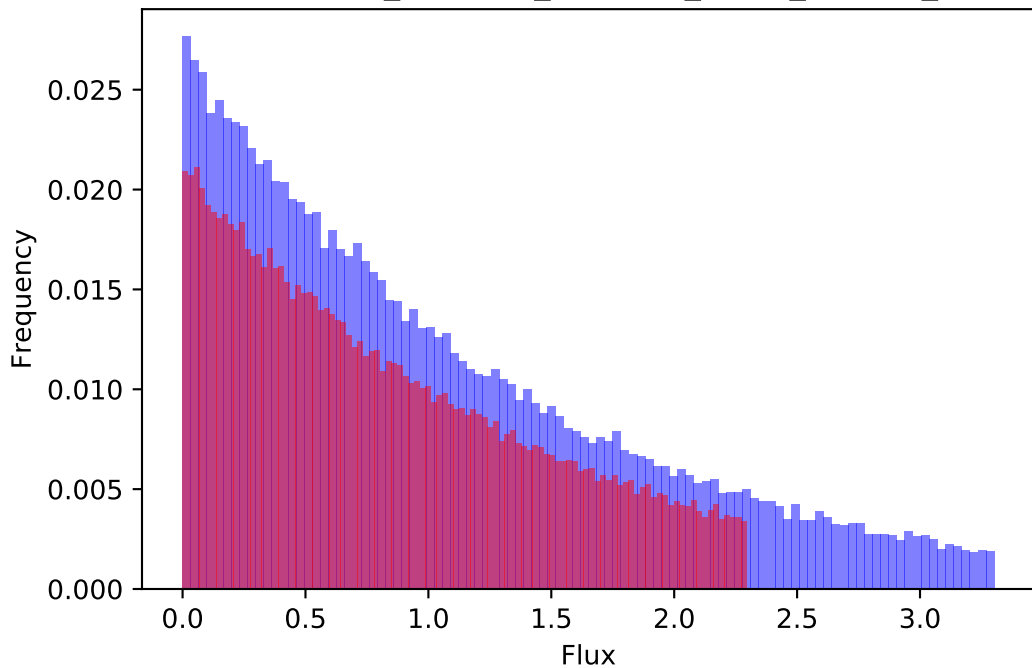
139 : NADPH_c + TRXox_c --> NADP_c + TRXrd_c



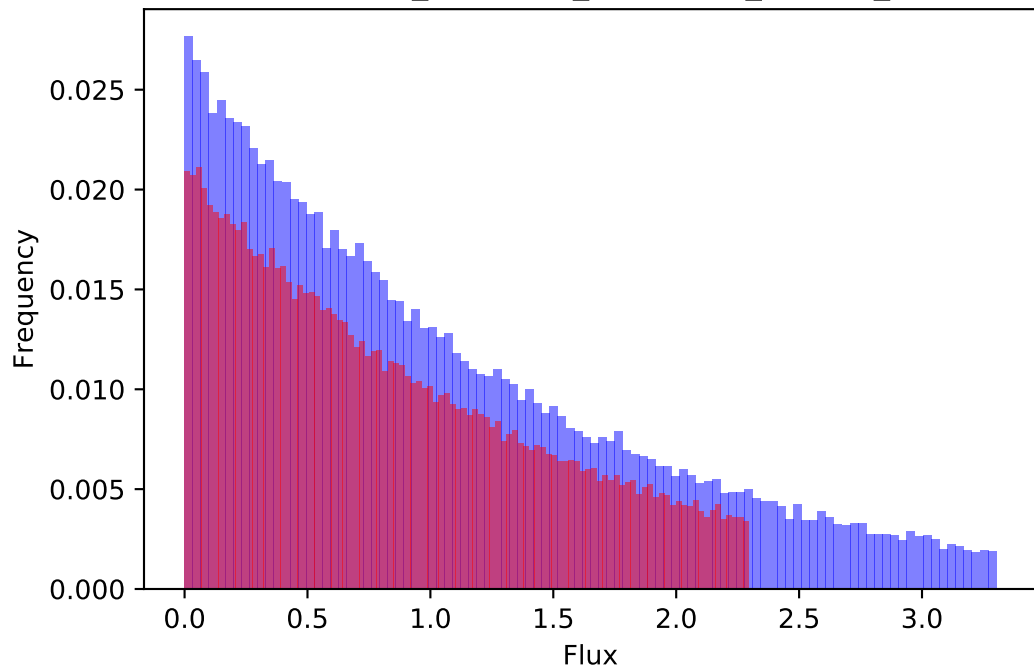
****140 : ADN_c + ATP_c --> ADP_c + AMP_c + H_c****



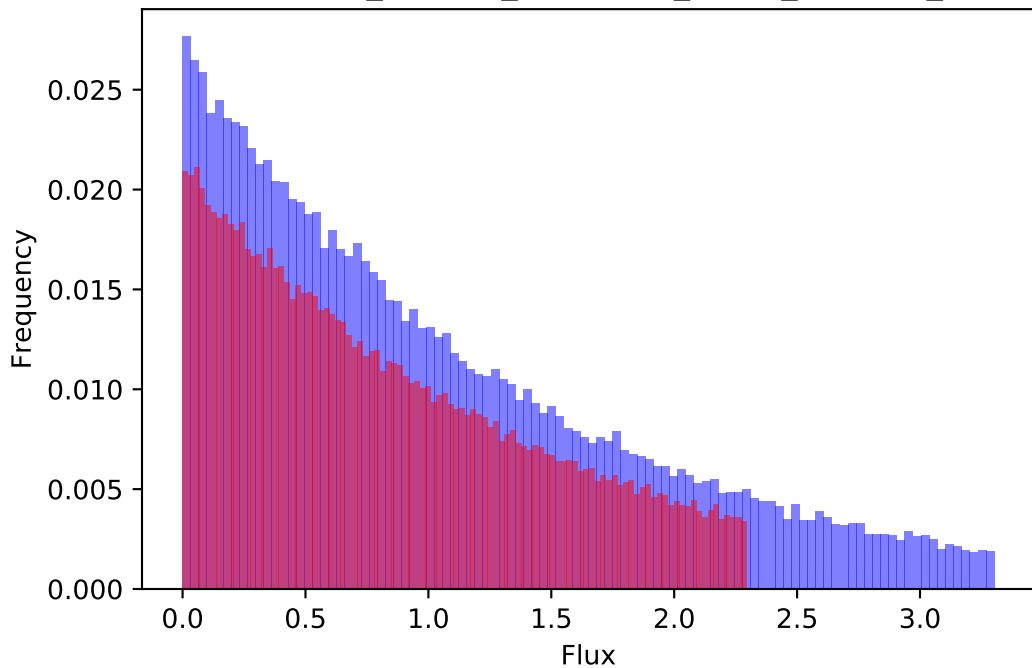
****141 : ADN_c + H2O_c --> AD_c + H_c + Rib_c****



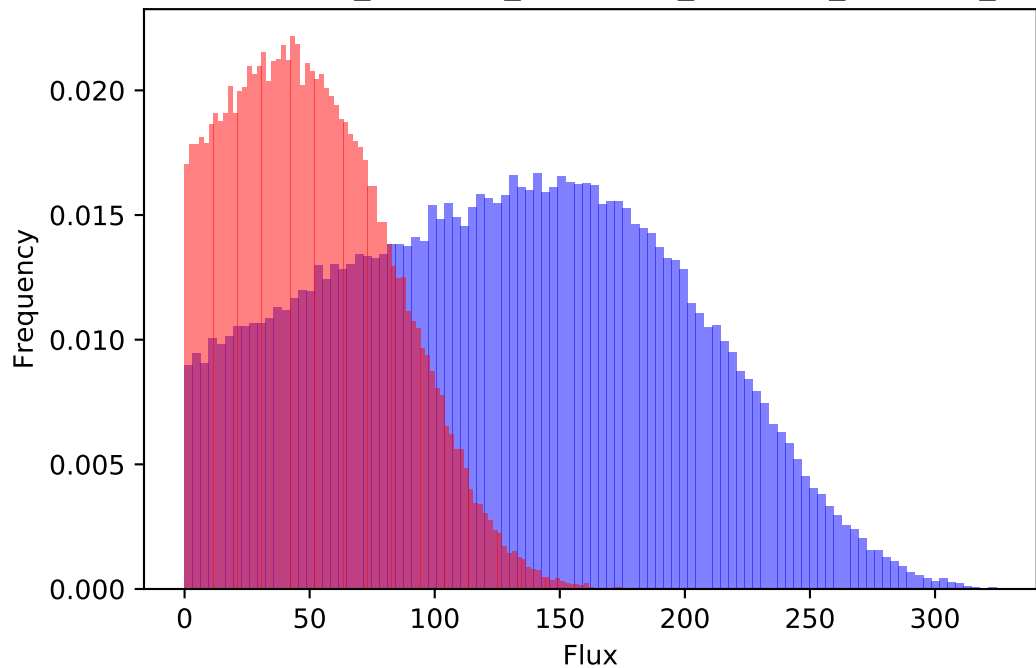
****142 : AD_c + PRPP_c --> AMP_c + PPi_c****



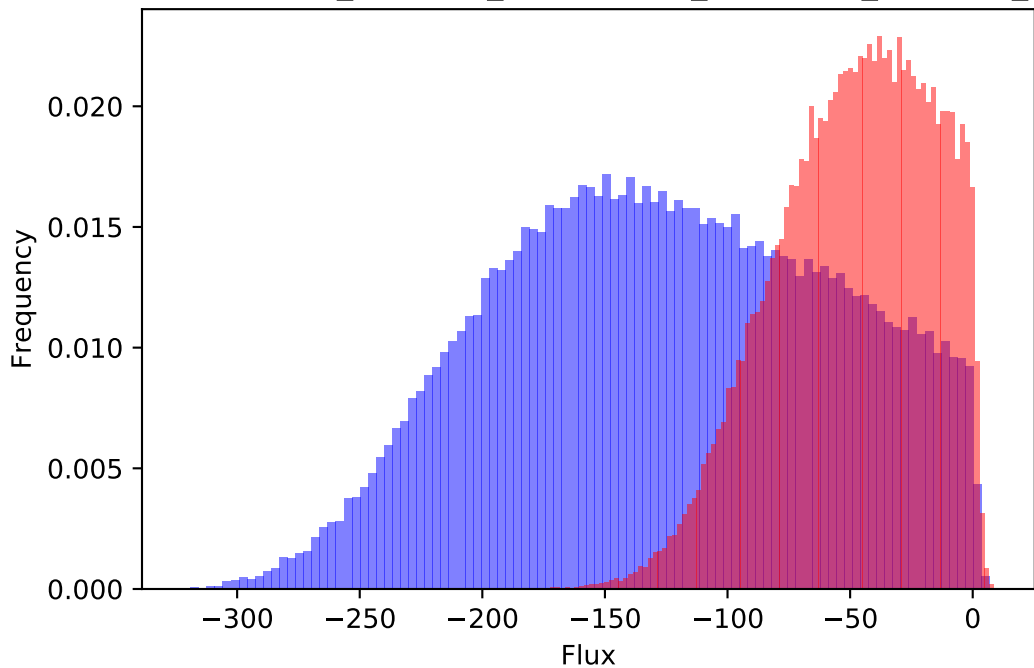
****143 : ATP_h + Rib_h --> ADP_h + H_h + R5P_h****



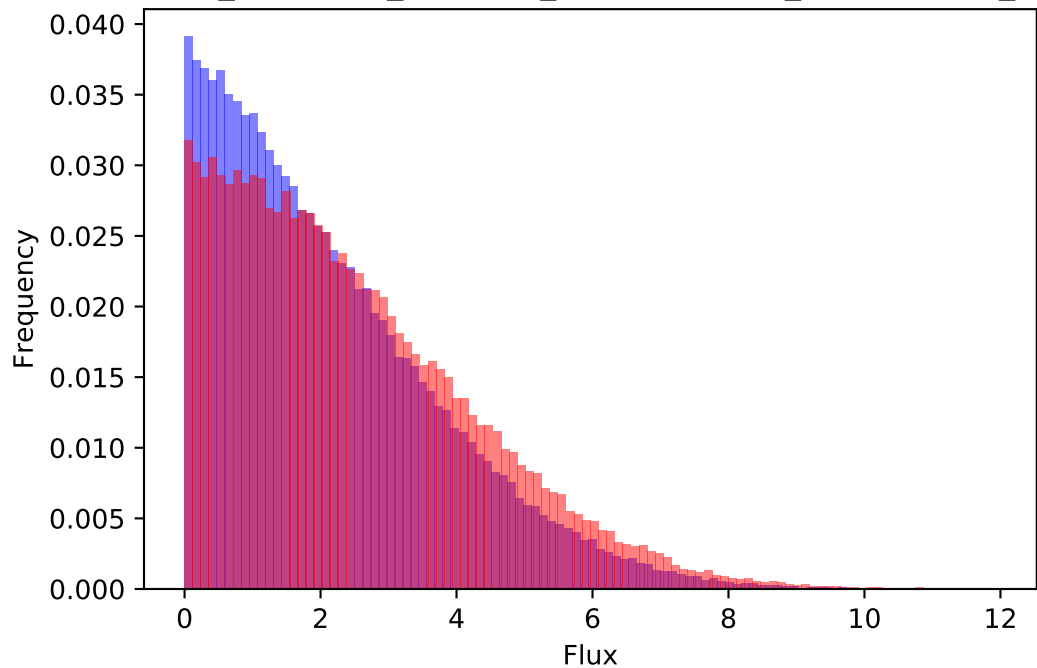
****144 : NADH_c + NO3_c --> H2O_c + NAD_c + NO2_c****



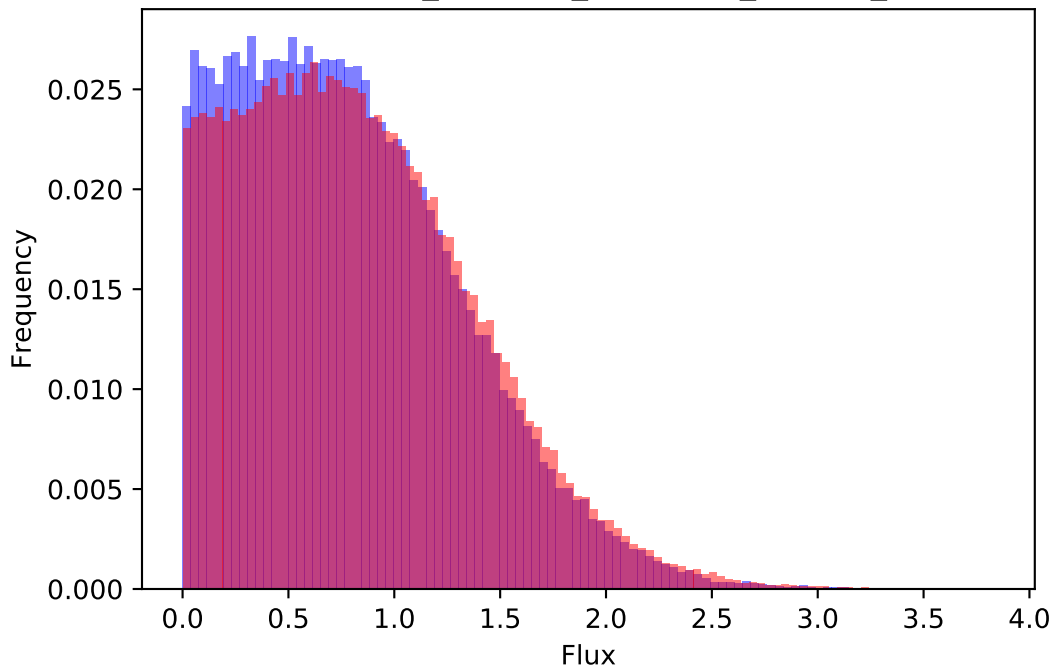
****145 : $\text{NADPH}_c + \text{NO3}_c \rightleftharpoons \text{H2O}_c + \text{NADP}_c + \text{NO2}_c$ ****



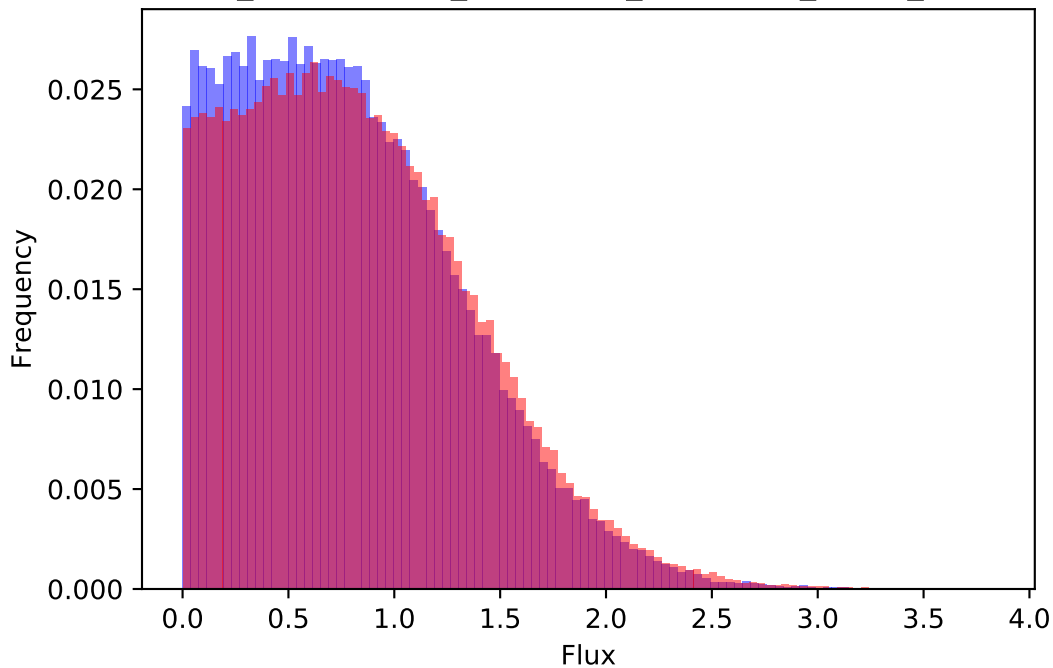
146 : 6.0 Fdrd_h + 8.0 H_h + NO2_h --> 6.0 Fdox_h + 2.0 H2O_h + NH4.



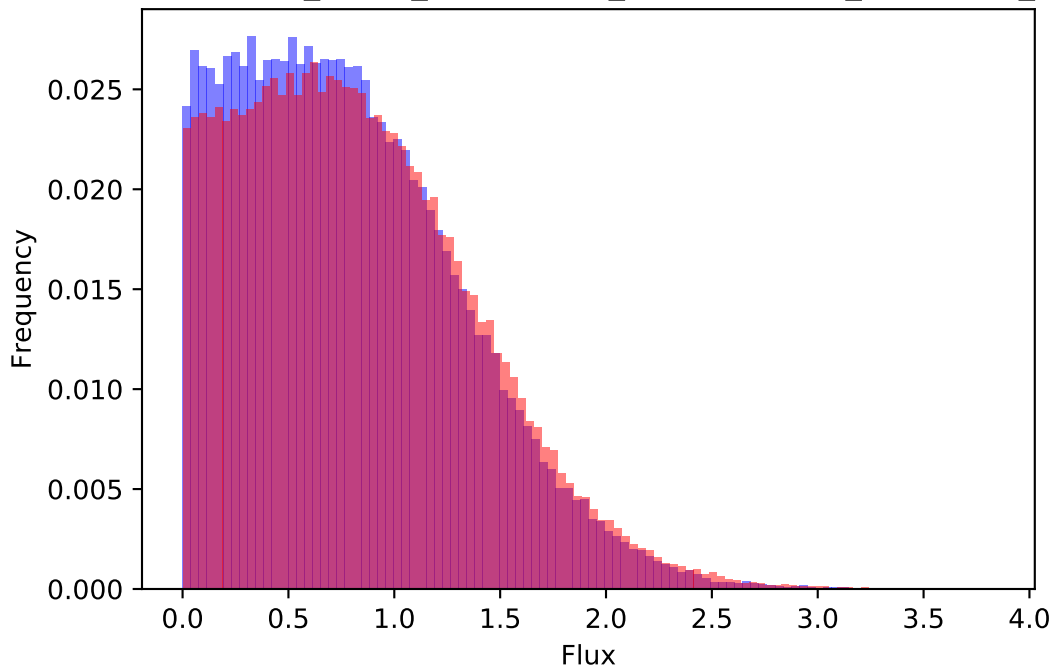
****147 : ATP_h + SO4_h --> APS_h + PPI_h****



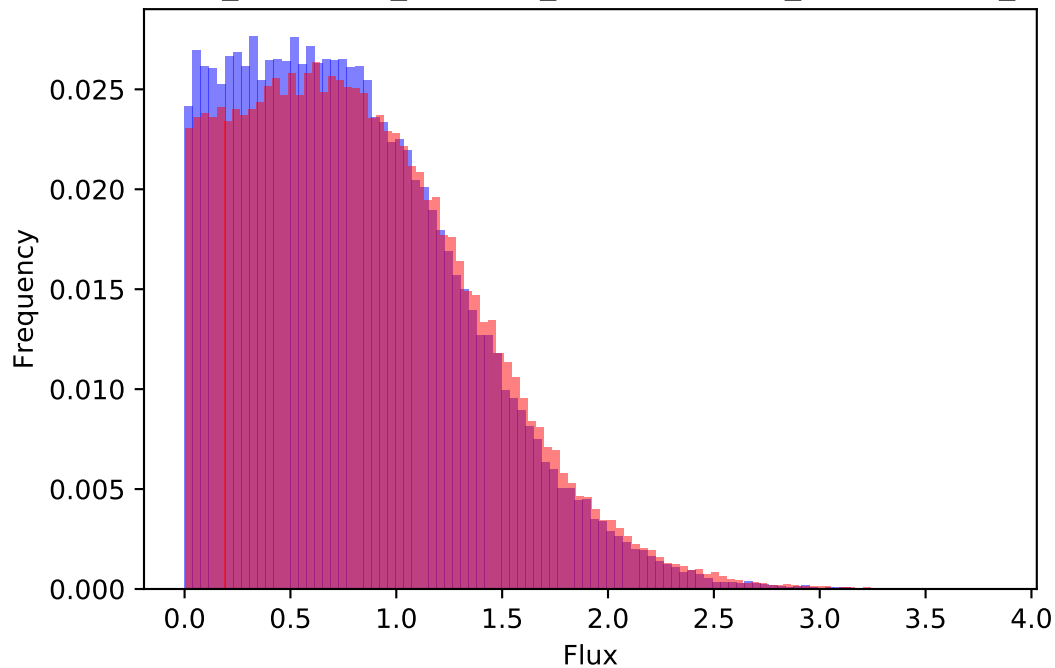
****148 : APS_h + 2.0 GSH_h --> AMP_h + GSSG_h + H_h + SO3_h****



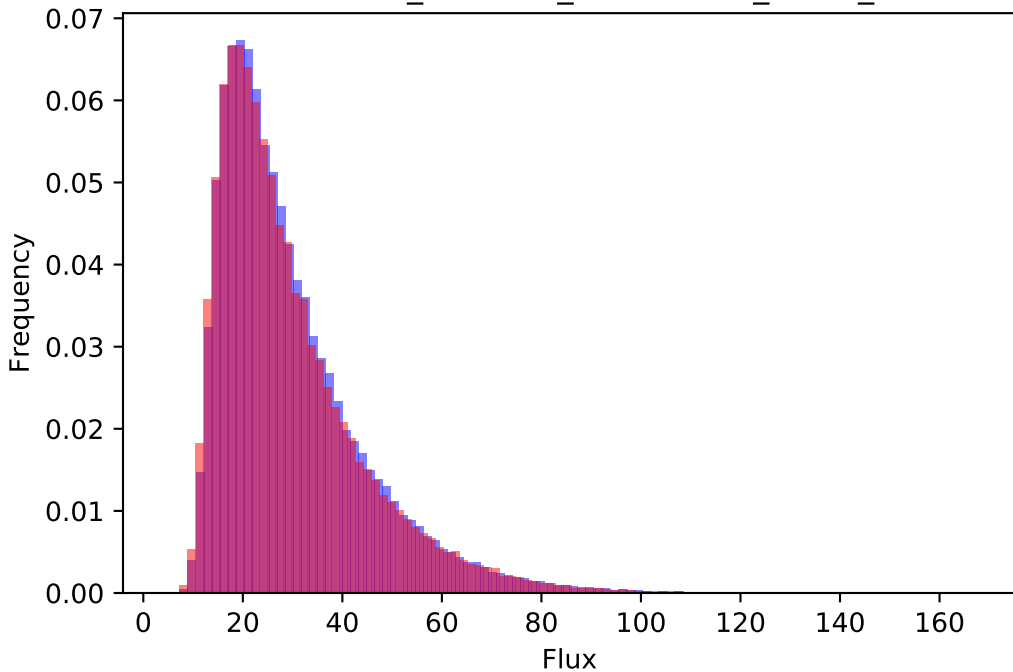
****149 : GSSG_h + H_h + NADPH_h --> 2.0 GSH_h + NADP_h****



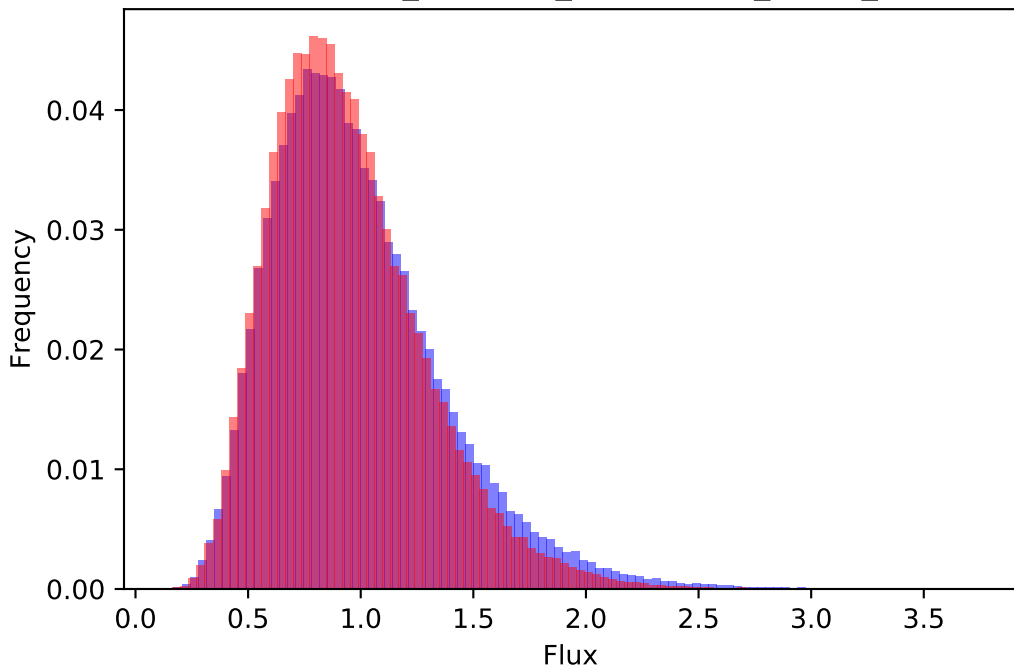
150 : 3.0 Fdrd_h + 7.0 H_h + SO3_h --> 3.0 Fdox_h + 3.0 H2O_h + H2S_h



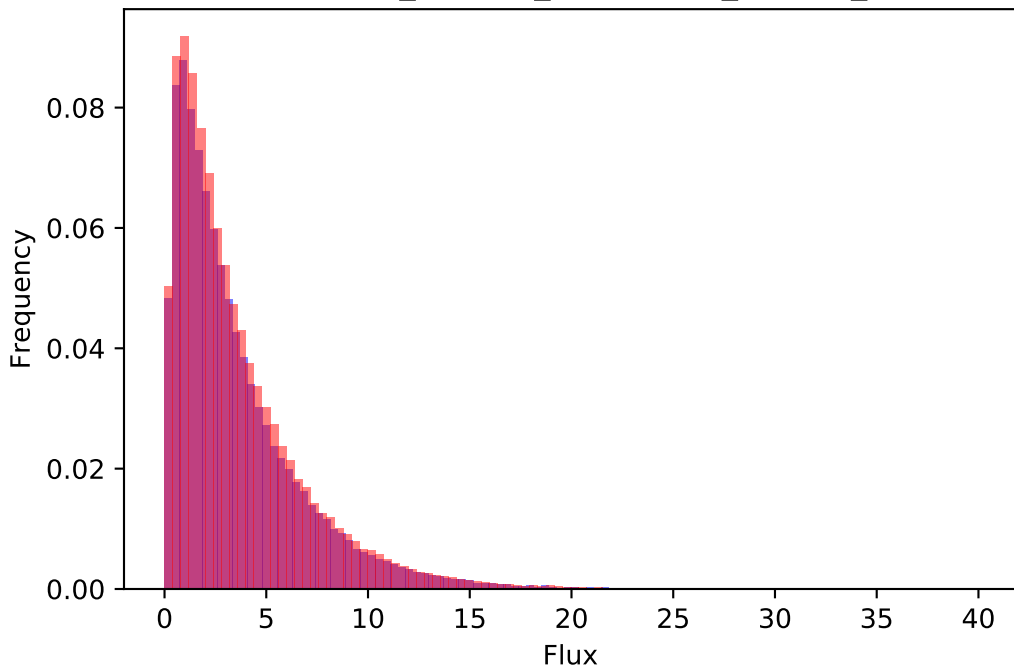
****151 : CO2_c + H2O_c --> HCO3_c + H_c****



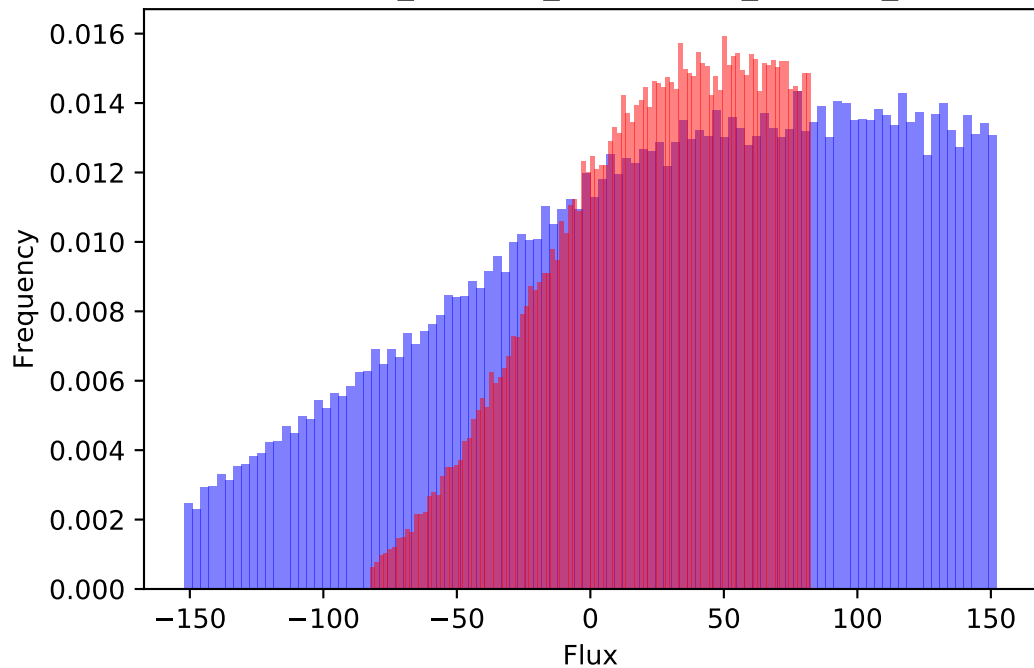
****152 : CO2_h + H2O_h --> HCO3_h + H_h****



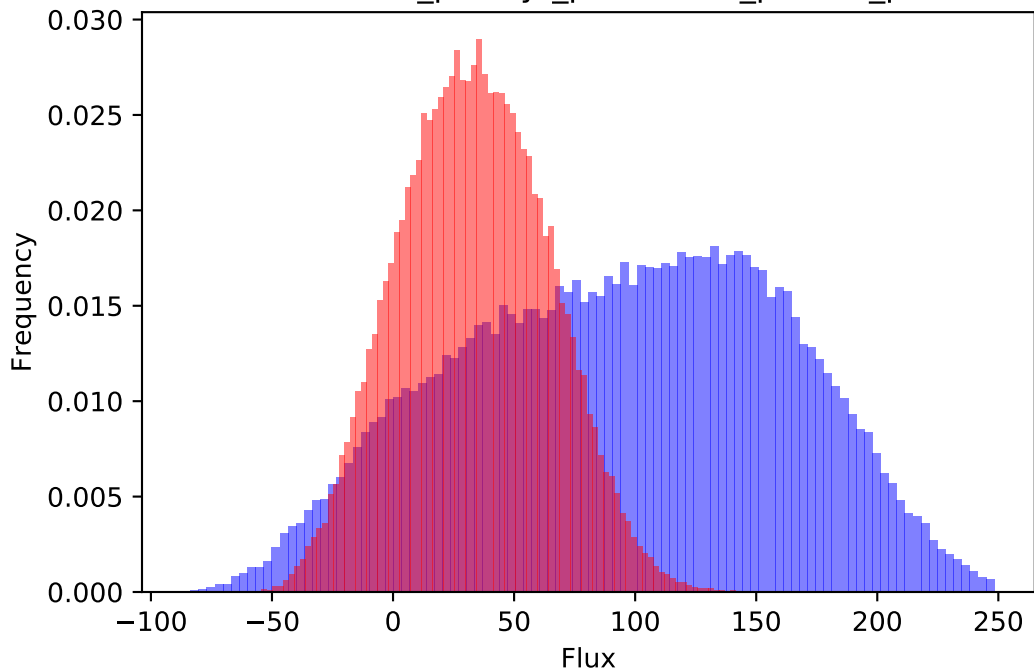
****153 : Glu_h + Pyr_h <=> Ala_h + KG_h****



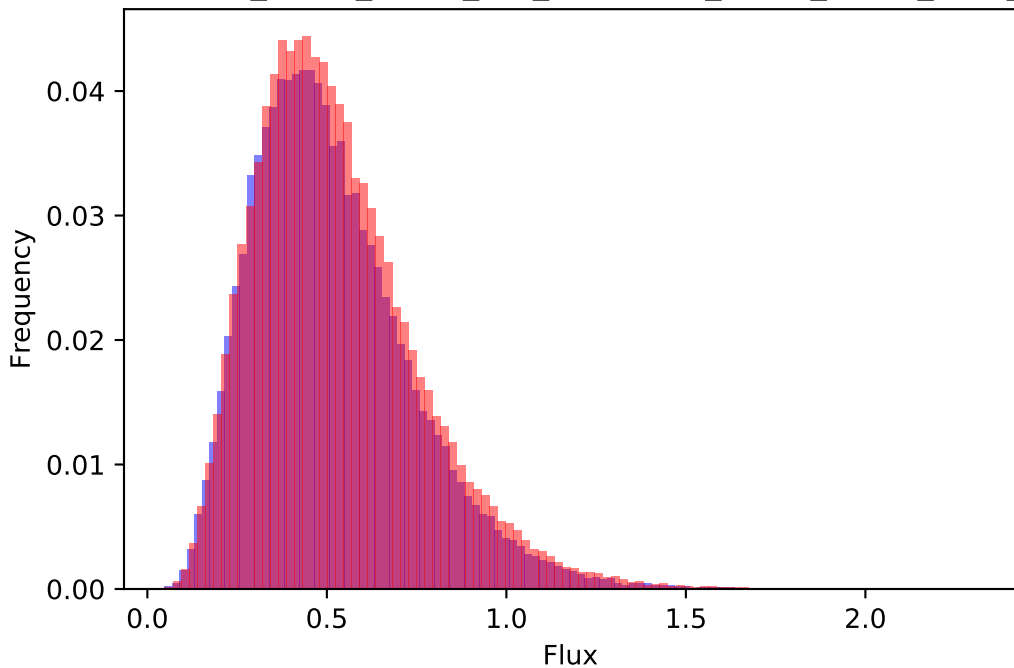
****154 : Glu_m + Pyr_m <=> Ala_m + KG_m****



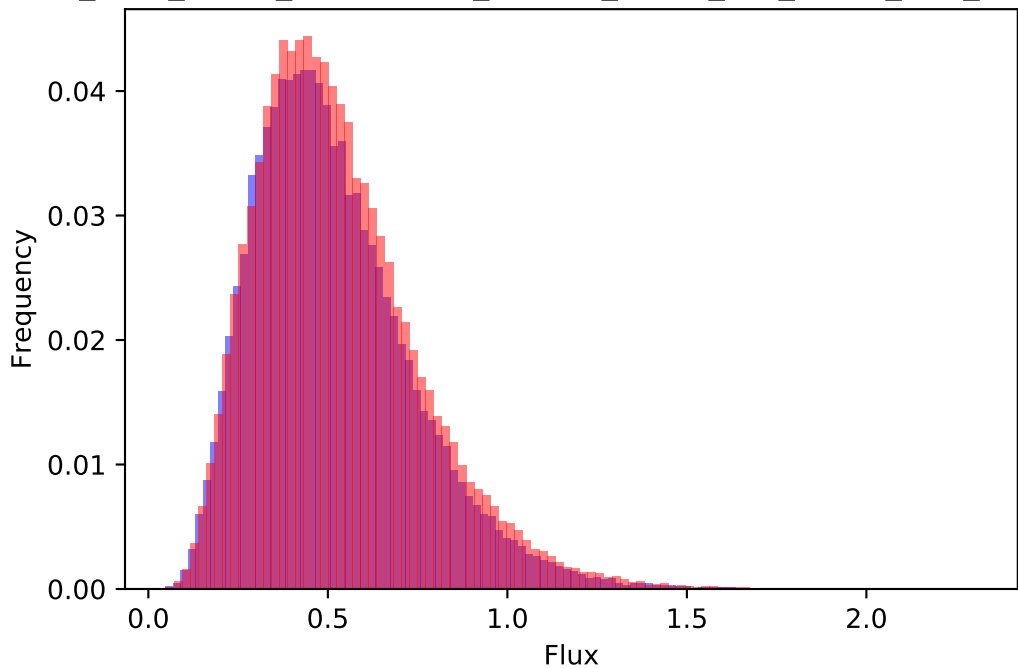
****155 : Glu_p + Pyr_p \rightleftharpoons Ala_p + KG_p****



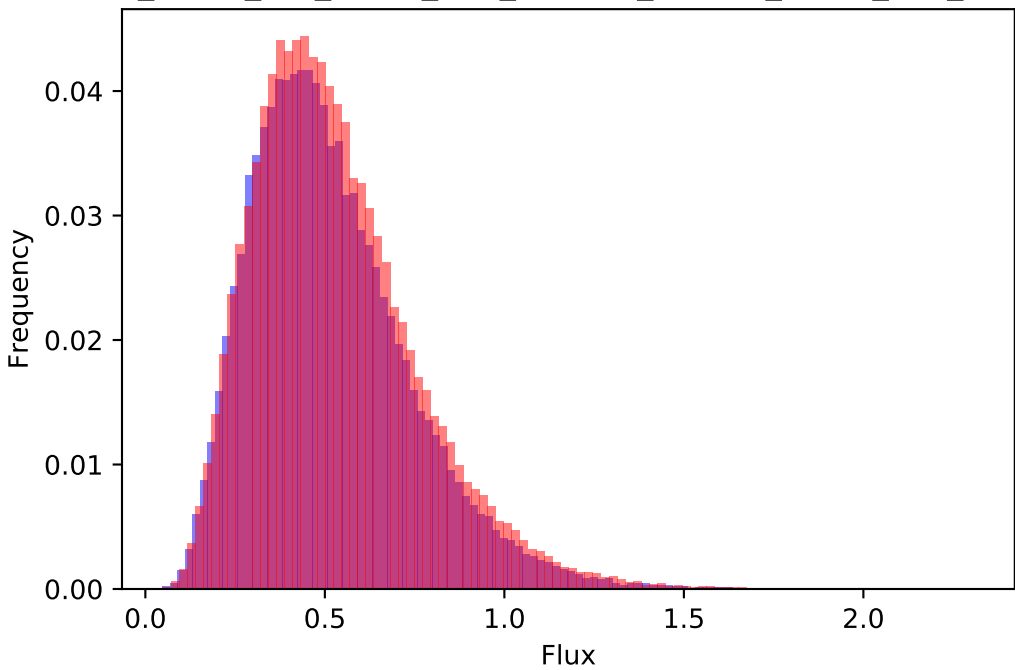
****156 : ATP_h + A_DASH_Glu_h --> ADP_h + A_DASH_GluP_h****



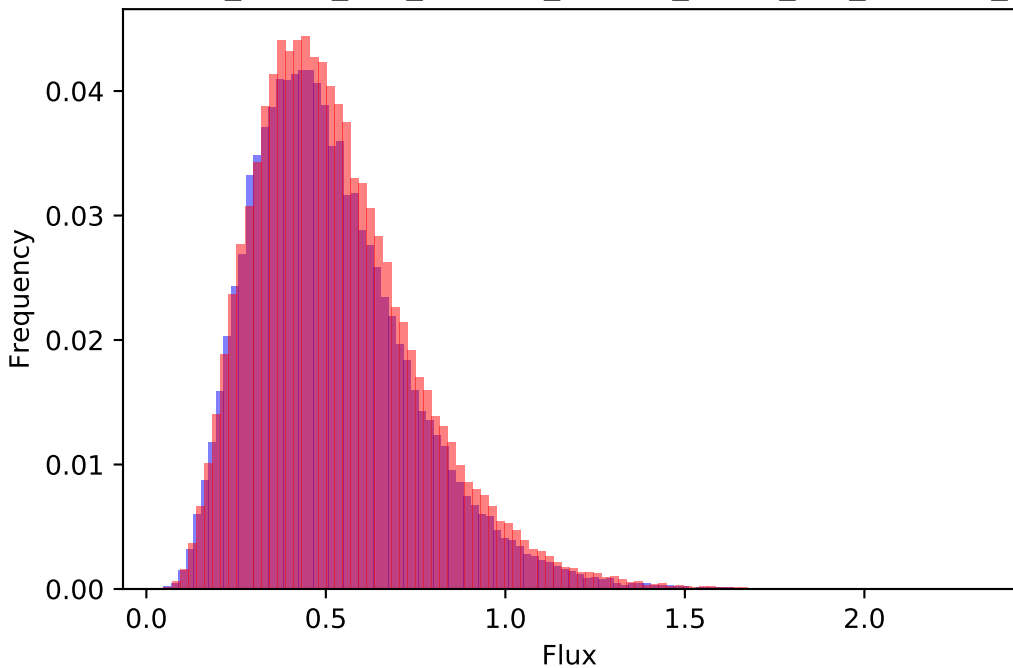
$\text{DASH_GluP_h} + \text{H_h} + \text{NADPH_h} \rightarrow \text{A_DASH_Glu_DASH_SeA_h} + \text{NADP}$



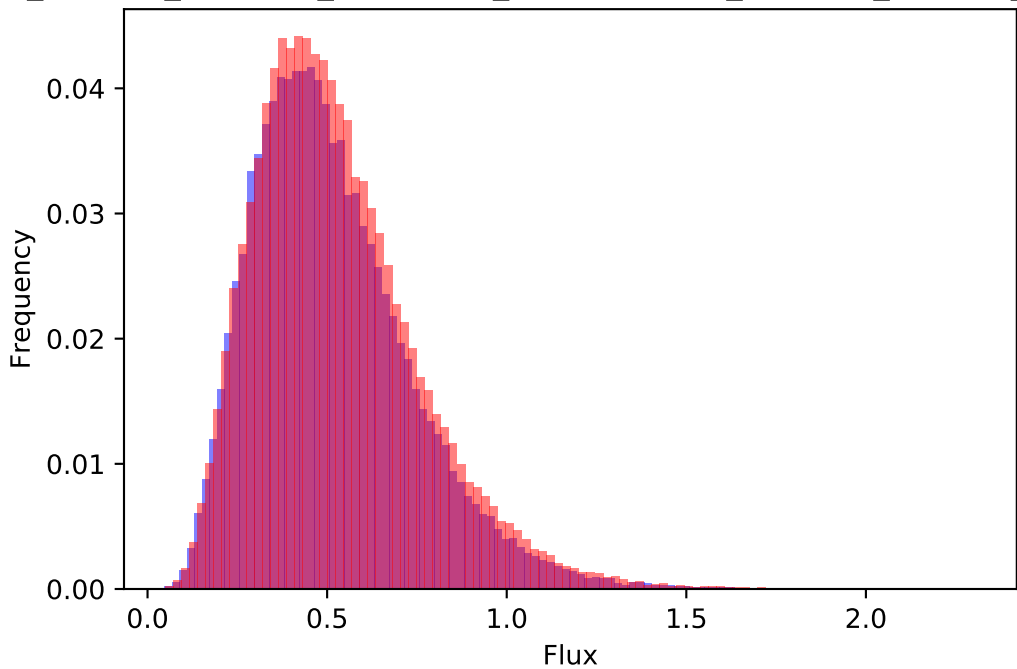
****158 : A_DASH_Glu_DASH_SeA_h + Glu_h --> A_DASH_Orn_h + KG_h***



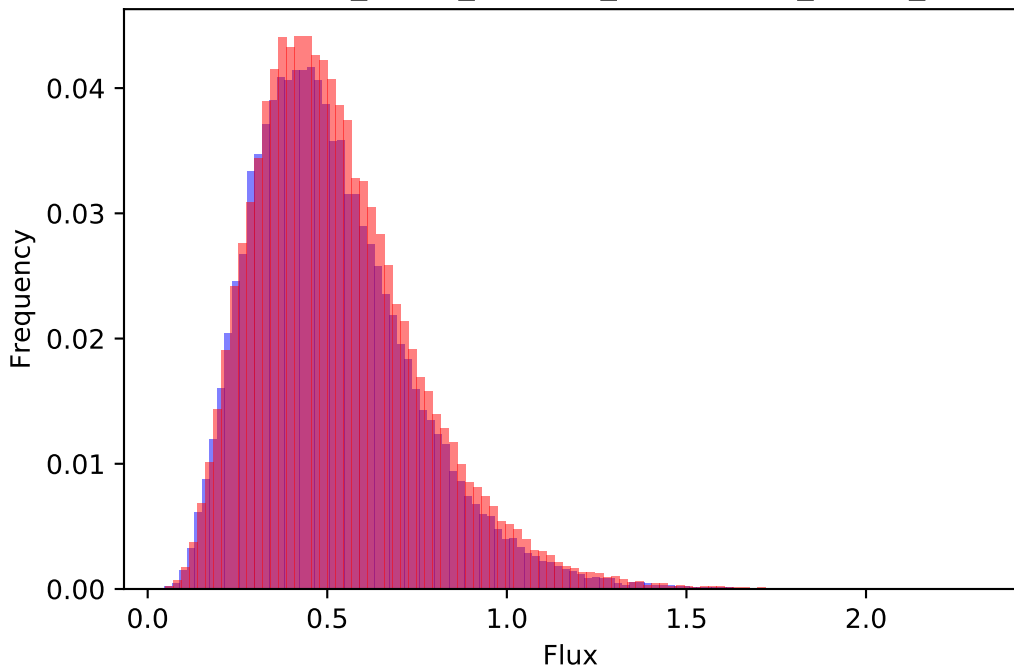
****159 : A_DASH_Orn_h + Glu_h --> A_DASH_Glu_h + Orn_h****



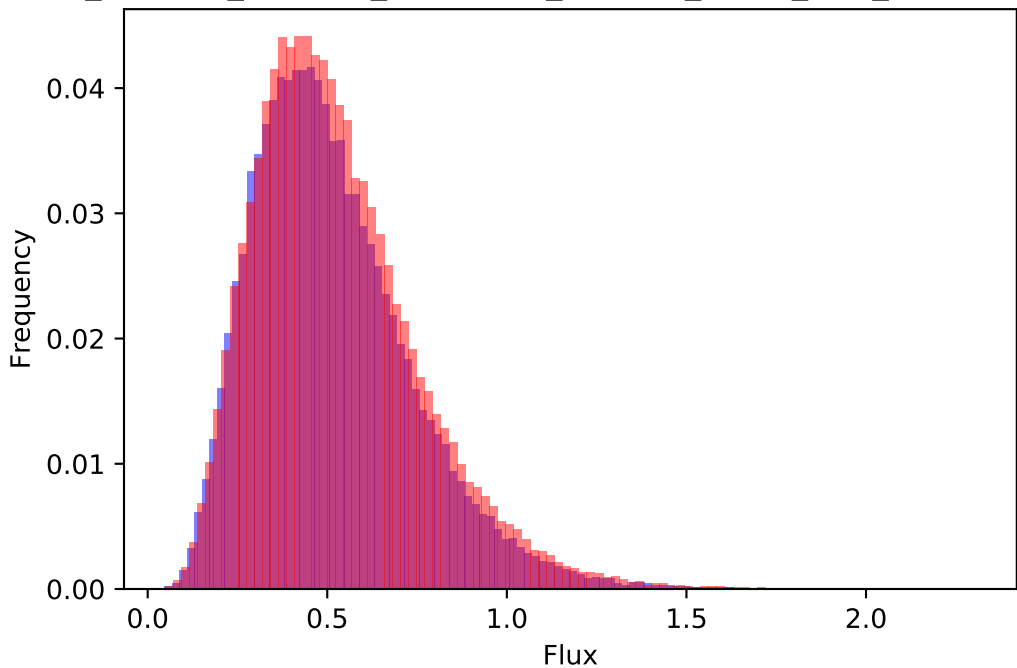
ATP_h + Gln_h + H2O_h + HCO3_h --> 2.0 ADP_h + CBP_h + Glu_h + 3.0



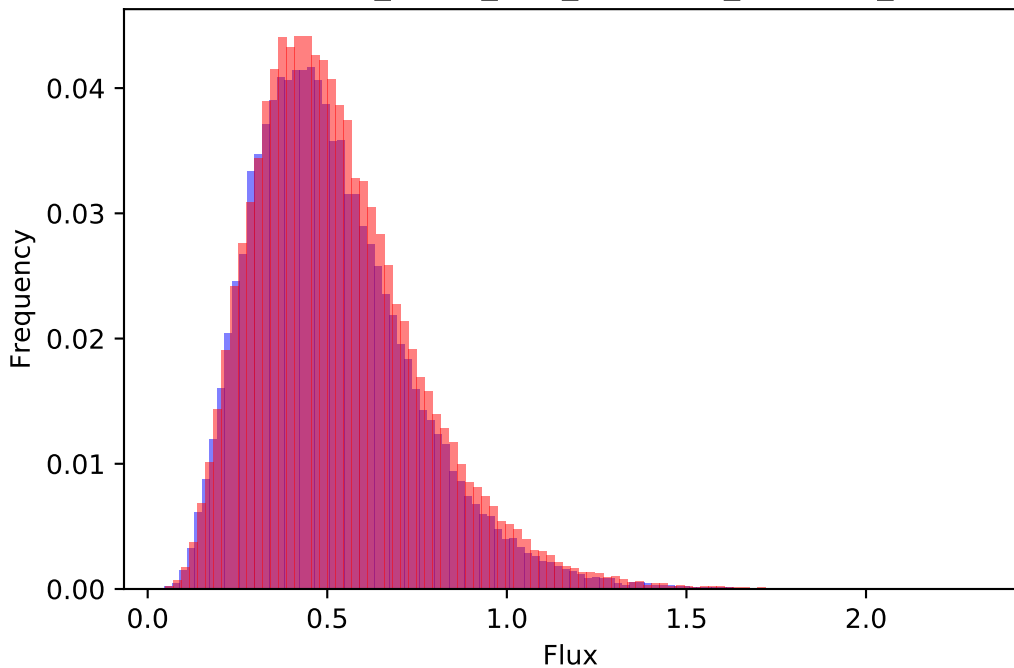
****161 : CBP_h + H_h + Orn_h <=> CTL_h + Pi_h****



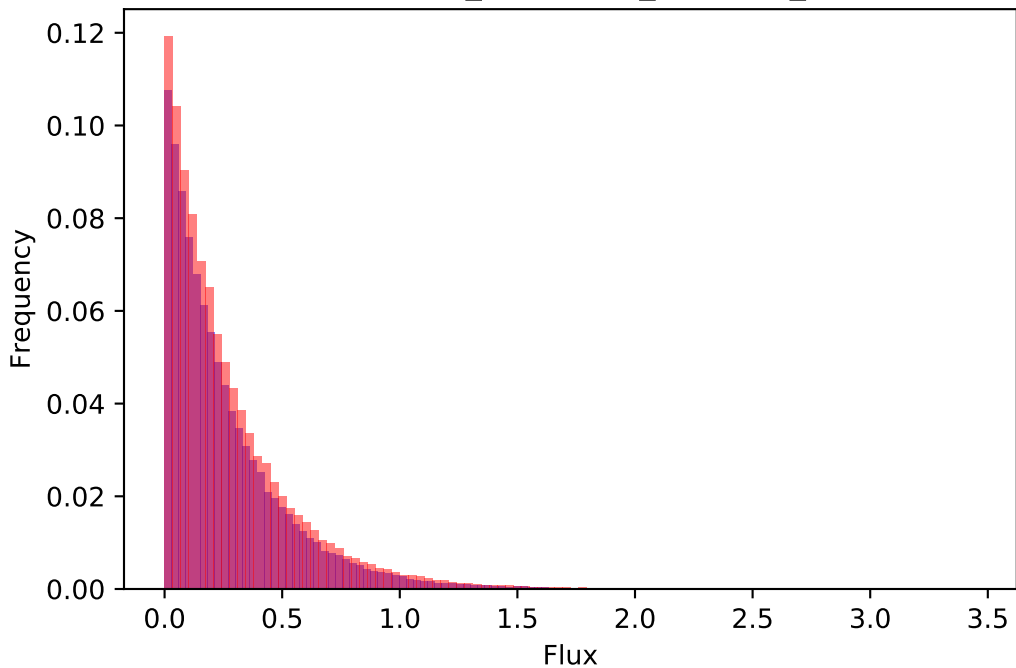
2 : ATP_h + Asp_h + CTL_h --> AMP_h + Arg_DASH_SCA_h + 3.0 H_h + P



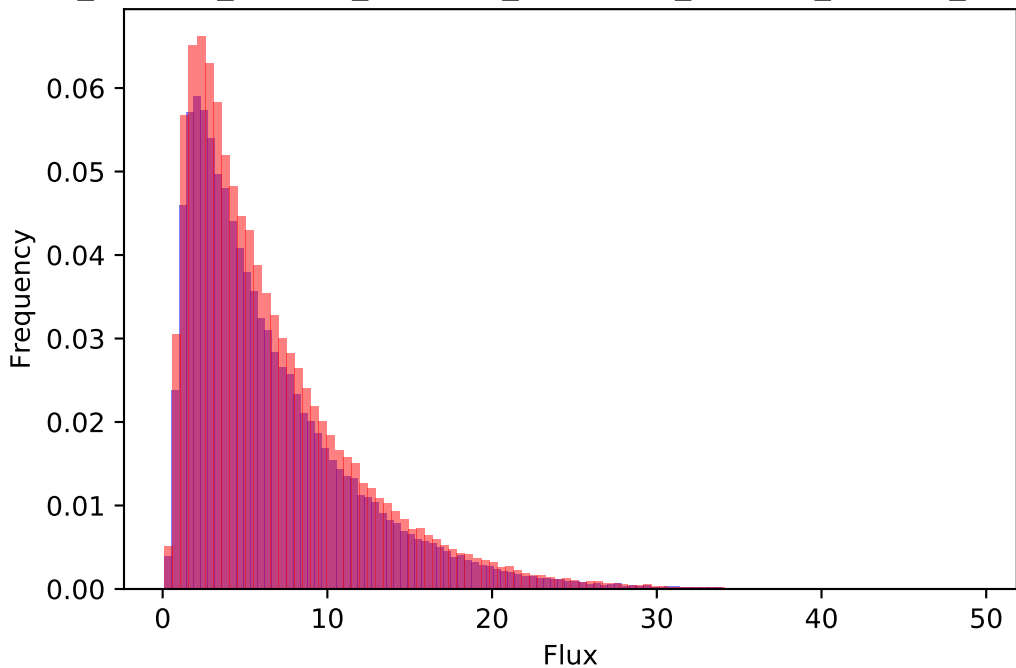
****163 : Arg_DASH_SCA_h --> Arg_h + Fum_h****



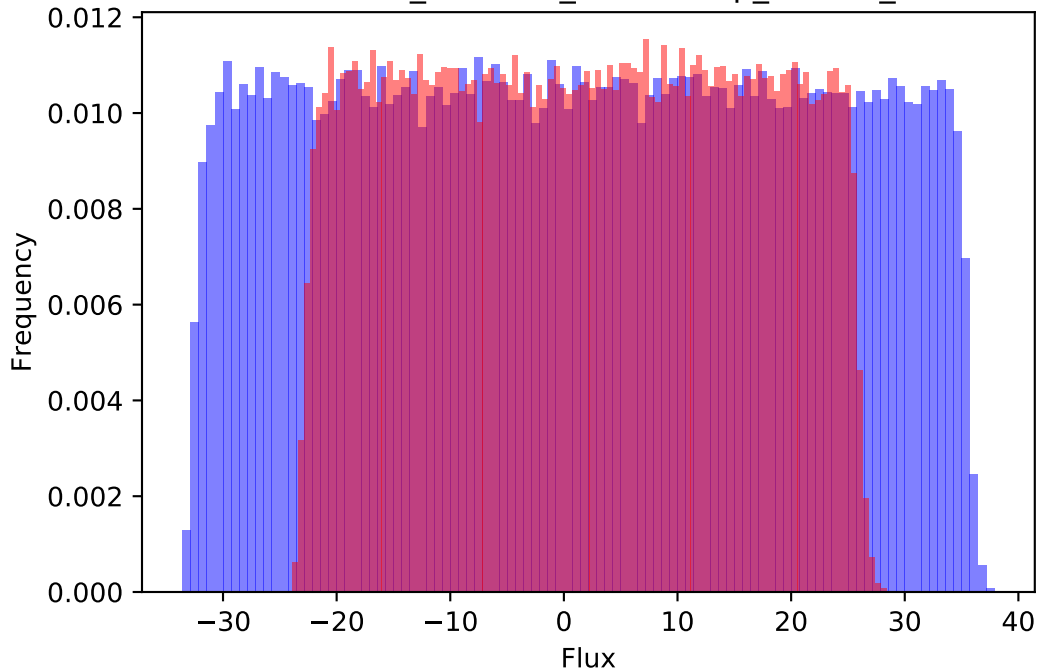
****164 : Mal_c --> Fum_c + H2O_c****



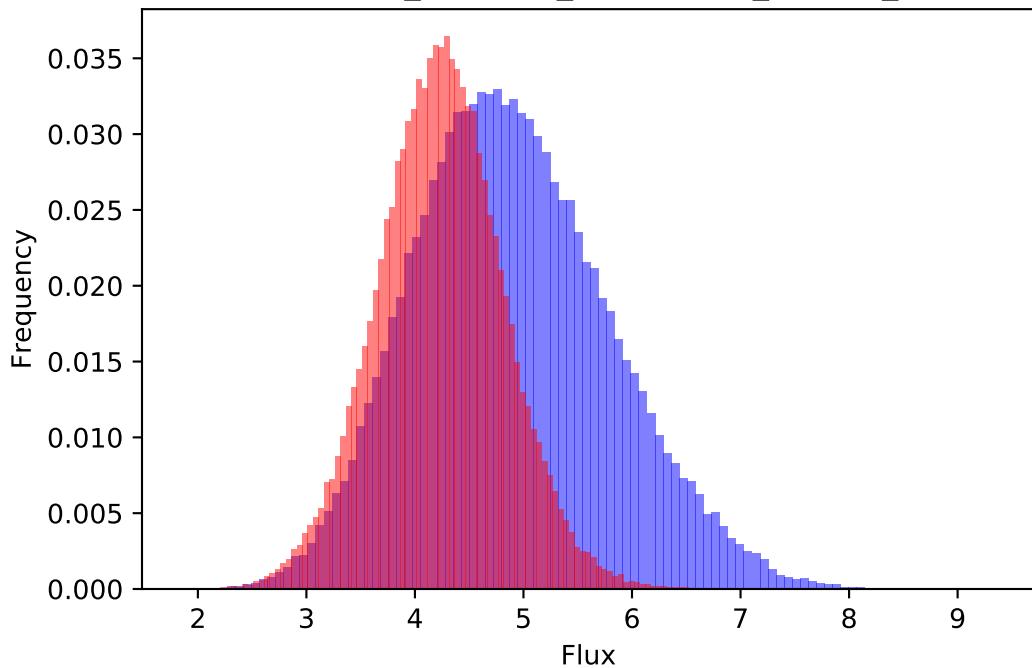
5 : ATP_c + Asp_c + Gln_c + H2O_c --> AMP_c + Asn_c + Glu_c + H_c +



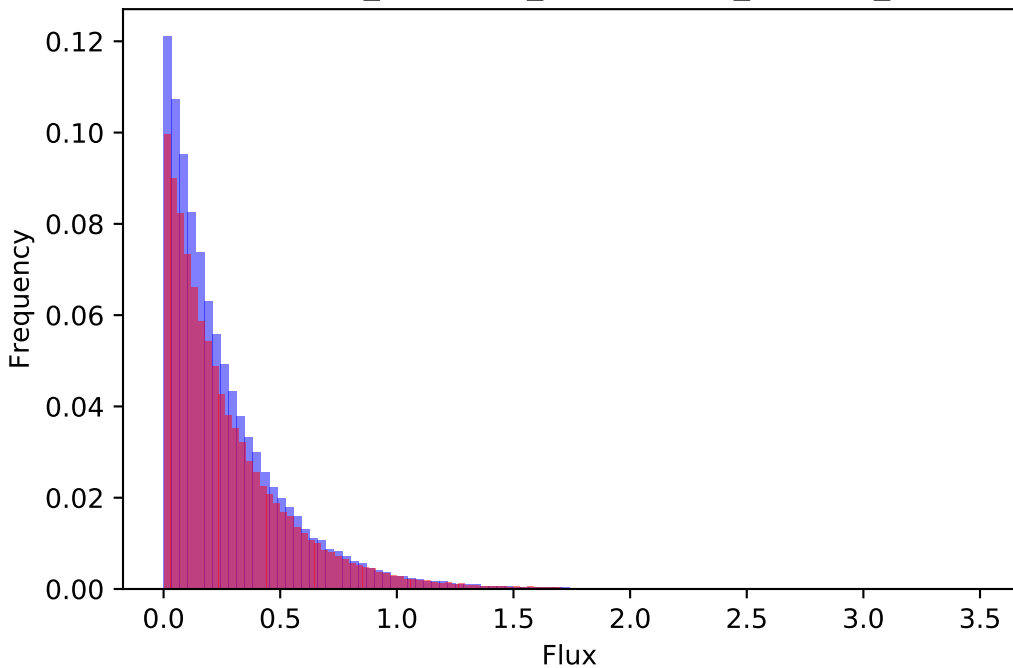
166 : Glu_c + OAA_c \rightleftharpoons Asp_c + KG_c



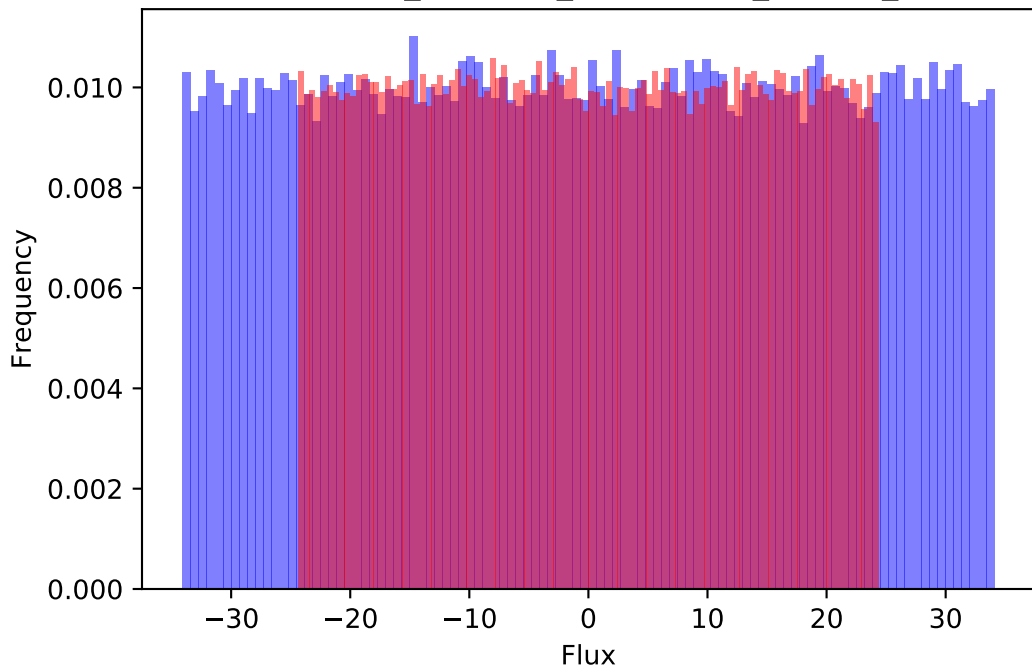
****167 : Glu_h + OAA_h <=> Asp_h + KG_h****



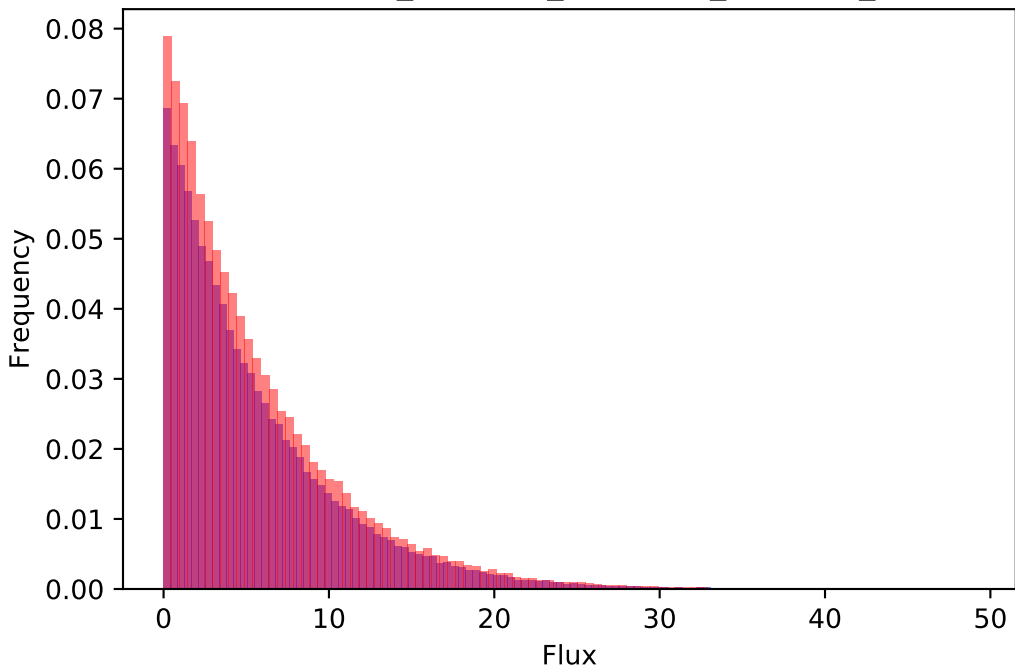
****168 : Glu_m + OAA_m <=> Asp_m + KG_m****



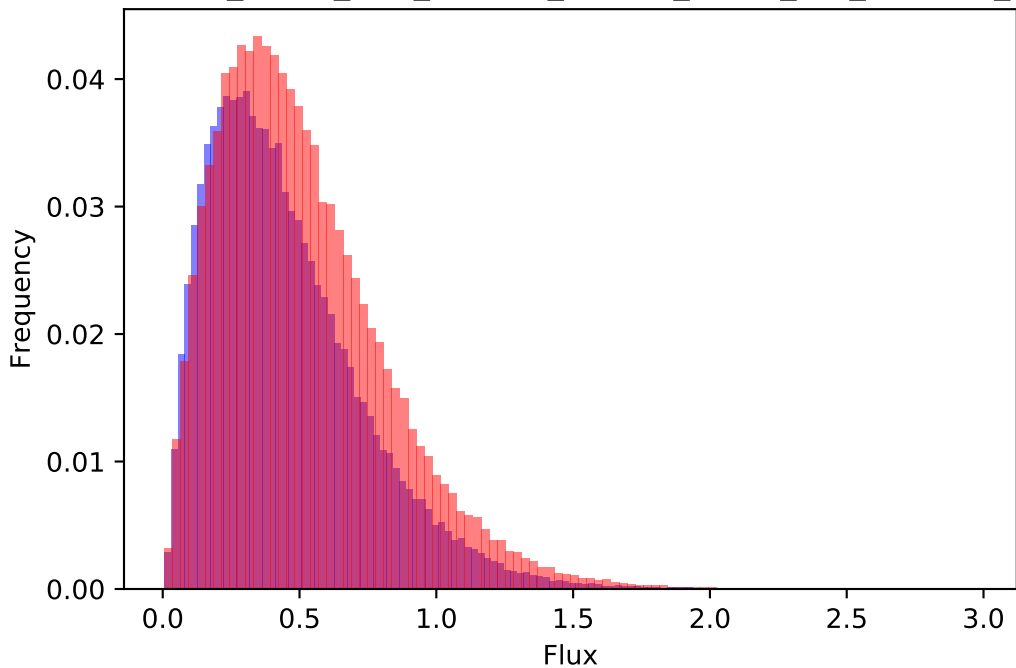
169 : Glu_p + OAA_p \rightleftharpoons Asp_p + KG_p



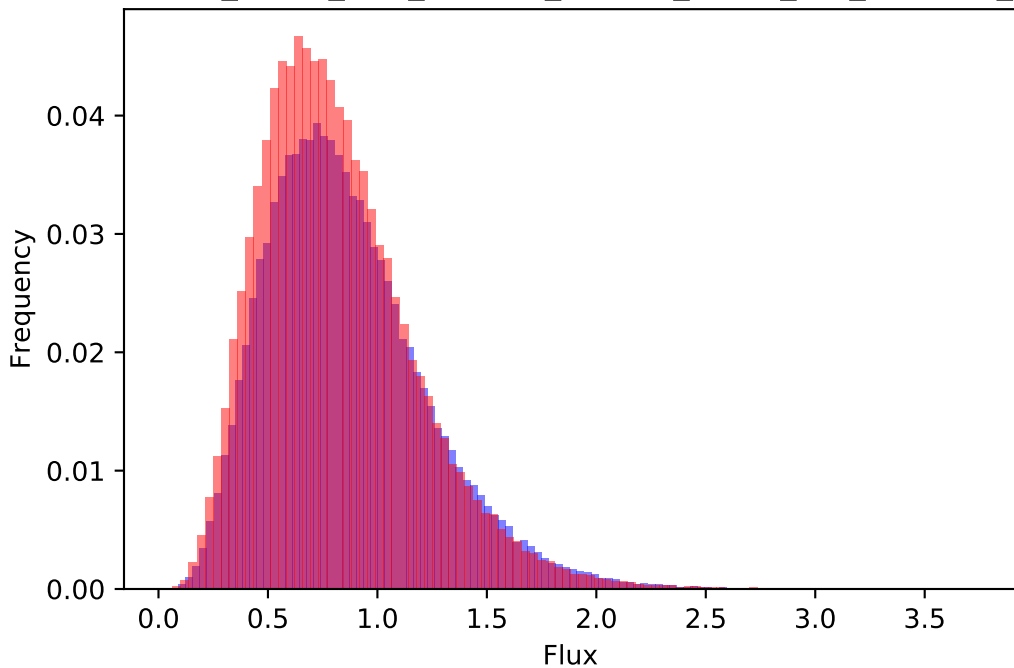
170 : Asn_c + H2O_c --> Asp_c + NH4_c



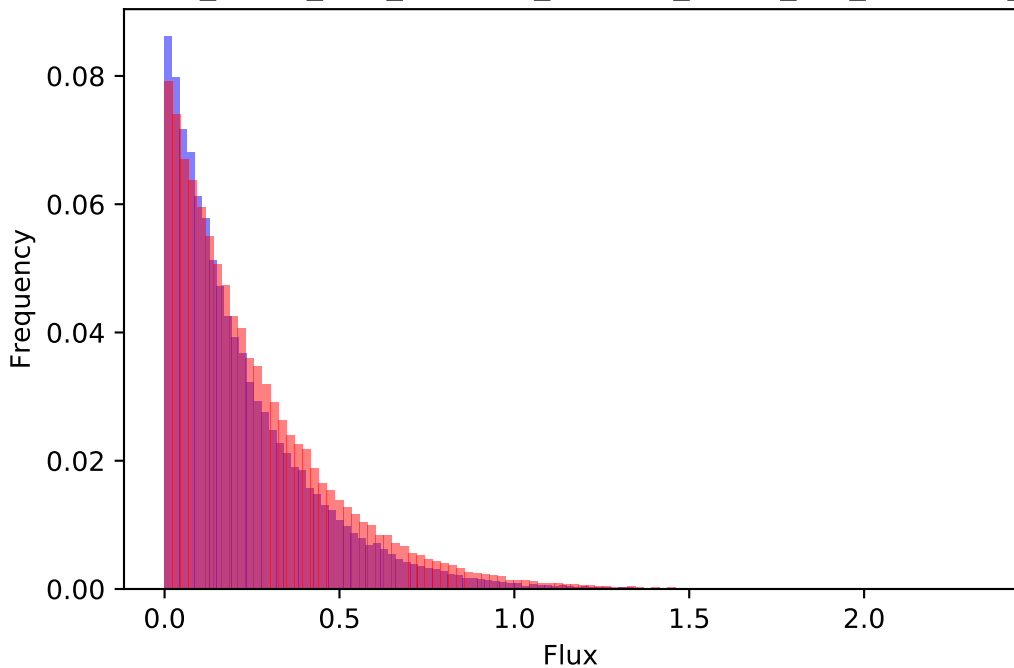
****171 : A_DASH_CoA_c + Ser_c --> A_DASH_Ser_c + CoA_c****



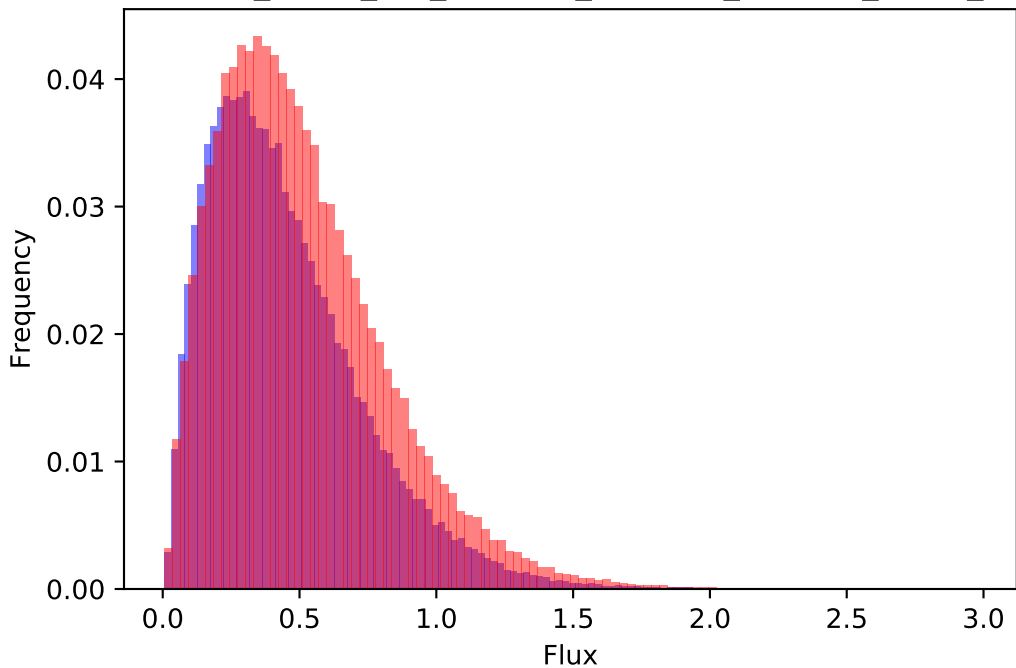
****172 : A_DASH_CoA_h + Ser_h --> A_DASH_Ser_h + CoA_h****



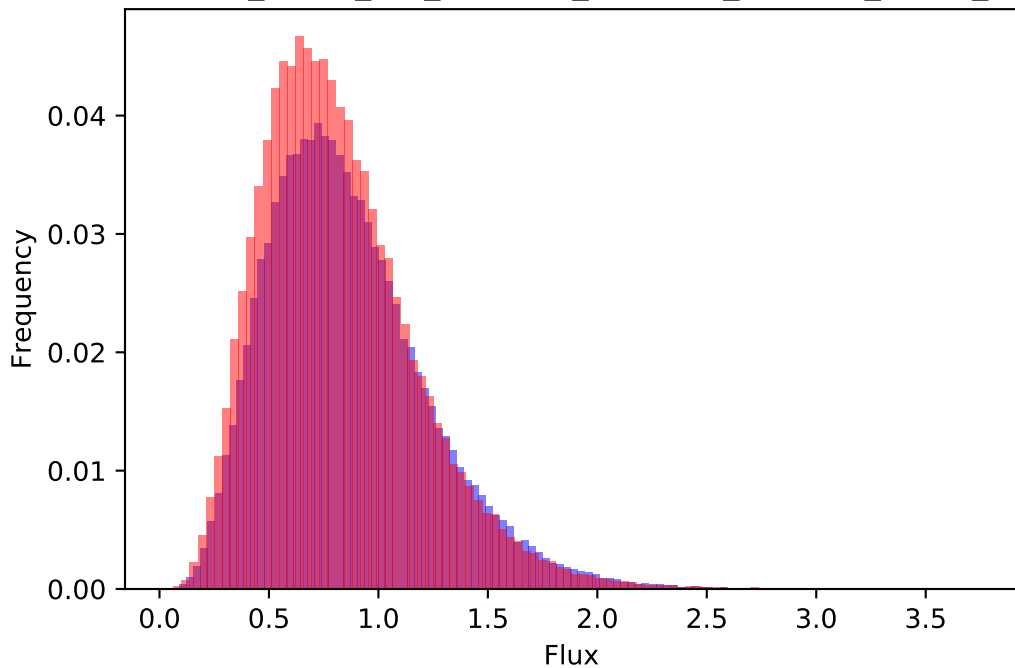
****173 : A_DASH_CoA_m + Ser_m --> A_DASH_Ser_m + CoA_m****



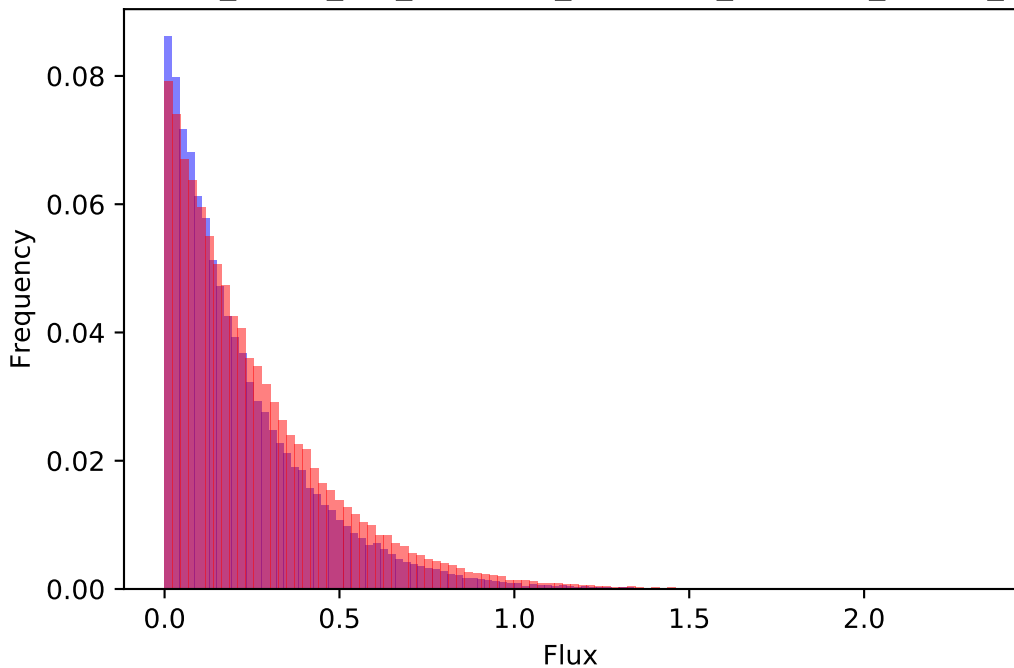
****174 : A_DASH_Ser_c + H2S_c --> AC_c + Cys_c + H_c****



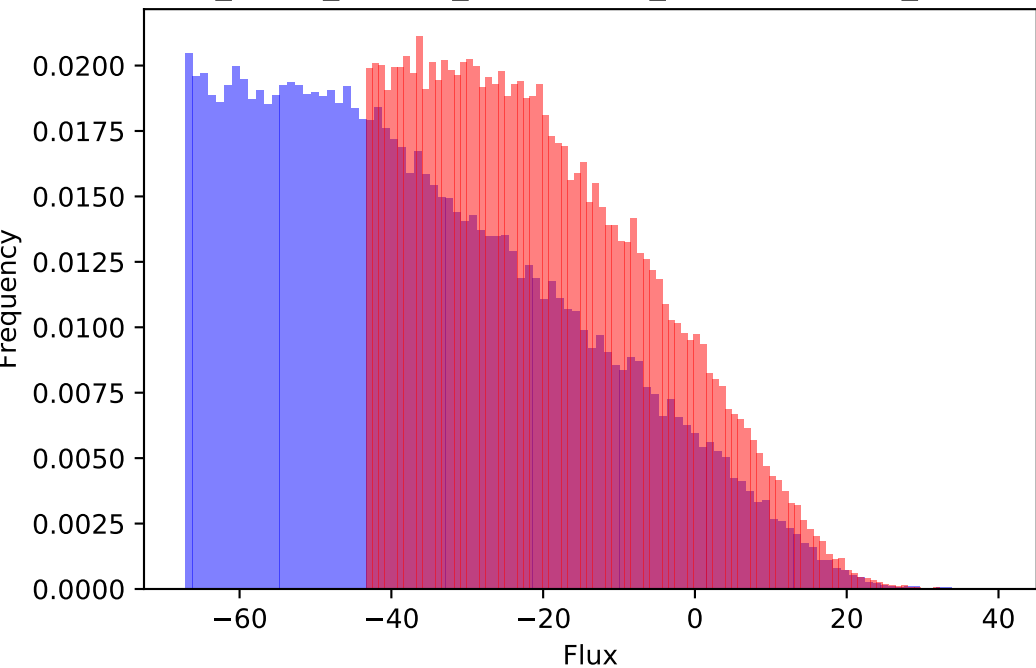
****175 : A_DASH_Ser_h + H2S_h --> AC_h + Cys_h + H_h****



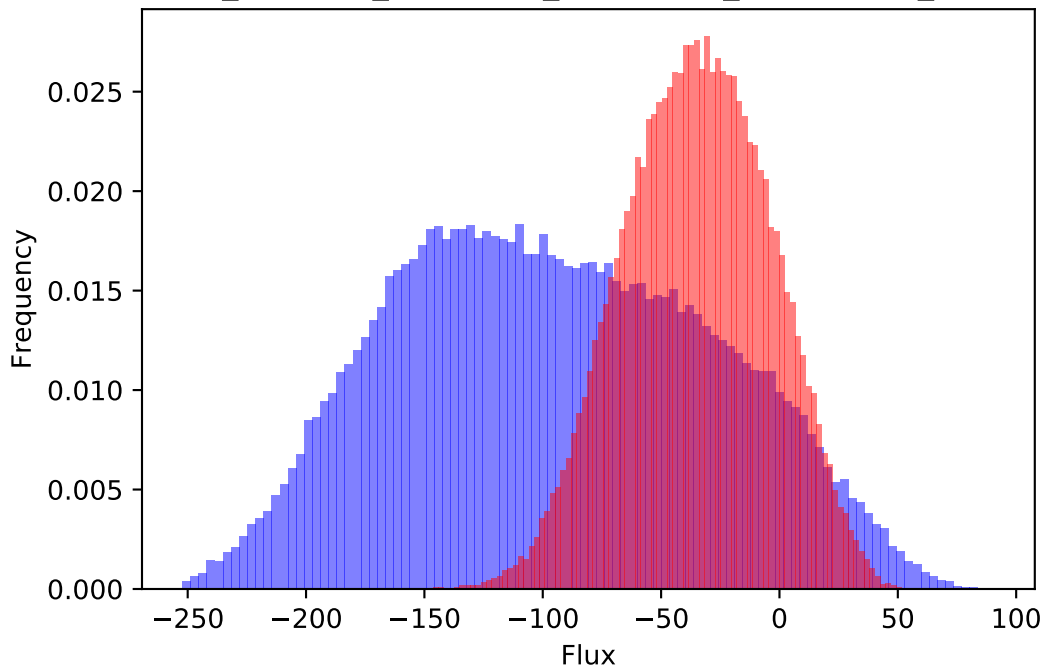
****176 : A_DASH_Ser_m + H2S_m --> AC_m + Cys_m + H_m****



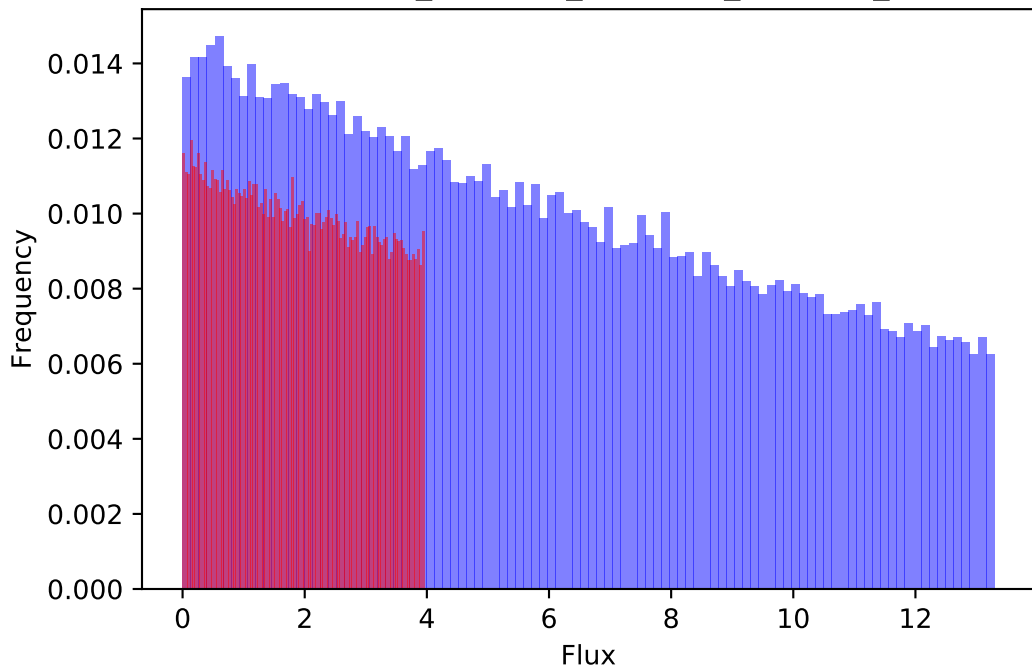
****177 : Gln_h + H_h + KG_h + NADPH_h <=> 2.0 Glu_h + NADP_h****



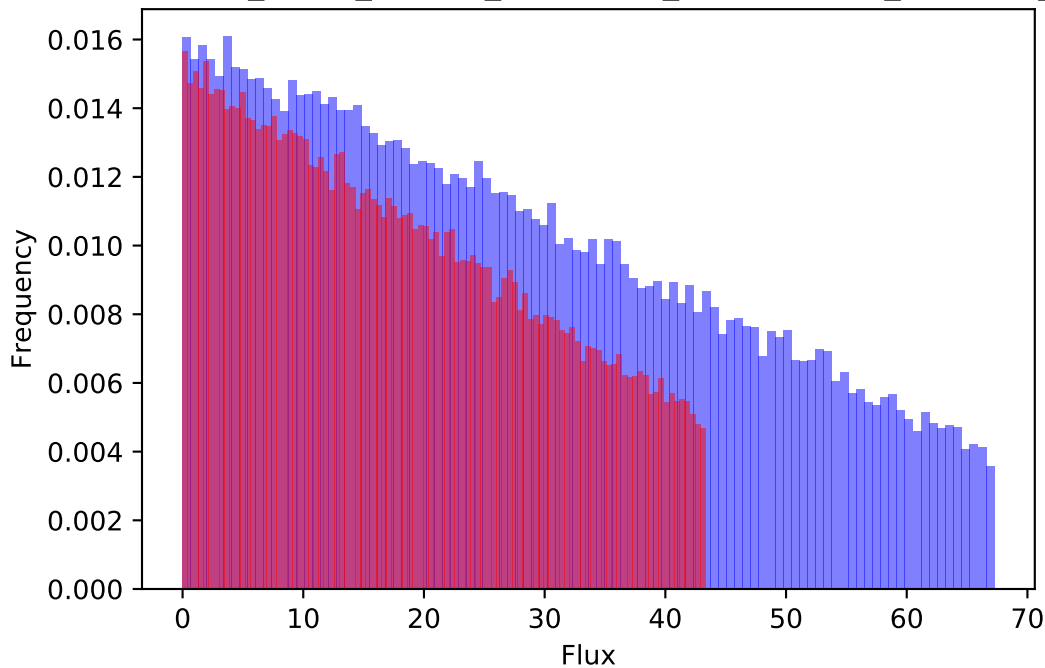
****178 : Glu_c + H2O_c + NADP_c <=> KG_c + NADPH_c + NH4_c****



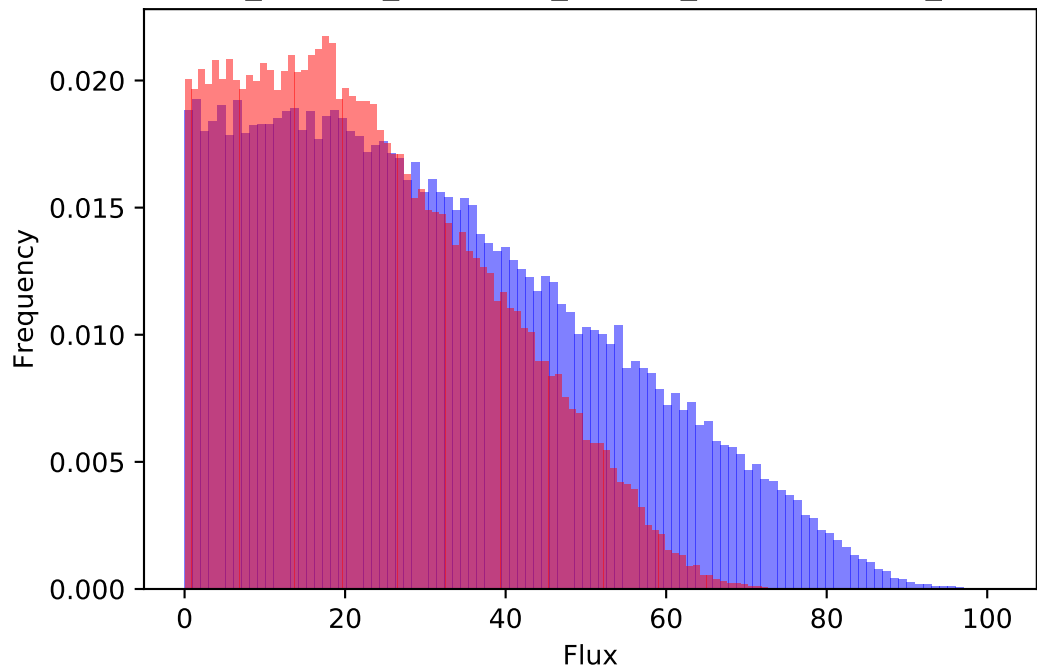
****179 : Gln_c + H2O_c --> Glu_c + NH4_c****



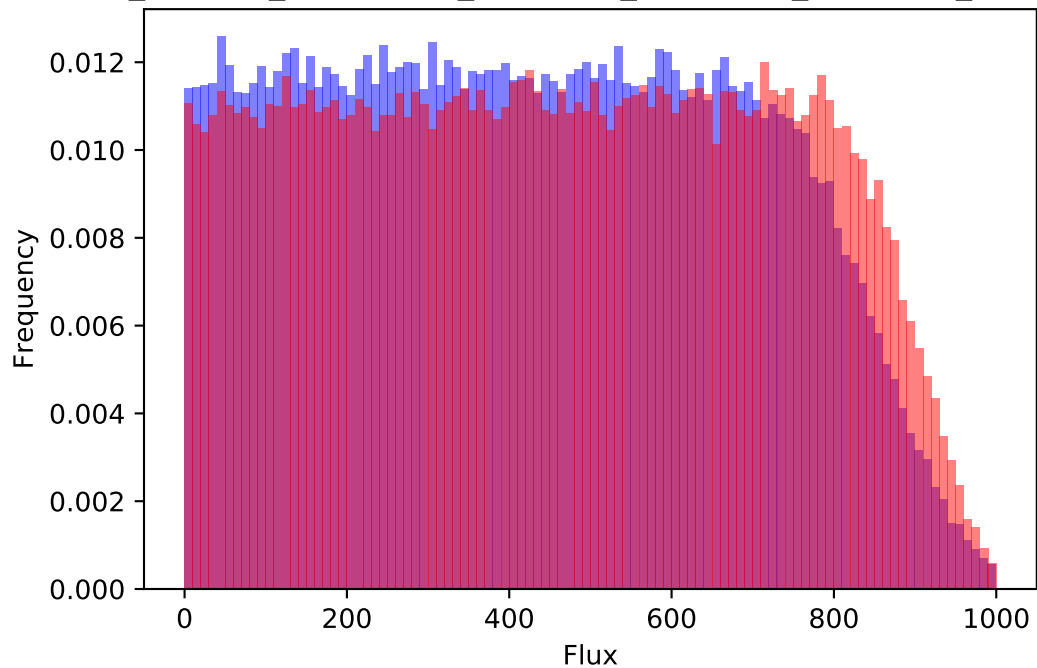
****180 : Gln_h + H_h + KG_h + NADH_h --> 2.0 Glu_h + NAD_h****



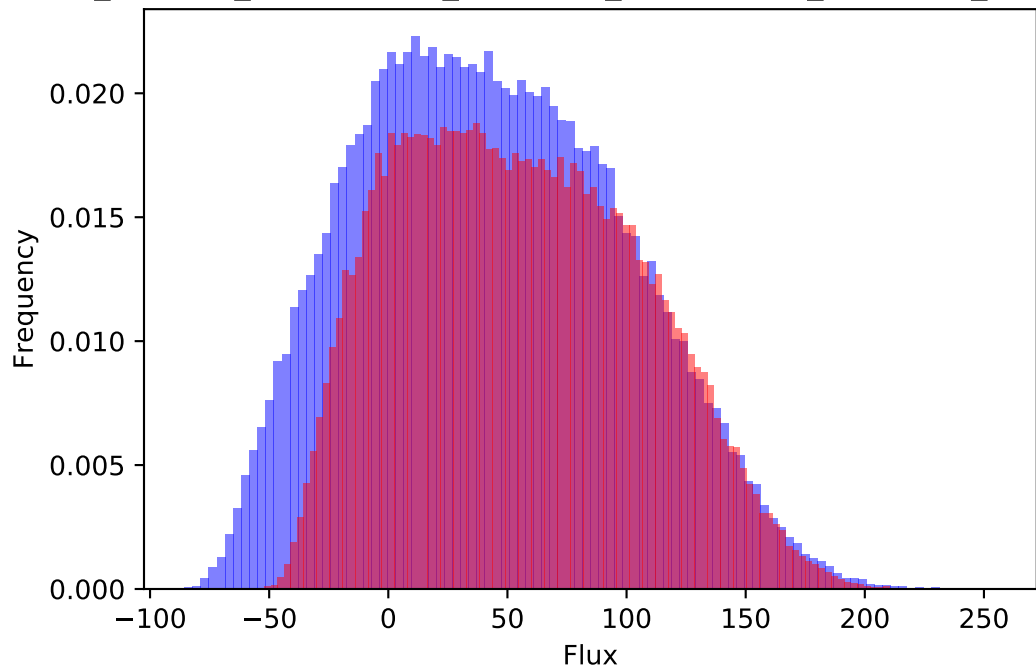
*181 : 2.0 Fdrd_h + Gln_h + 2.0 H_h + KG_h --> 2.0 Fdox_h + 2.0 Glu_h



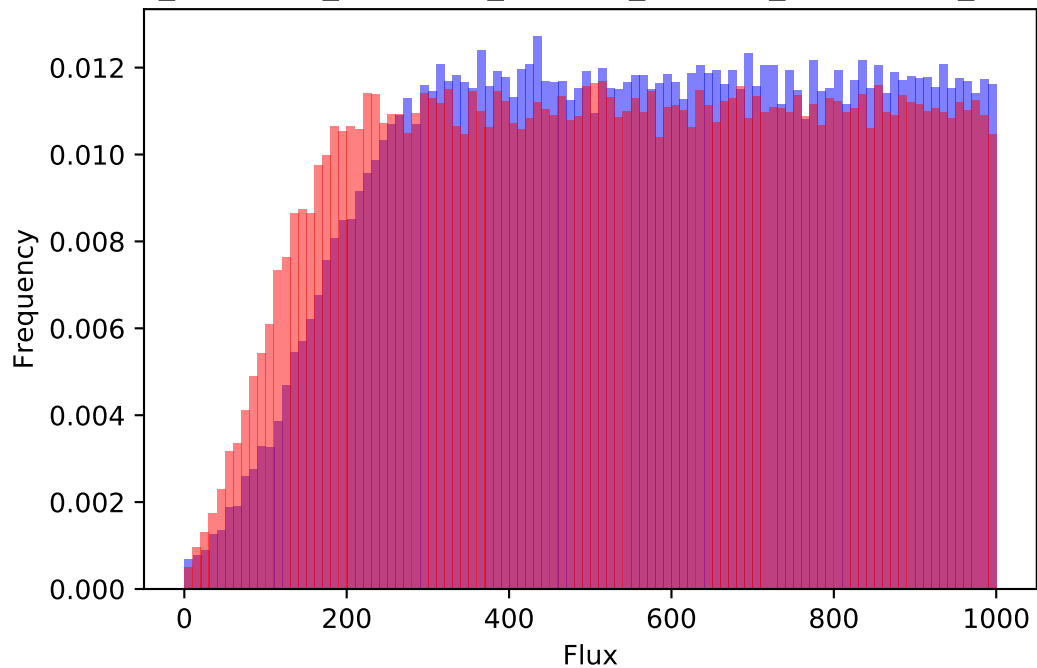
*182 : H_m + KG_m + NADH_m + NH4_m --> Glu_m + H2O_m + NAD_n



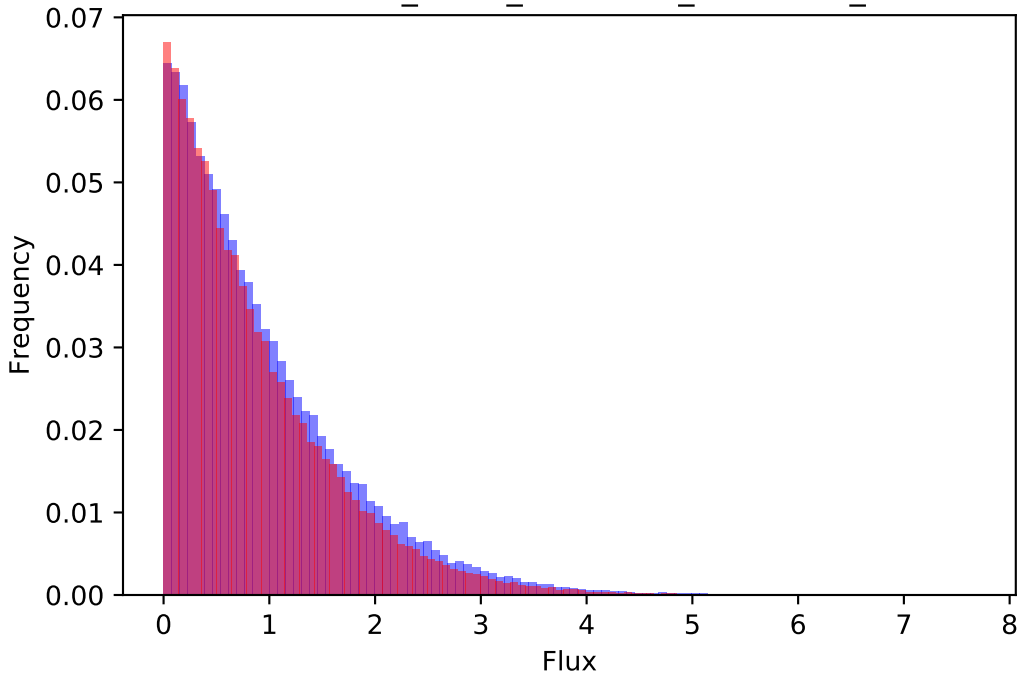
83 : $H_m + KG_m + NADPH_m + NH4_m \rightleftharpoons Glu_m + H2O_m + NADP$



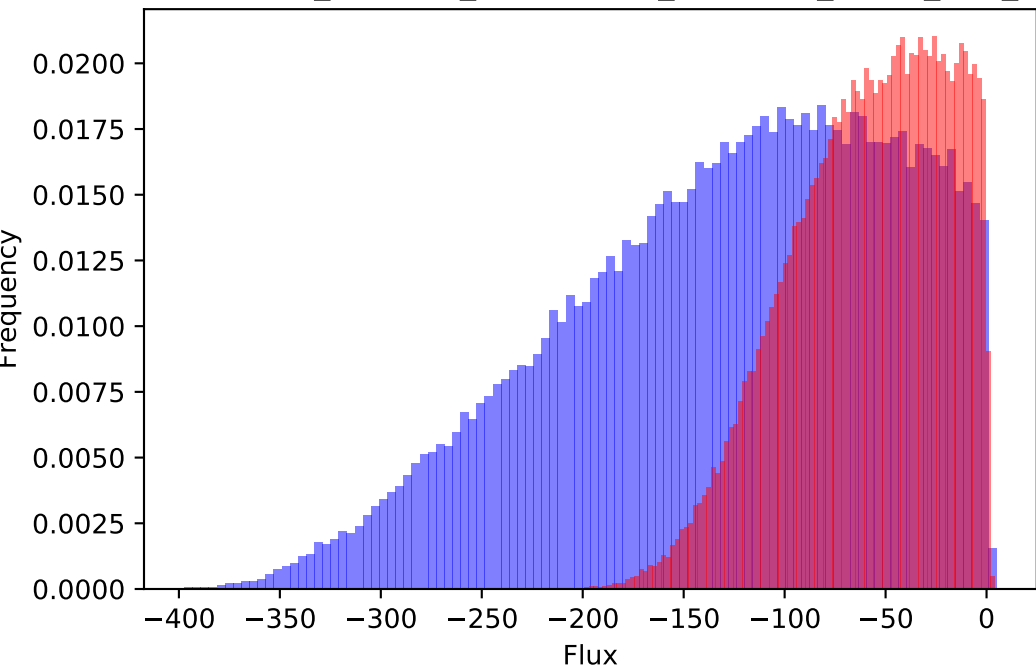
*184 : Glu_m + H2O_m + NAD_m --> H_m + KG_m + NADH_m + NH4_n



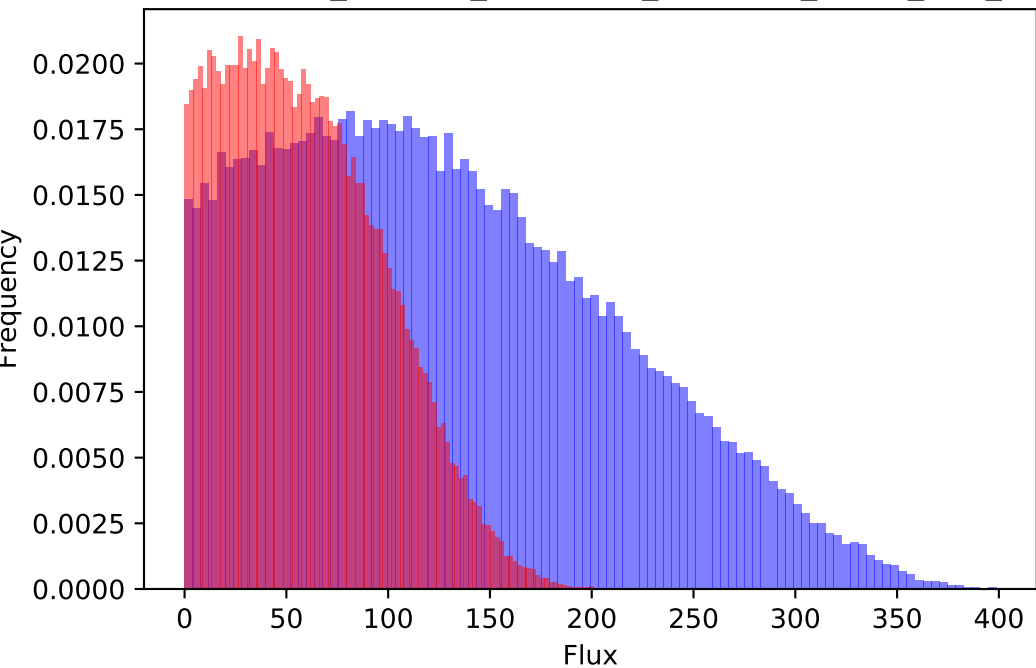
****185 : Glu_c + H_c --> CO2_c + GABA_c****



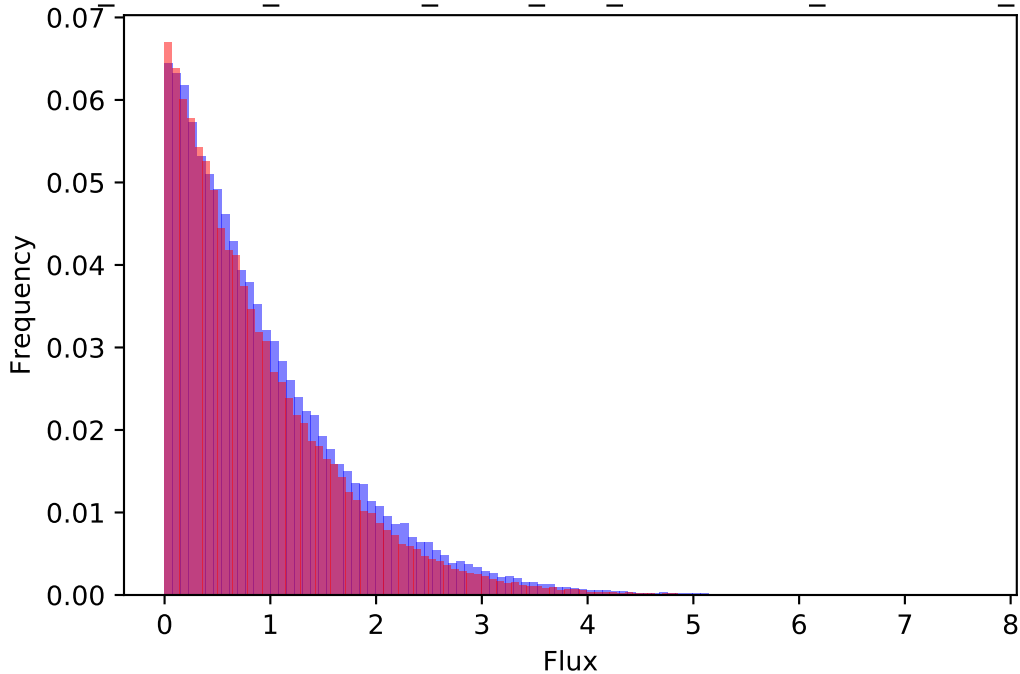
****186 : GABA_m + Pyr_m \rightleftharpoons Ala_m + SCA_DASH_SeA_m****



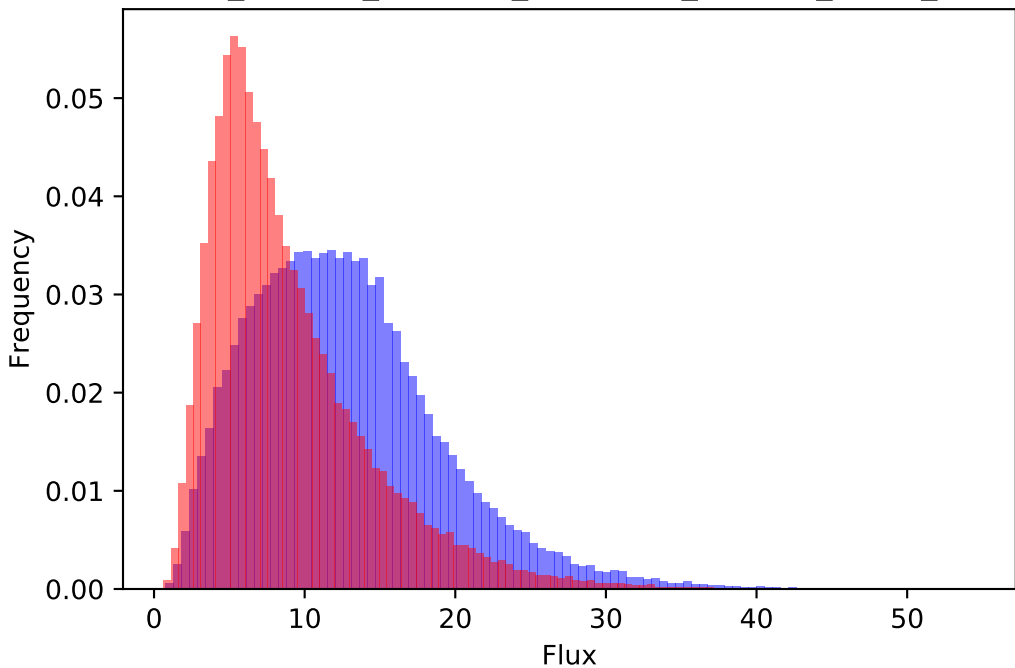
****187 : GABA_m + KG_m --> Glu_m + SCA_DASH_SeA_m****



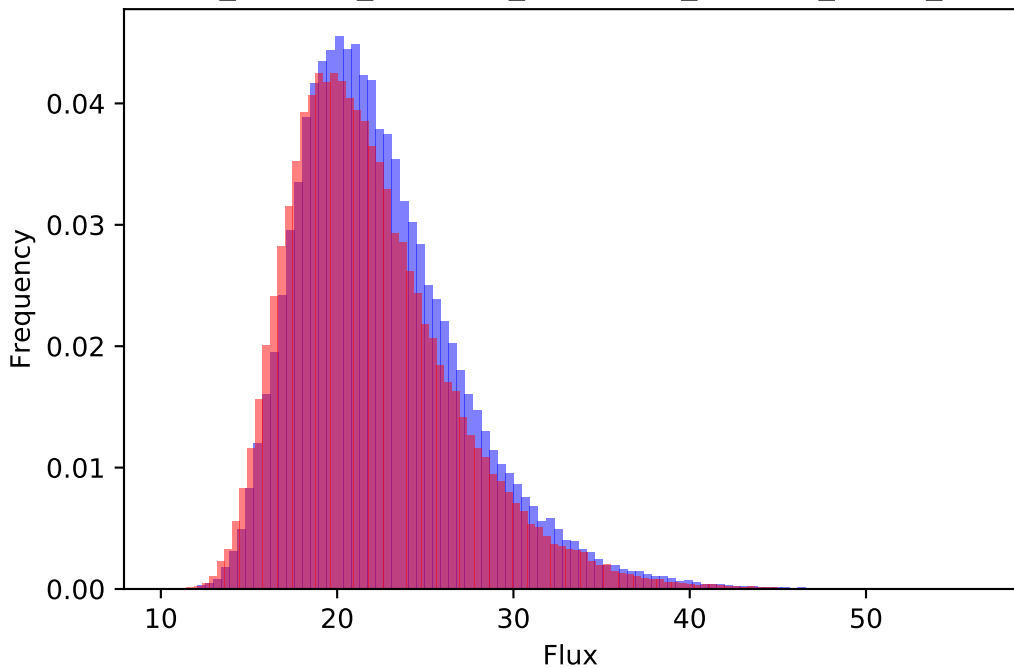
8 : H2O_m + NAD_m + SCA_DASH_SeA_m --> 2.0 H_m + NADH_m + SC



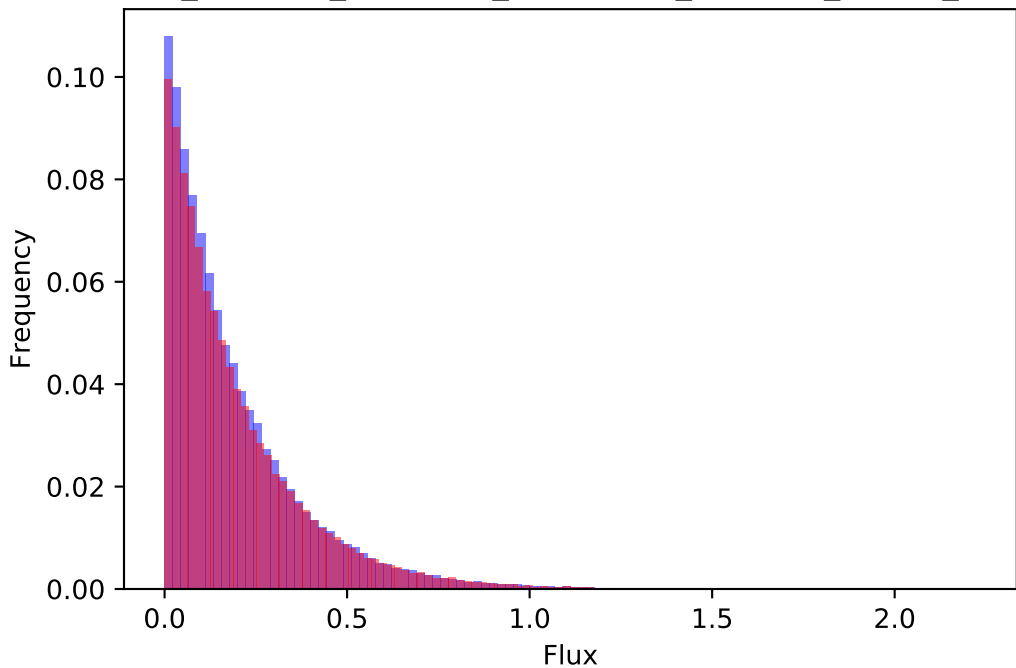
****189 : ATP_c + Glu_c + NH4_c --> ADP_c + Gln_c + H_c + Pi_c****



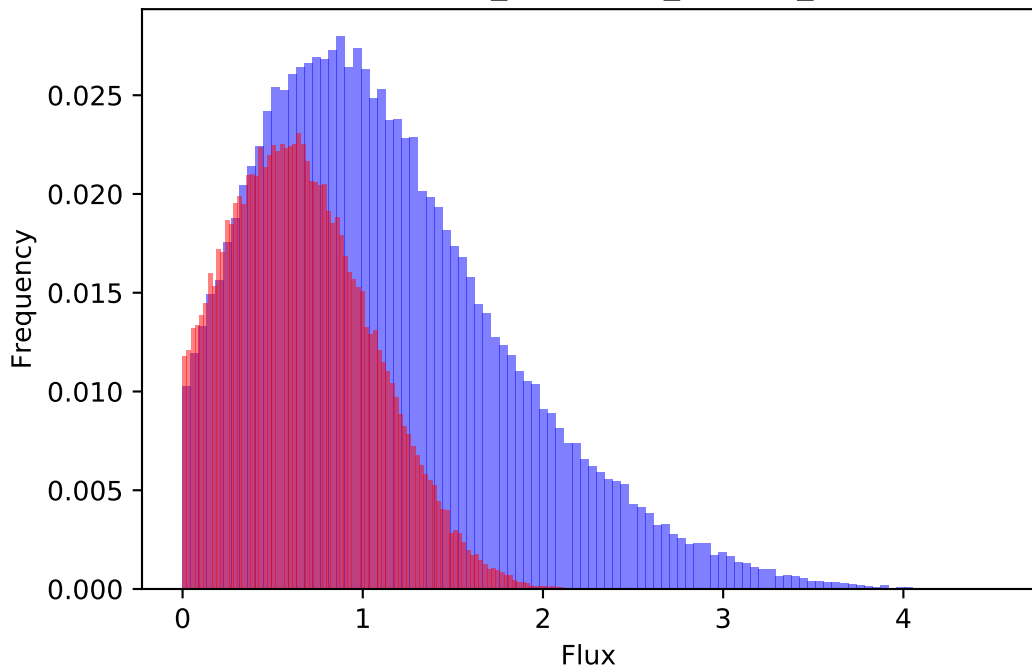
****190 : ATP_h + Glu_h + NH4_h --> ADP_h + Gln_h + H_h + Pi_h****



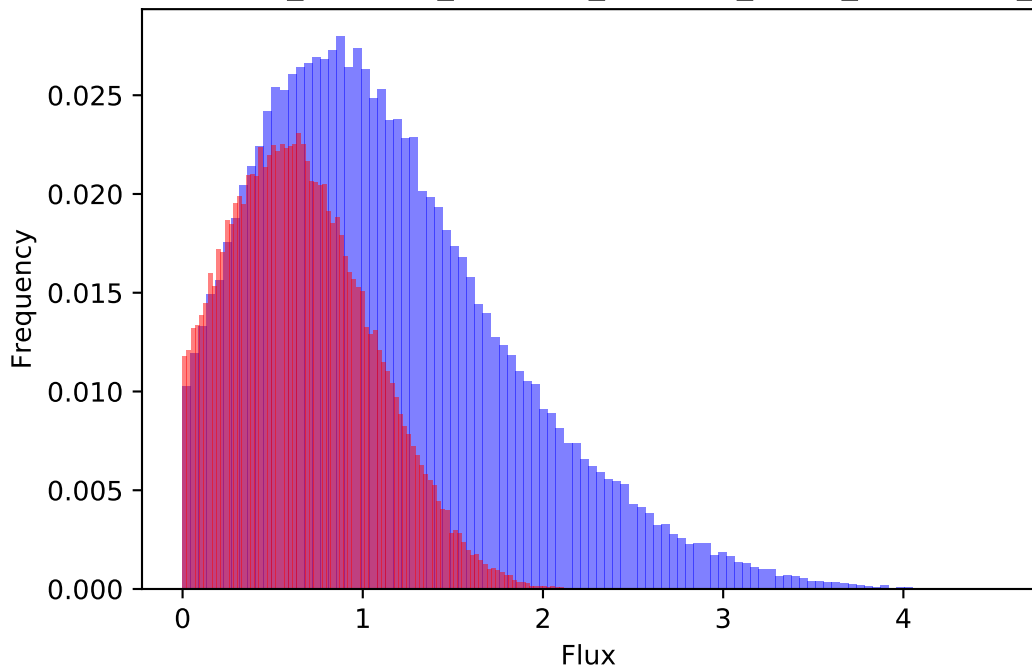
****191 : ATP_m + Glu_m + NH4_m --> ADP_m + Gln_m + H_m + Pi_m****



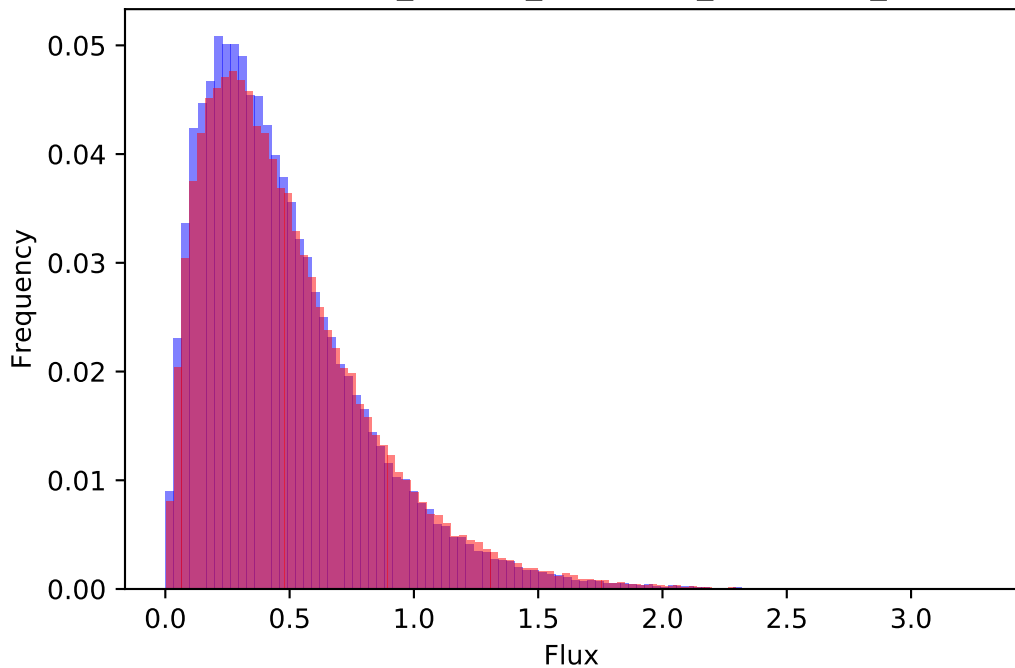
****192 : Thr_c --> ACD_c + Gly_c****



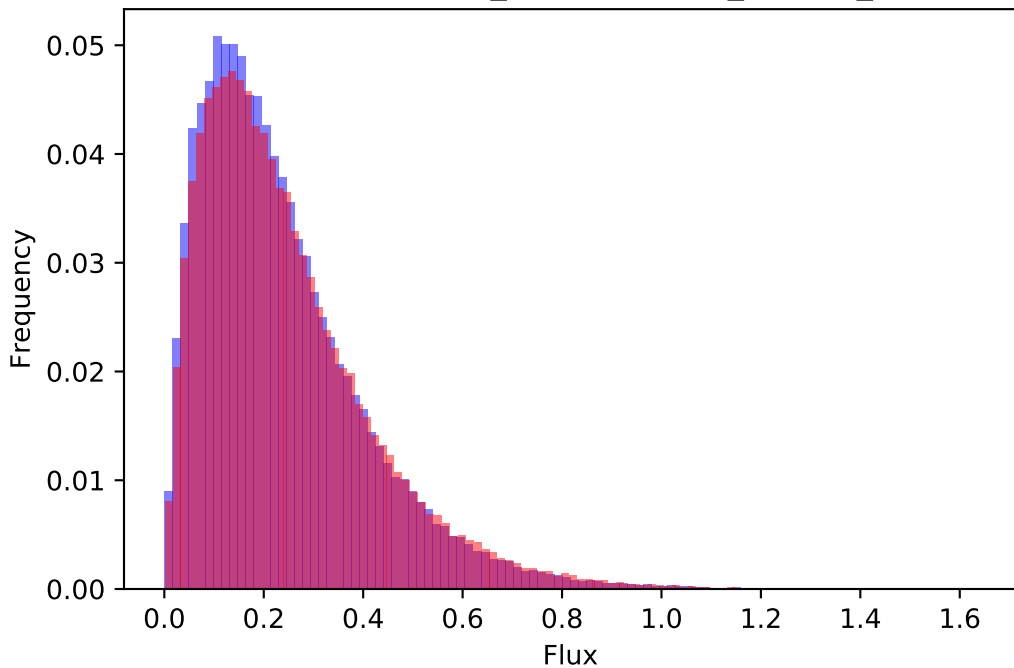
****193 : ACD_c + H2O_c + NAD_c --> AC_c + H_c + NADH_c****



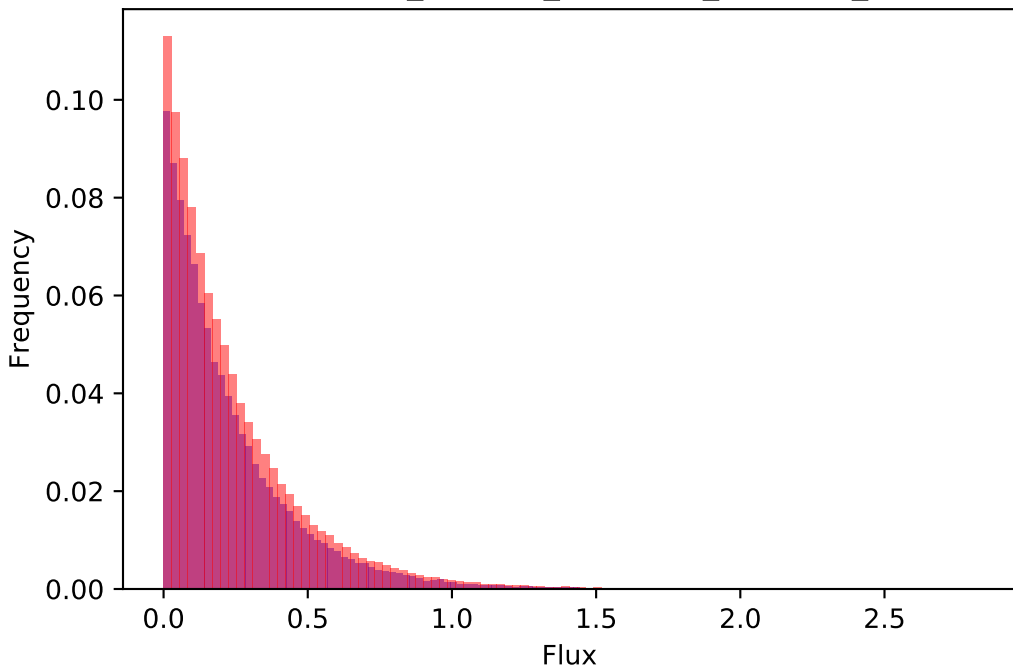
****194 : GCA_h + O2_h --> GLX_h + H2O2_h****



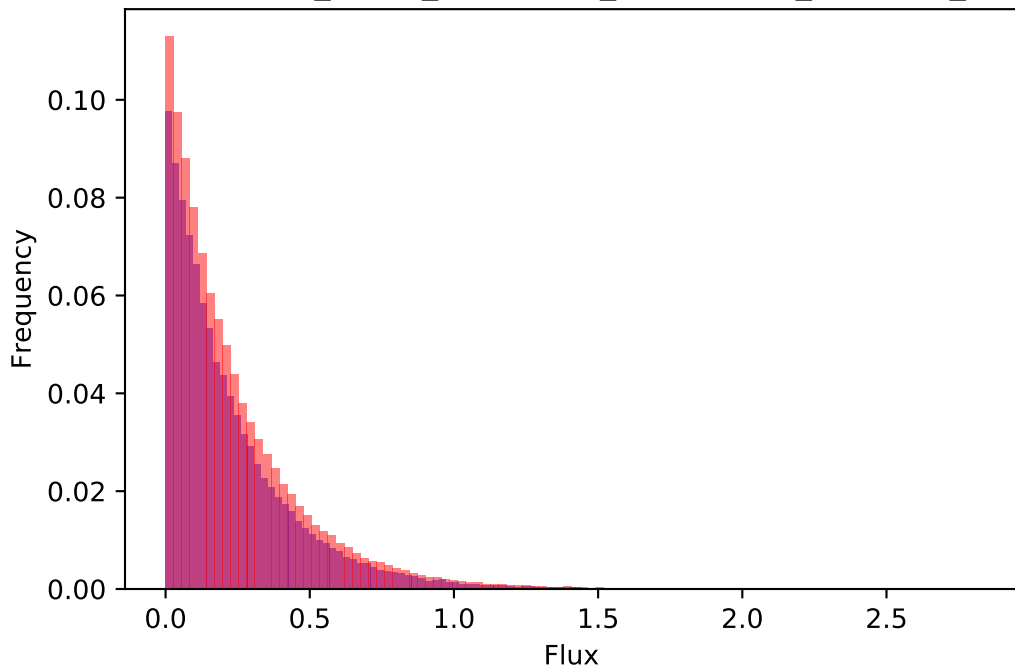
****195 : 2.0 H2O2_h --> 2.0 H2O_h + O2_h****



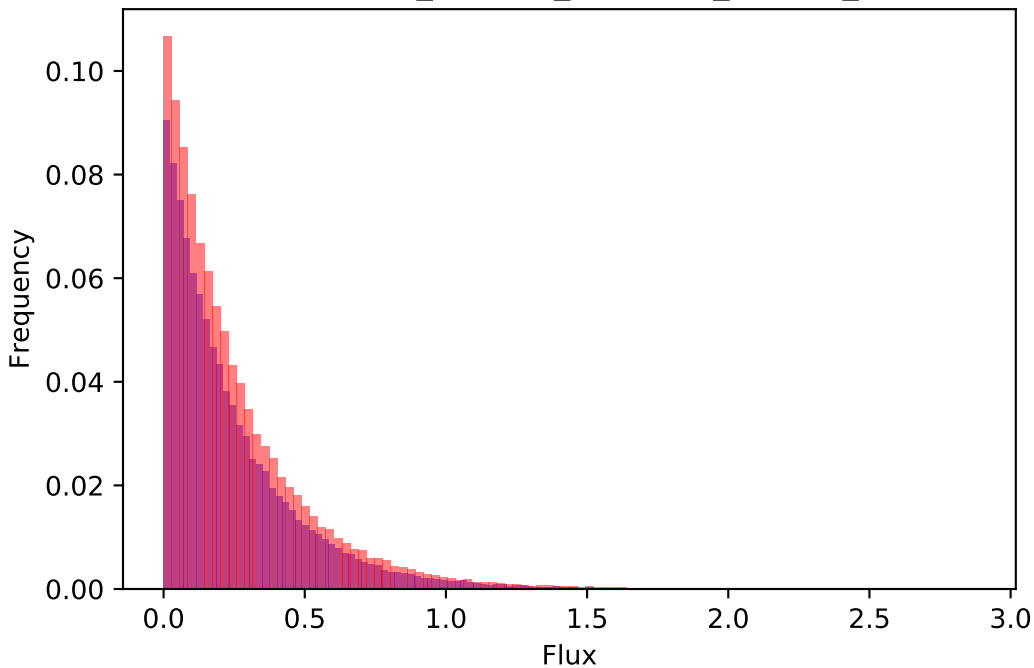
****196 : GLX_h + Ser_h --> Gly_h + HPR_h****



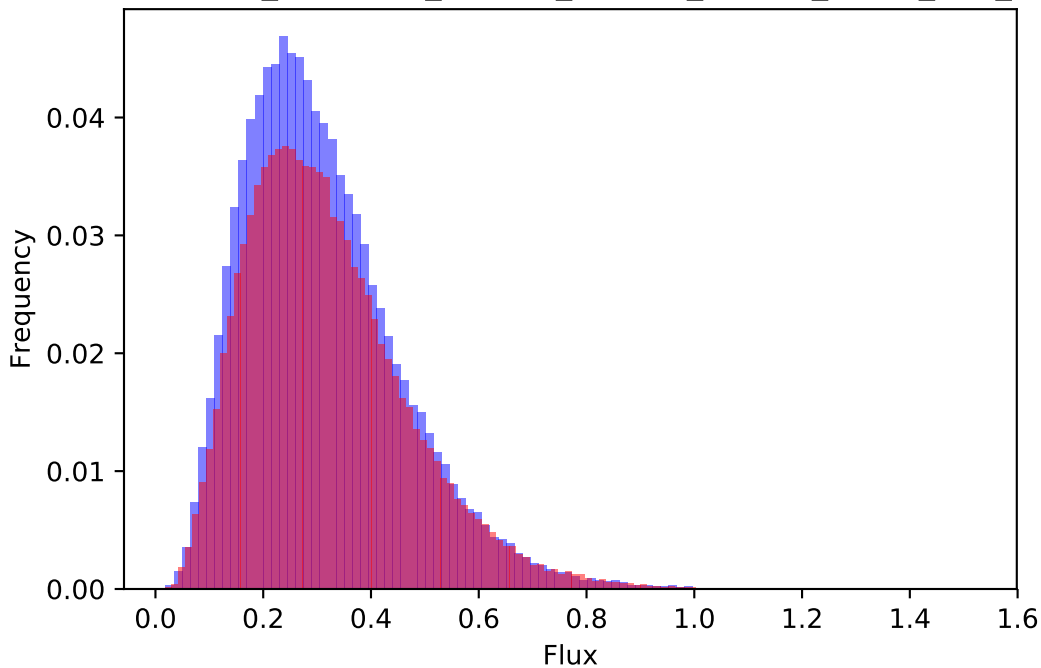
****197 : HPR_h + H_h + NADH_h --> GCEA_h + NAD_h****



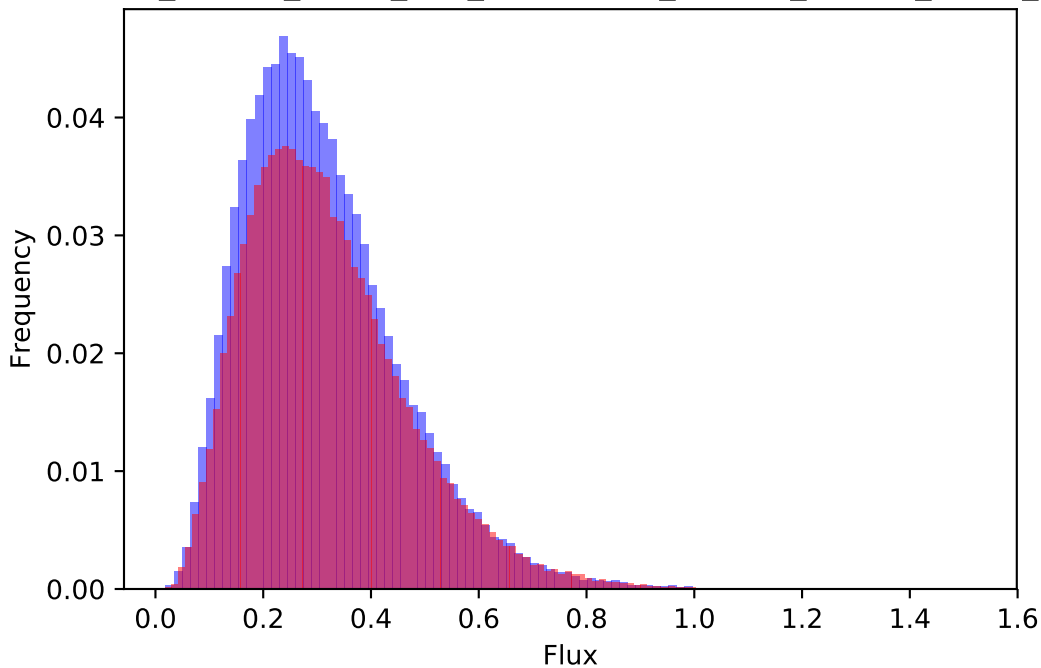
****198 : GLX_h + Glu_h --> Gly_h + KG_h****



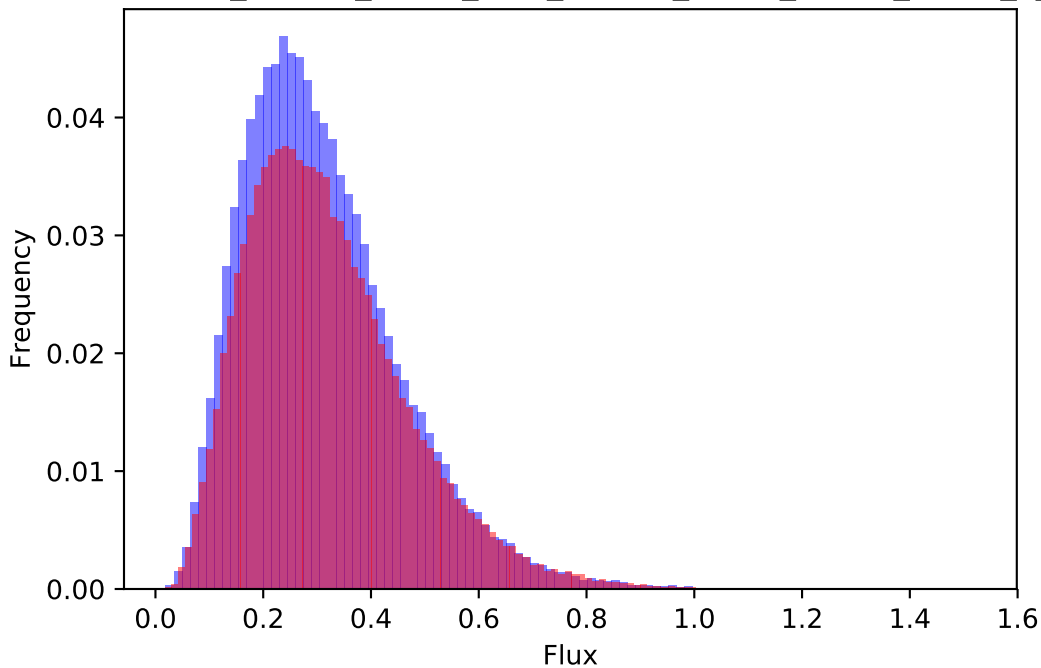
****199 : ATP_h + PRPP_h --> H_h + PPI_h + PR_DASH_ATP_h****



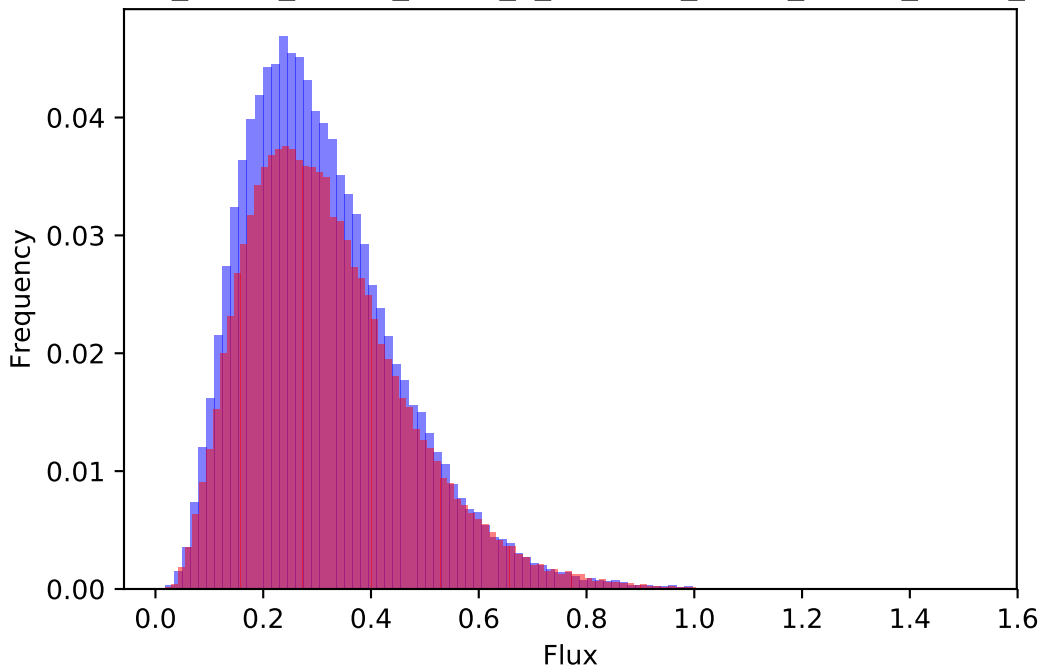
*200 : H₂O_h + PR_DASH_ATP_h --> 2.0 H_h + PPi_h + PR_DASH_AMP_h



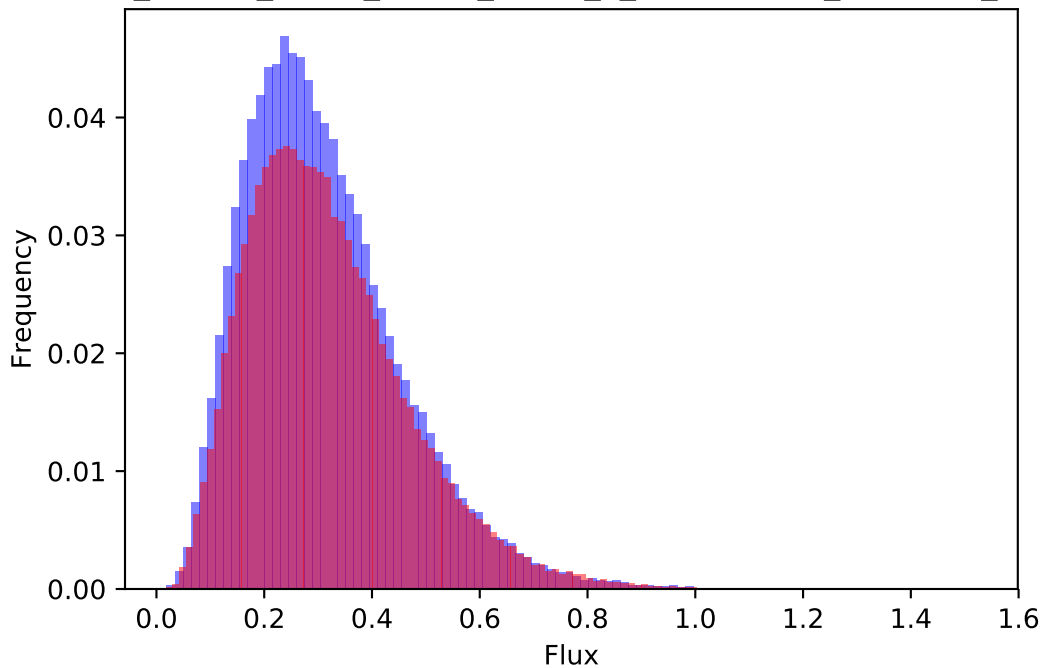
****201 : H2O_h + PR_DASH_AMP_h --> P_DASH_AICAR_DASH_P_h****



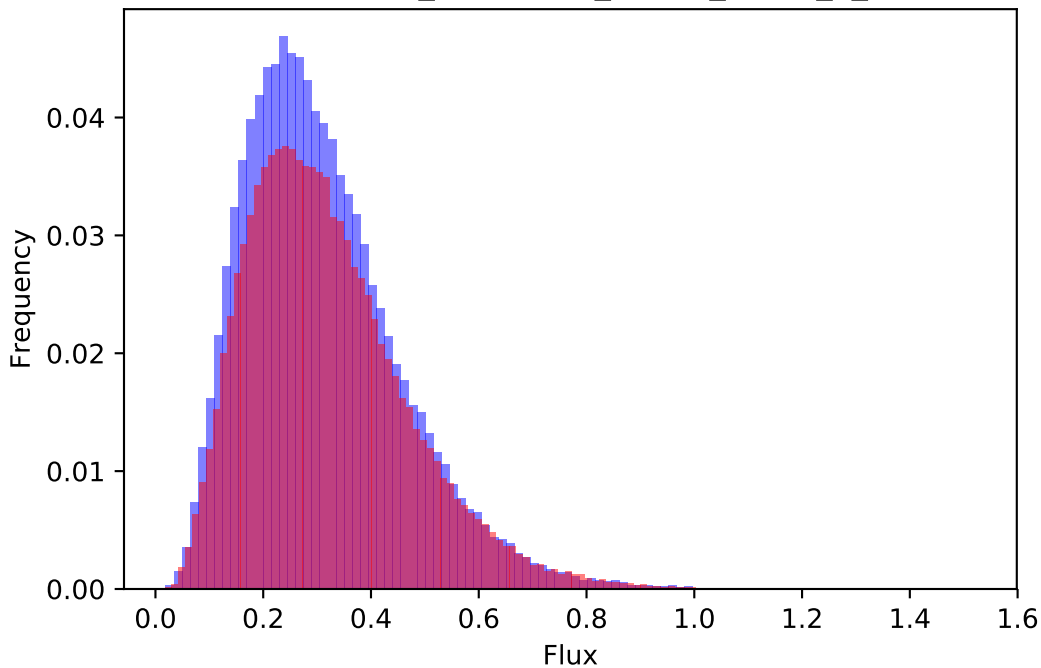
****202 : P_DASH_AICAR_DASH_P_h --> Pu_DASH_AICAR_DASH_P_h****



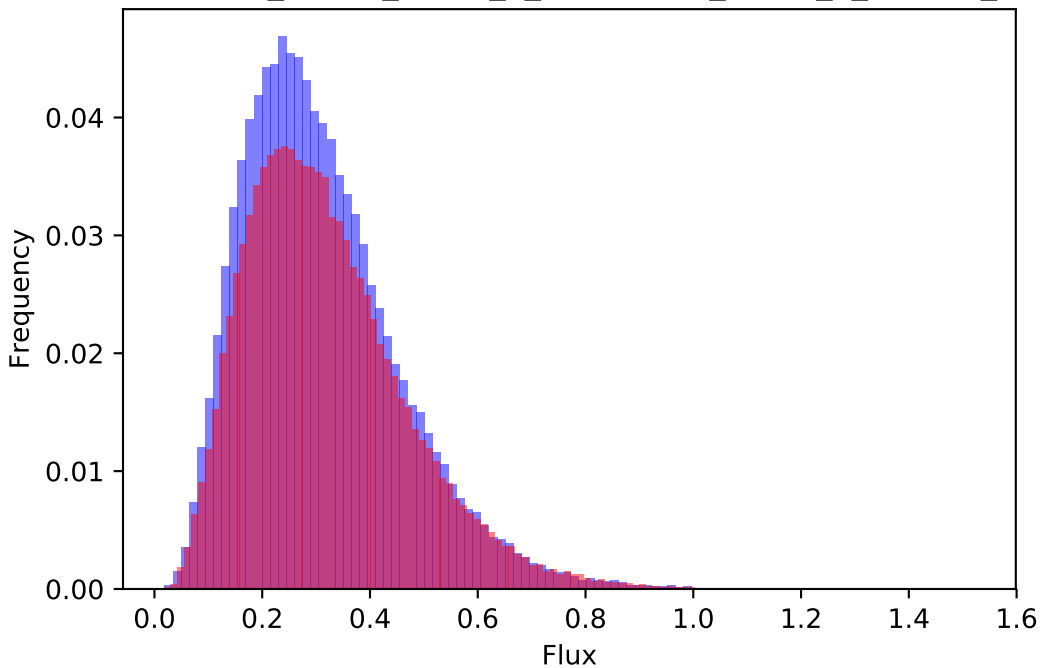
<203 : Gln_h + Pu_DASH_AICAR_DASH_P_h --> AICAR_h + EIGP_h + Glu_h



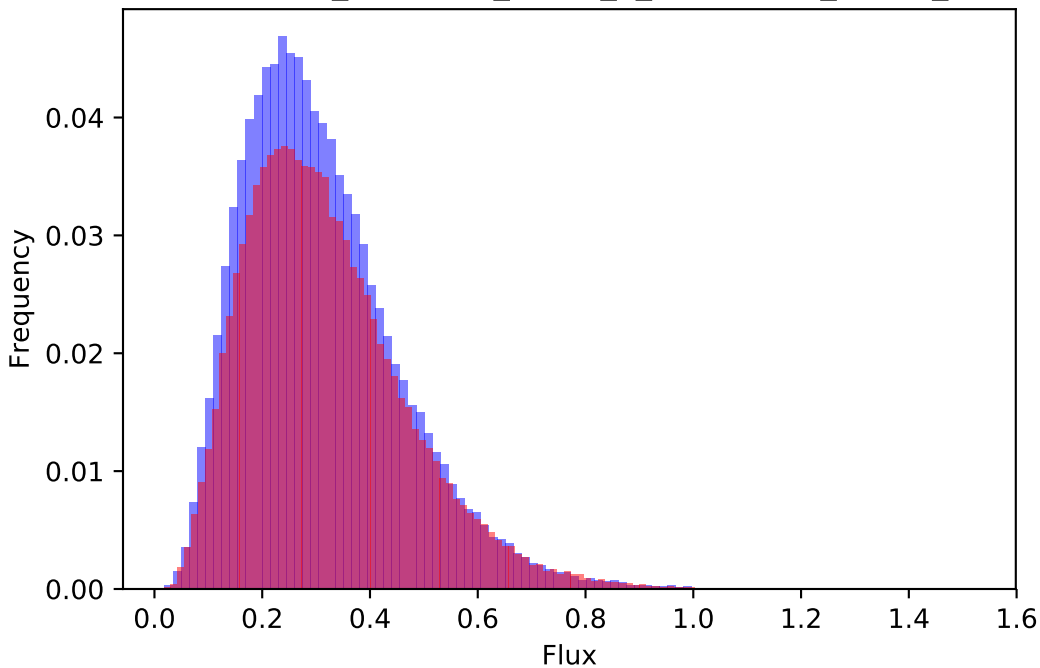
****204 : EIGP_h --> H2O_h + IA_DASH_P_h****



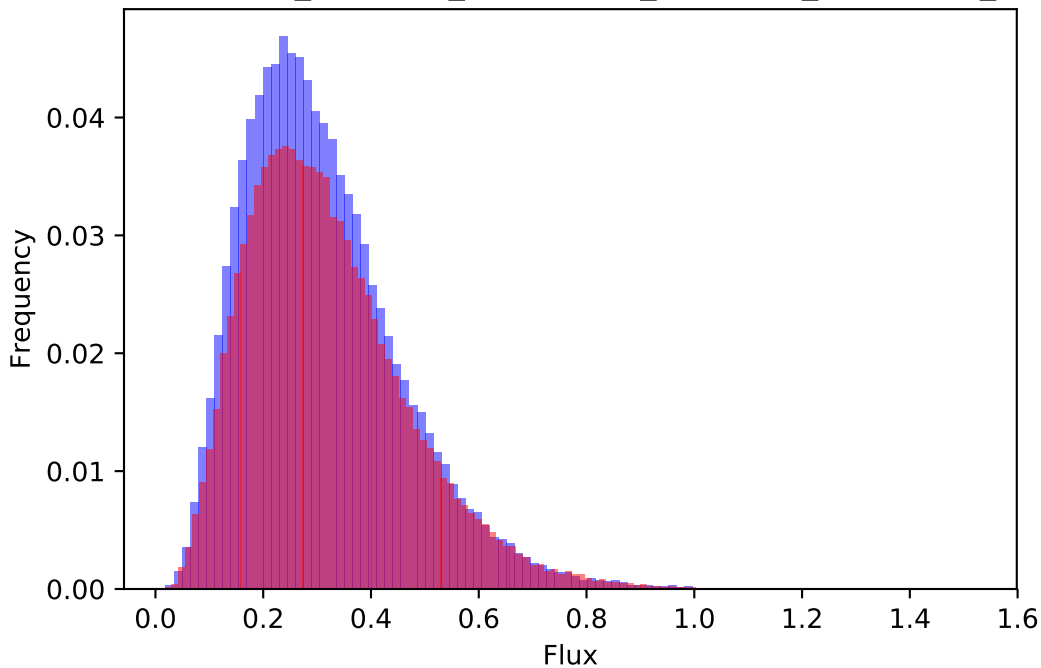
****205 : Glu_h + IA_DASH_P_h --> Hisol_DASH_P_h + KG_h****



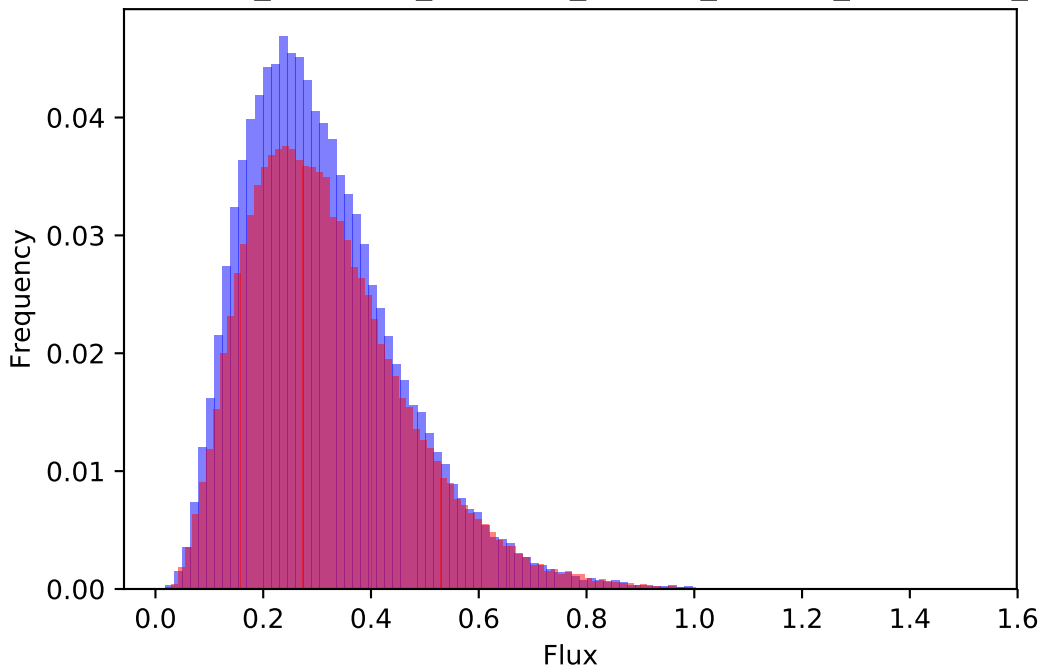
****206 : H2O_h + Hisol_DASH_P_h --> Hisol_h + Pi_h****



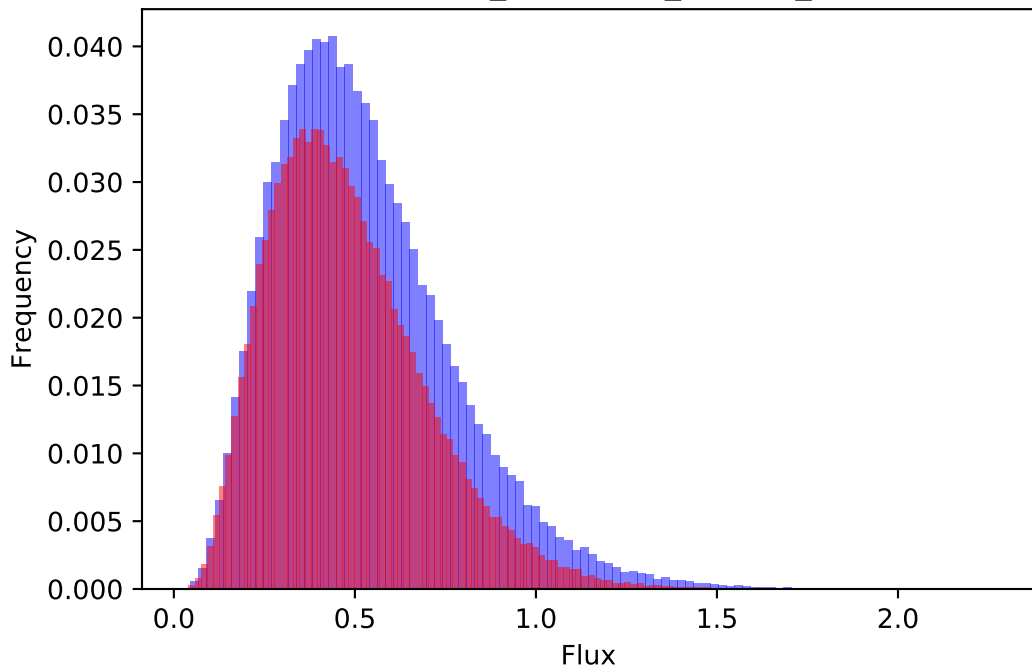
****207 : Hisol_h + NAD_h --> 2.0 H_h + Hisal_h + NADH_h****



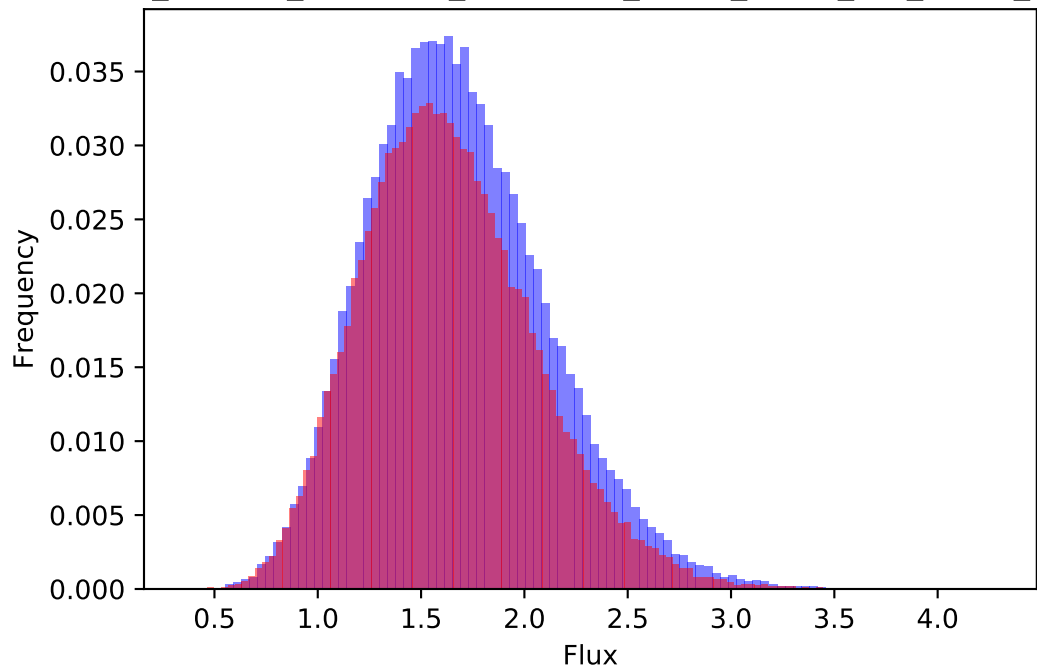
****208 : H2O_h + Hisal_h + NAD_h --> H_h + His_h + NADH_h****



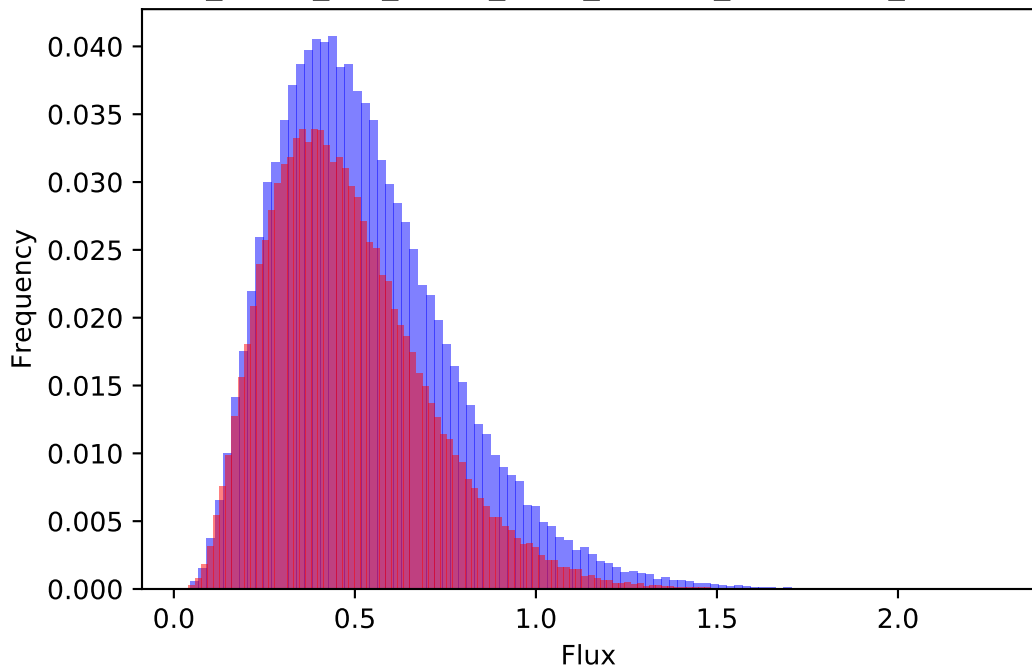
****209 : Thr_h --> NH4_h + OB_h****



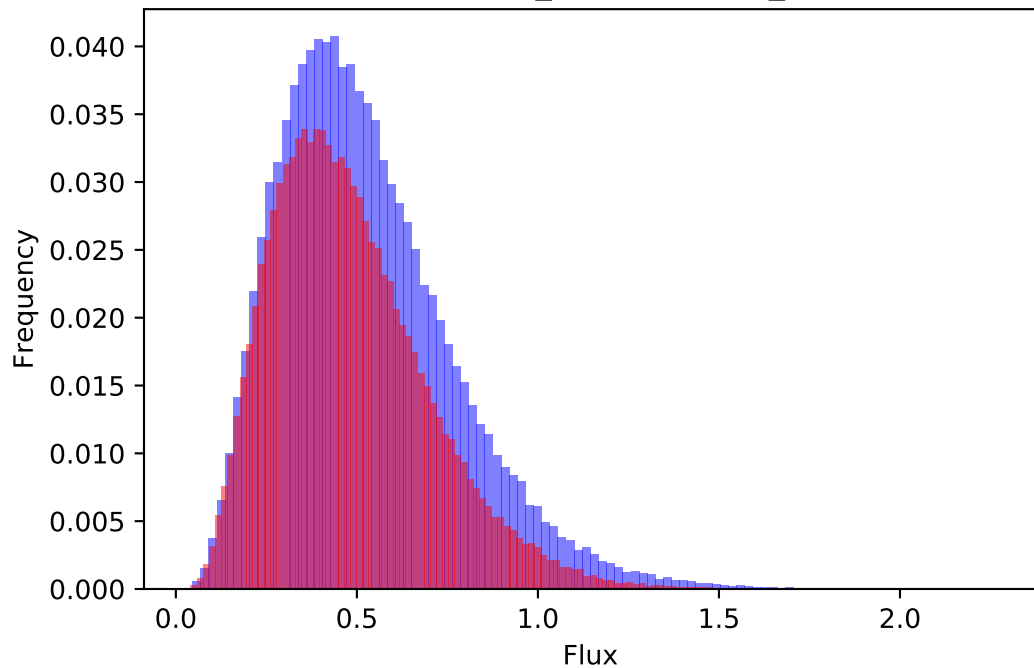
**210 : H_h + Pyr_h + ThPP_h --> CO2_h + H_DASH_Eth_DASH_ThPP_h*



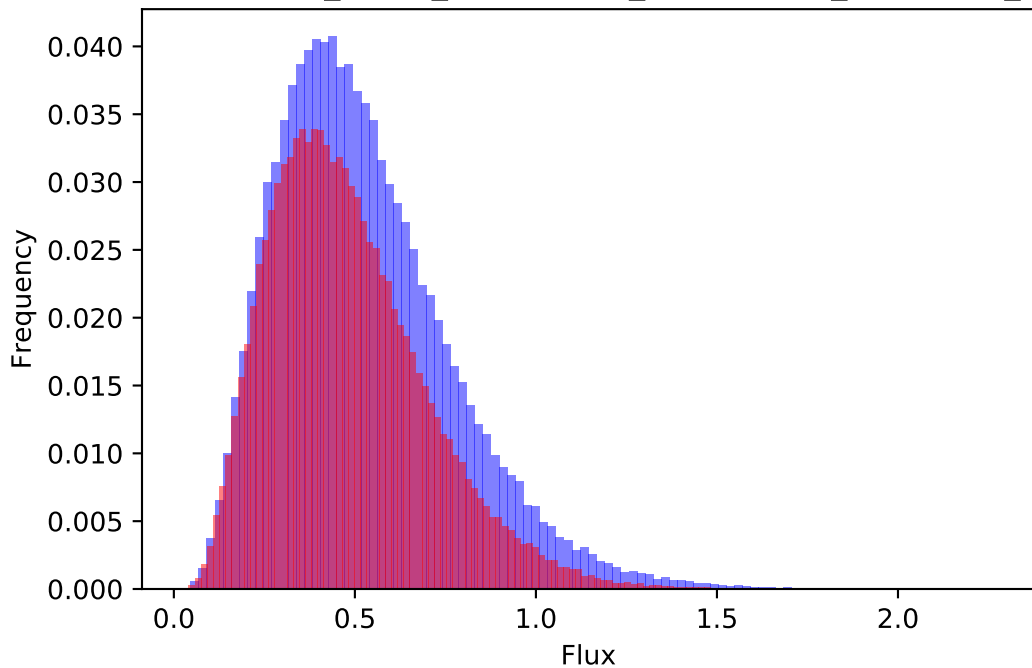
****211 : H_DASH_Eth_DASH_ThPP_h + OB_h --> AHB_h + ThPP_h****



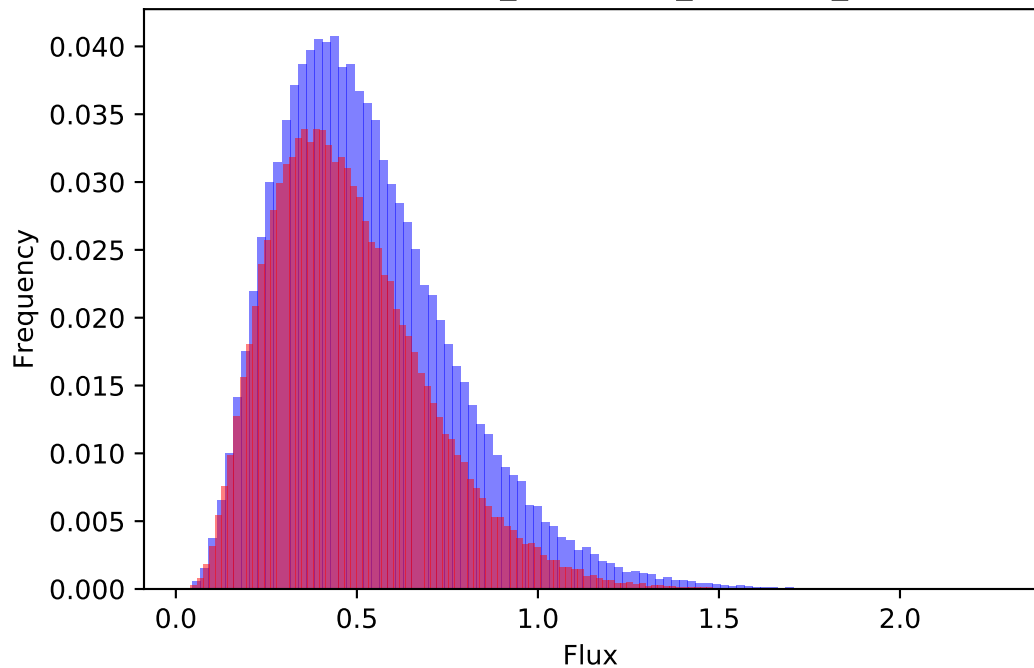
****212 : AHB_h <=> HMOP_h****



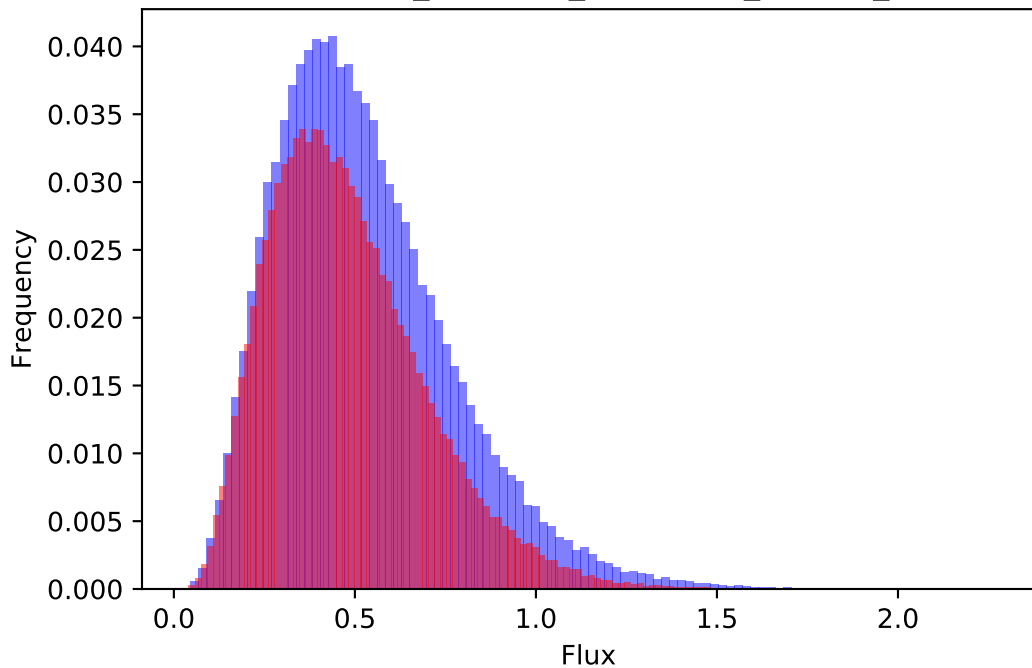
****213 : HMOP_h + H_h + NADPH_h --> DHMP_h + NADP_h****



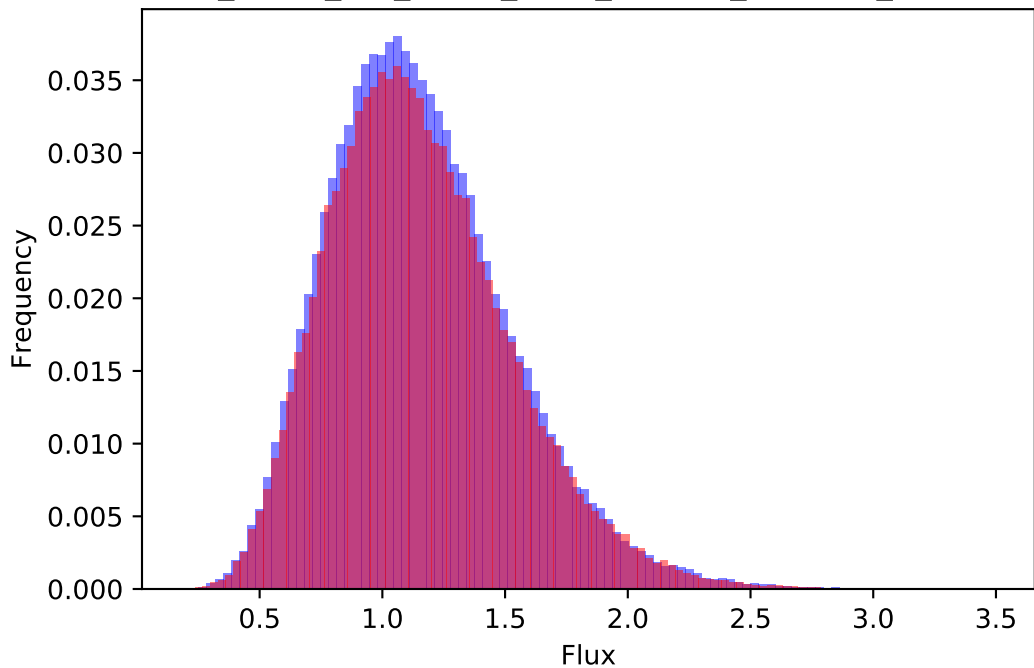
****214 : DHMP_h --> H2O_h + MOP_h****



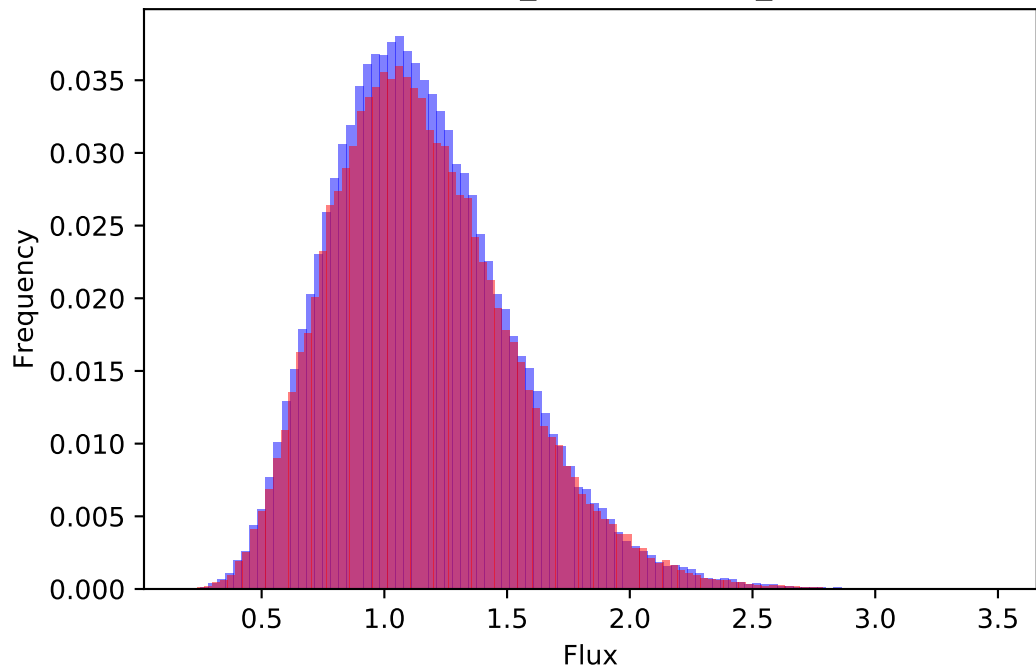
****215 : Glu_h + MOP_h <=> Ile_h + KG_h****



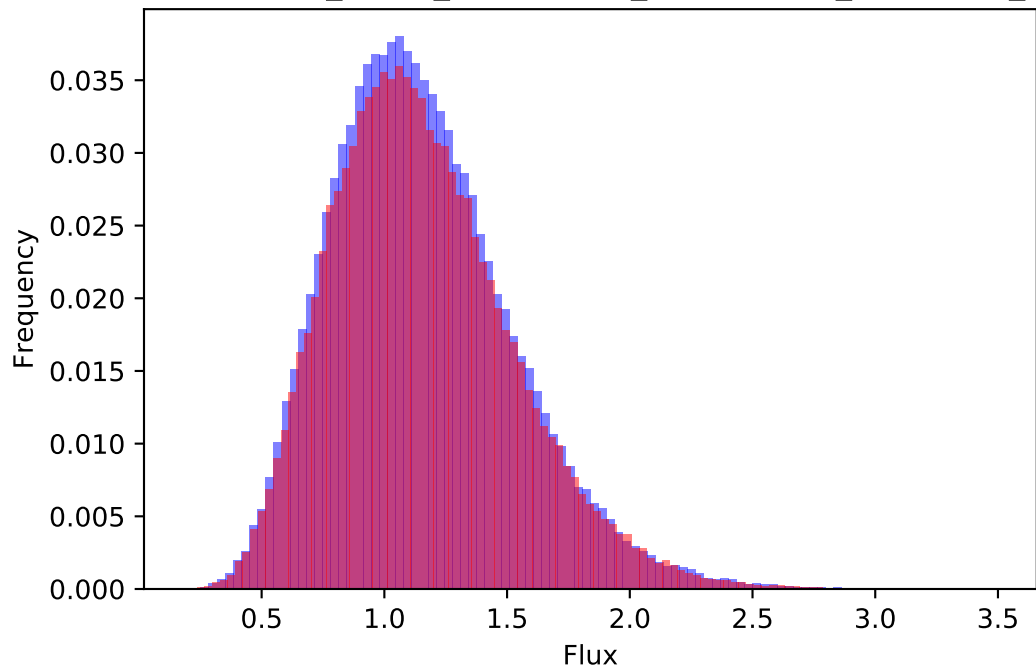
216 : H_DASH_Eth_DASH_ThPP_h + Pyr_h --> AL_h + ThPP_h



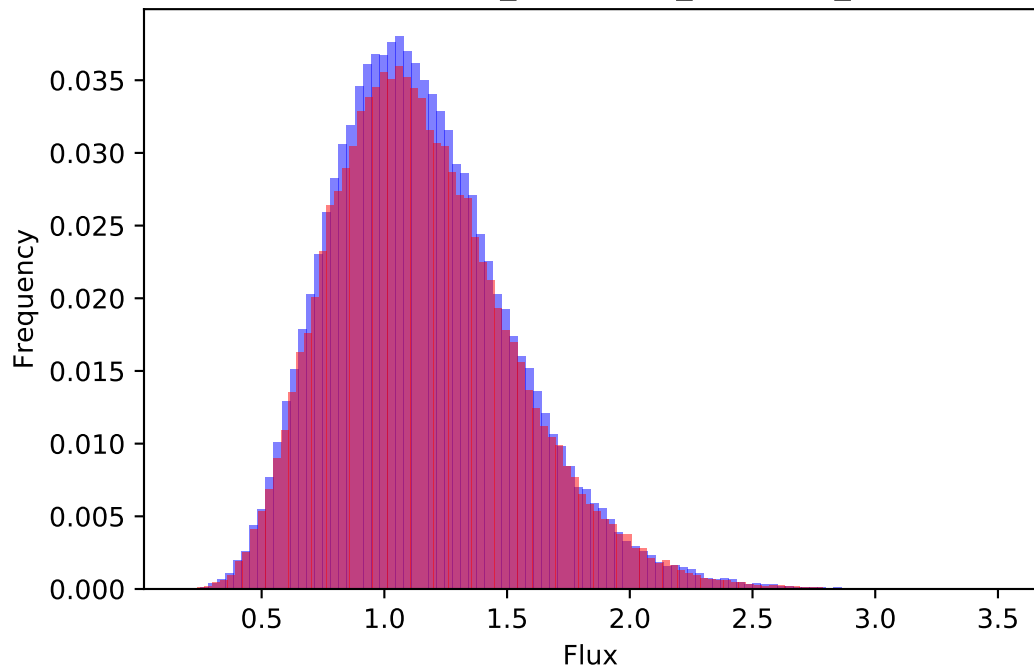
217 : AL_h <=> HMOB_h



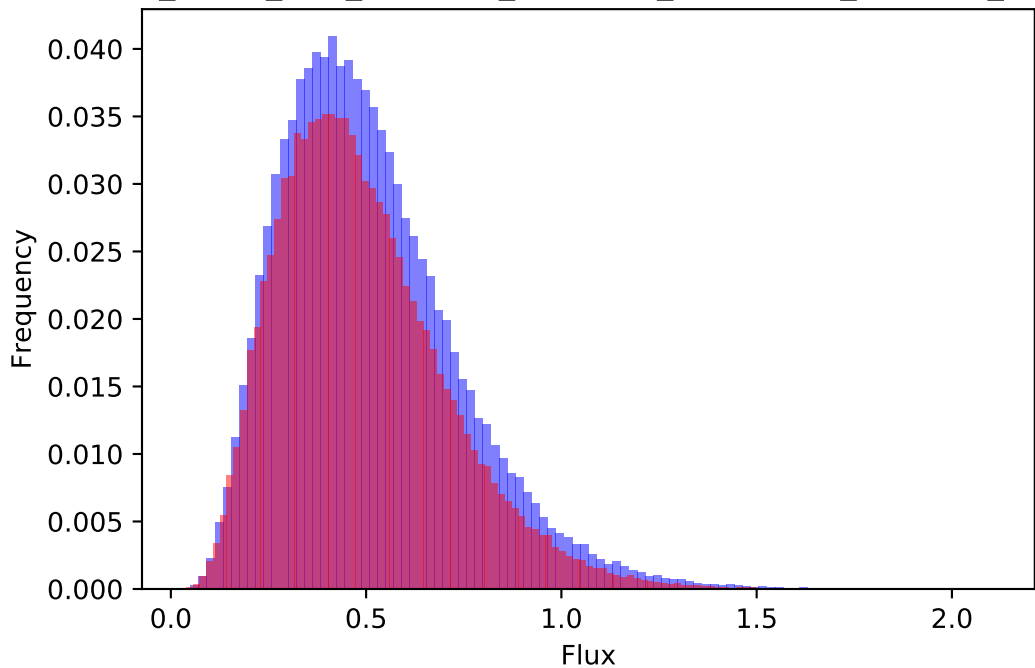
218 : HMOB_h + H_h + NADPH_h --> DHMB_h + NADP_h



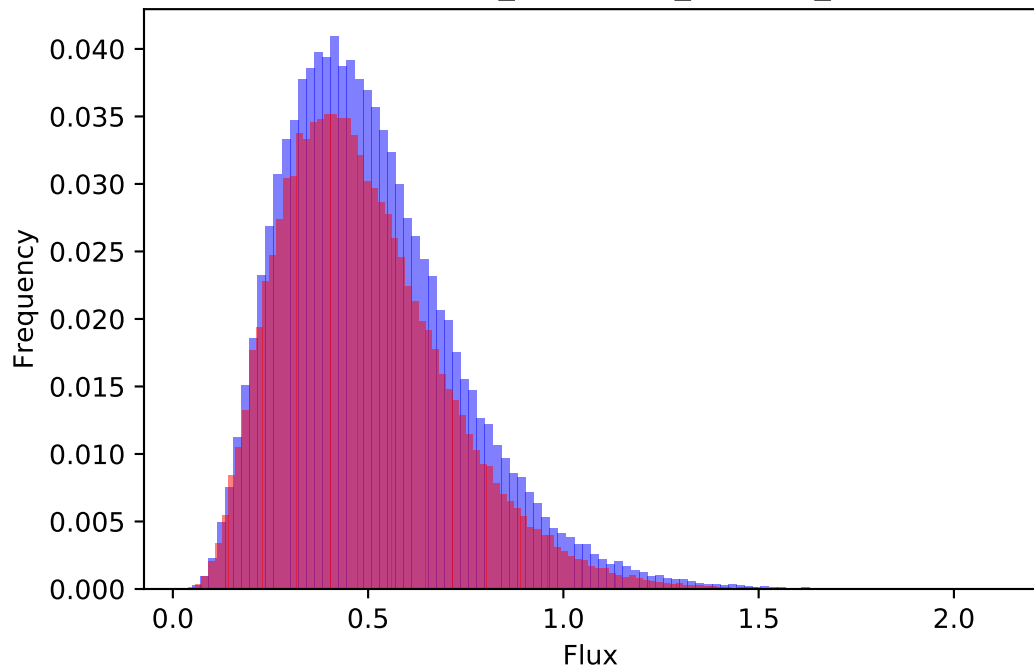
219 : DHMB_h --> H2O_h + MOB_h



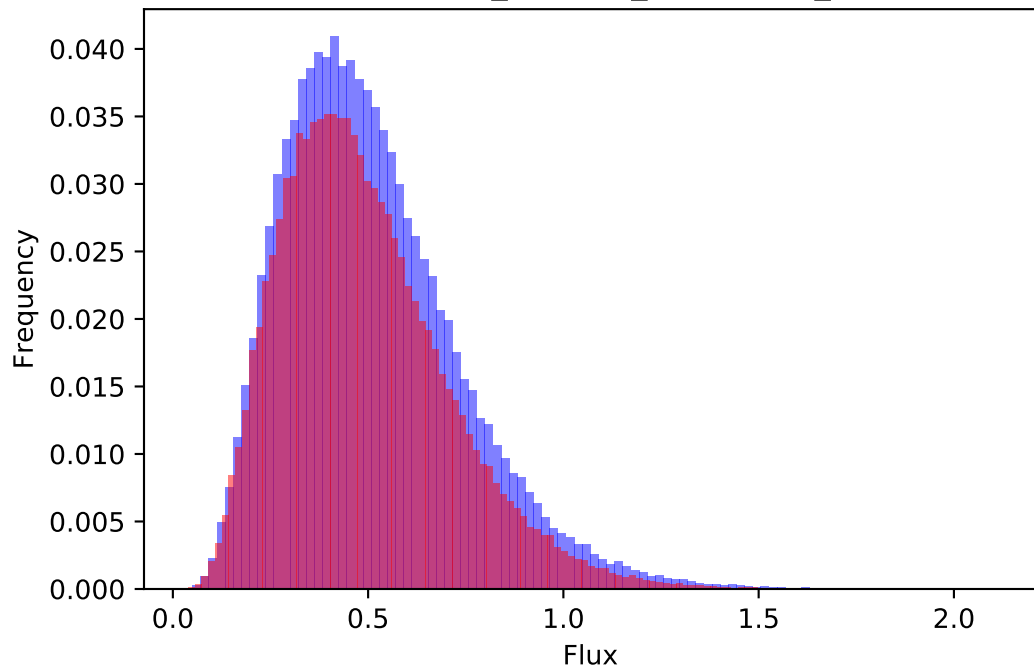
****220 : A_DASH_CoA_h + H2O_h + MOB_h --> 2IPM_h + CoA_h + H_h***



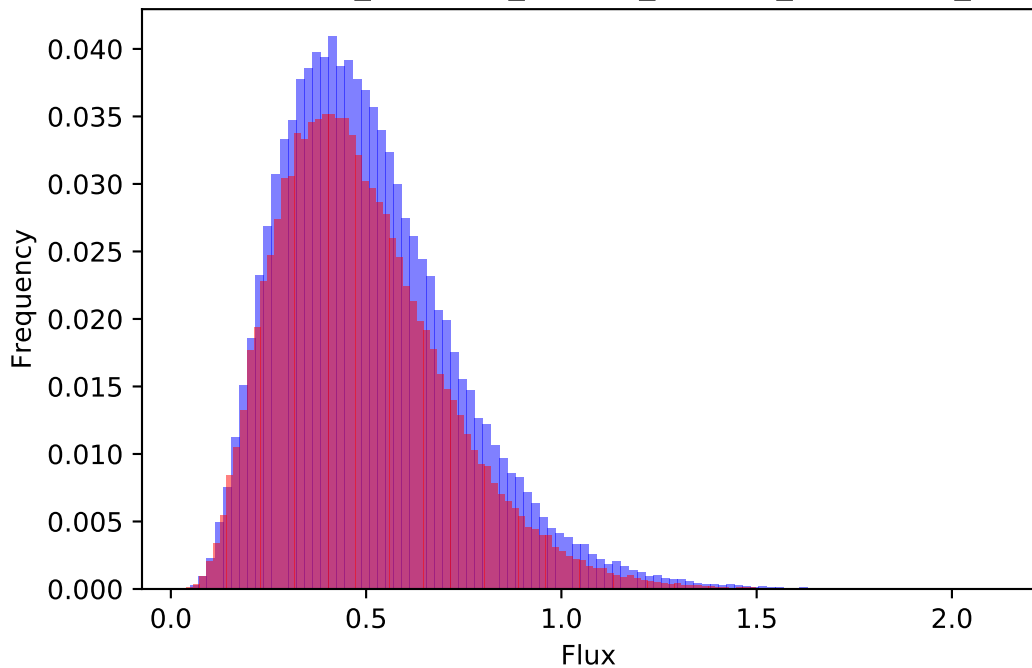
****221 : 2IPM_h --> H2O_h + IPM_h****



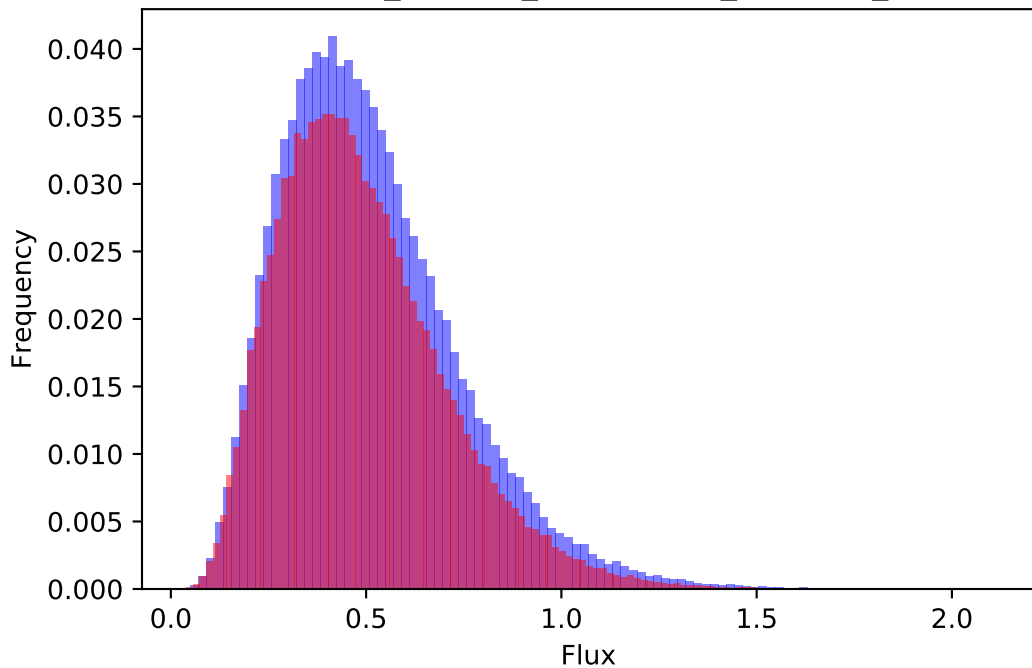
****222 : H2O_h + IPM_h --> 3IPM_h****



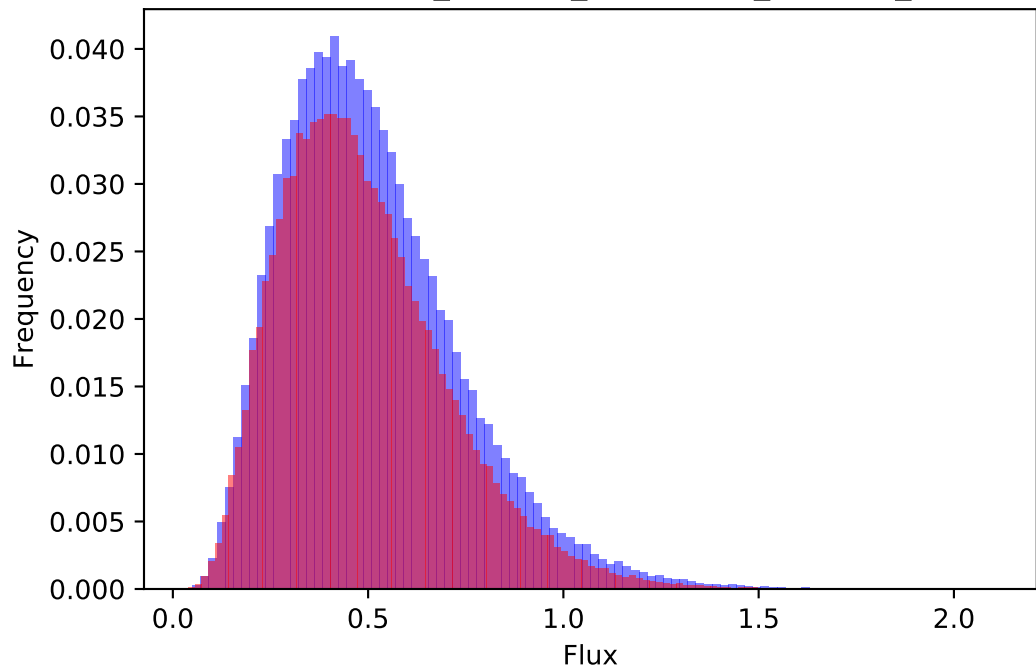
****223 : 3IPM_h + NAD_h --> H_h + IPO_h + NADH_h****



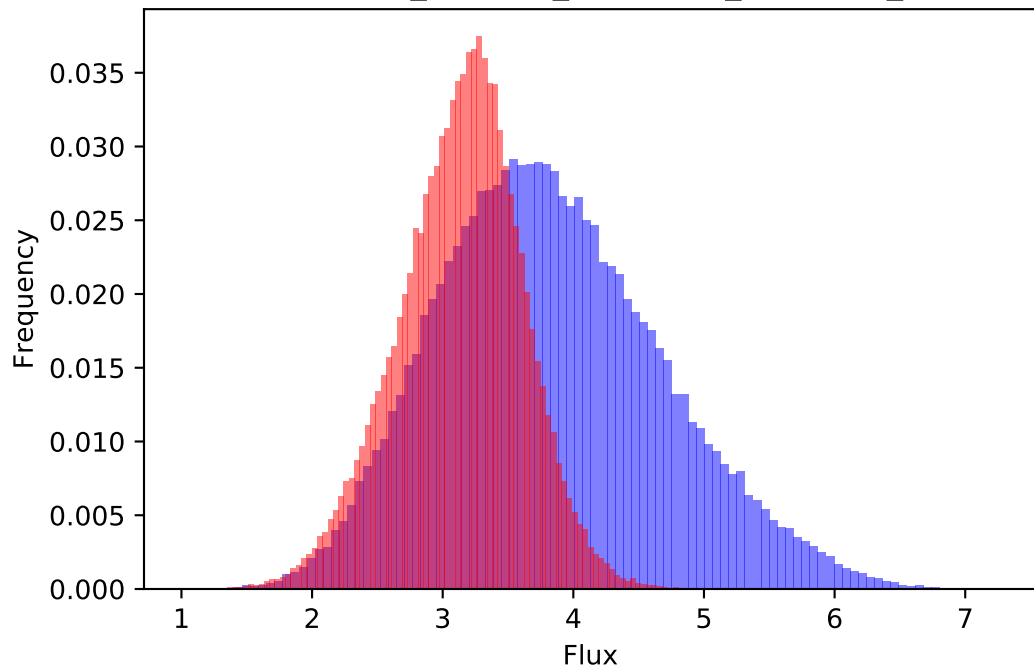
****224 : H_h + IPO_h --> 4MOP_h + CO2_h****



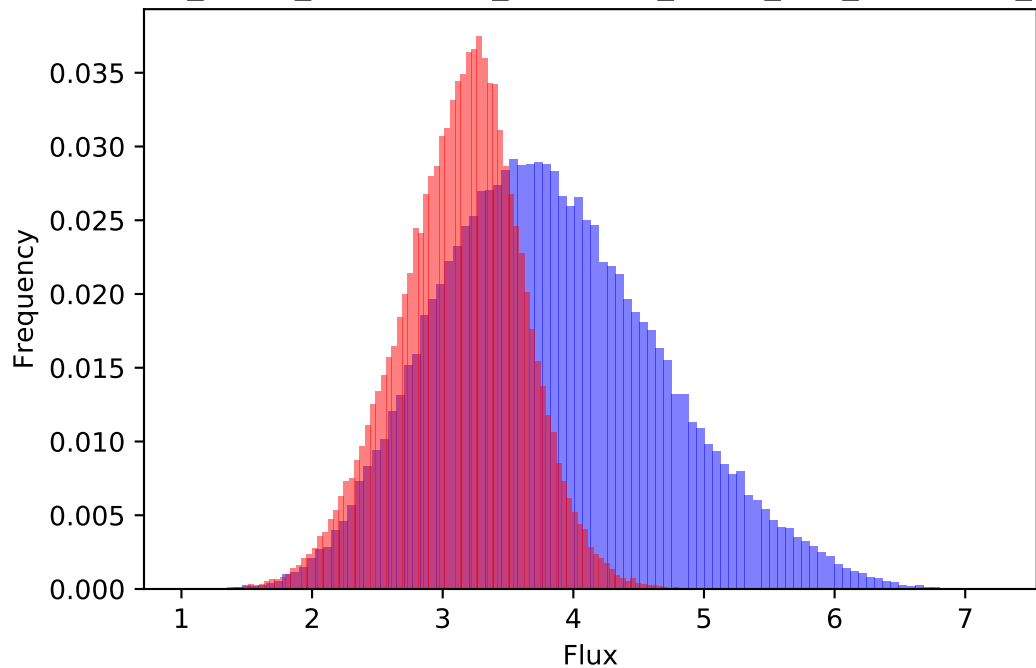
****225 : 4MOP_h + Glu_h <=> KG_h + Leu_h****



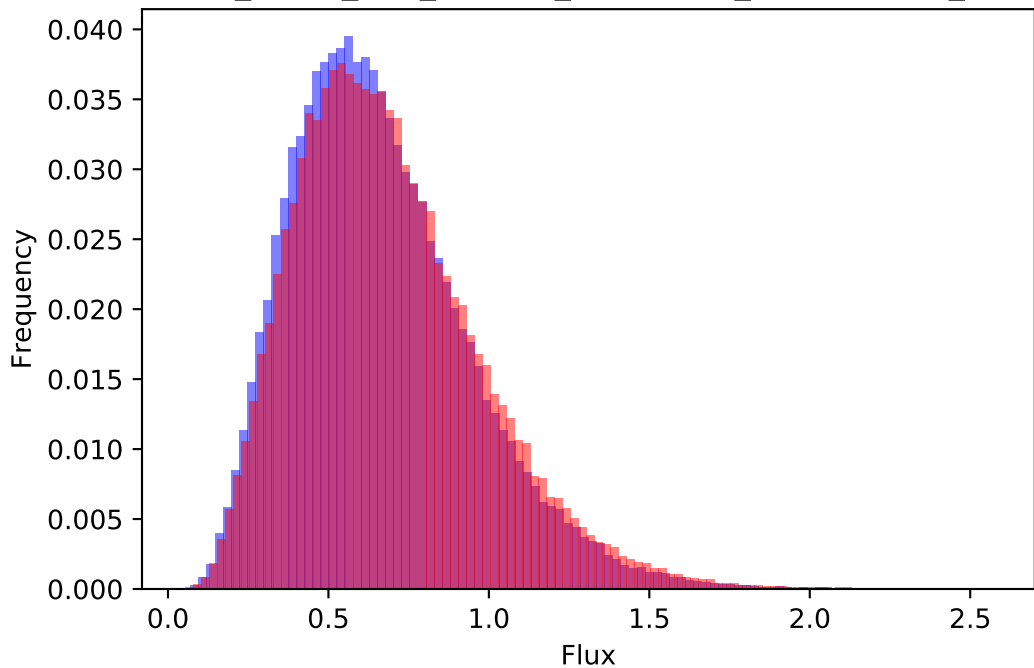
****226 : ATP_h + Asp_h --> ADP_h + AspP_h****



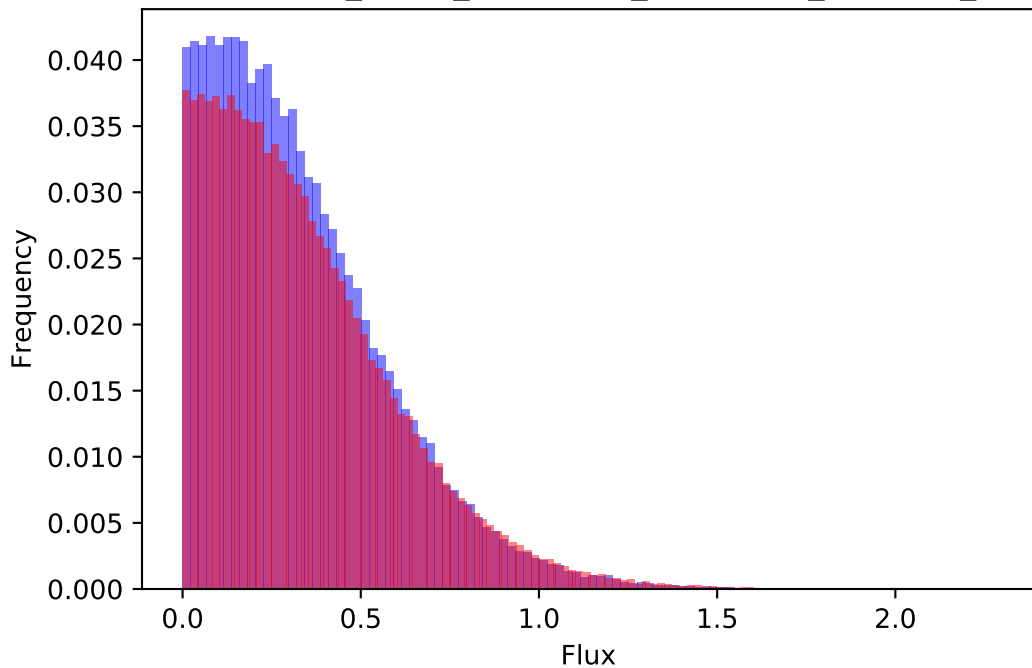
*227 : AspP_h + H_h + NADPH_h --> Asp_DASH_SeA_h + NADP_h + Pi_h



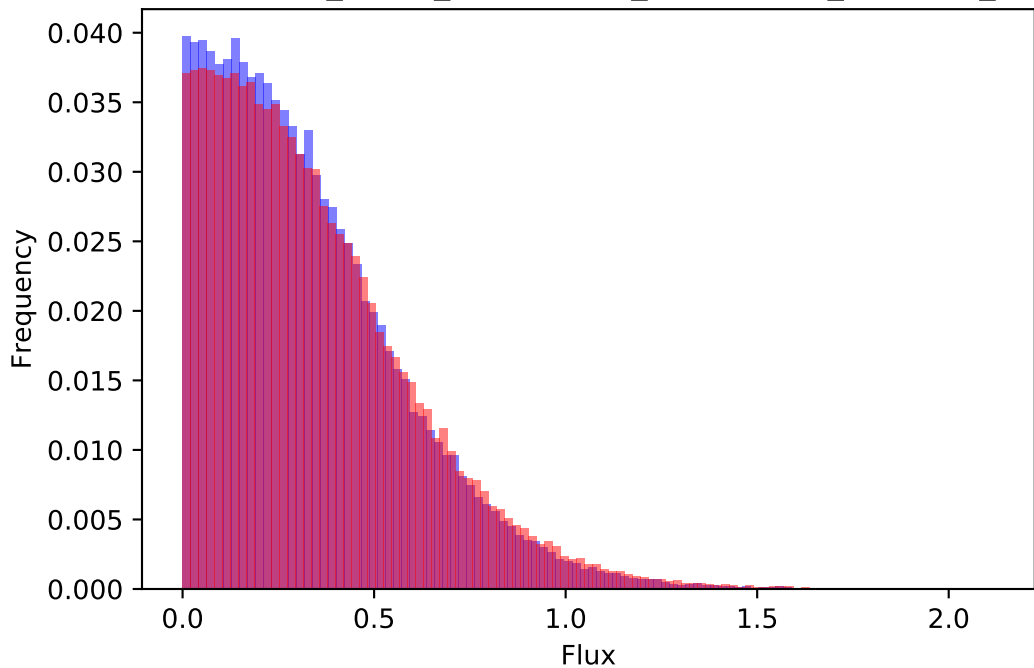
****228 : Asp_DASH_SeA_h + Pyr_h --> DHD_h + 2.0 H2O_h + H_h****



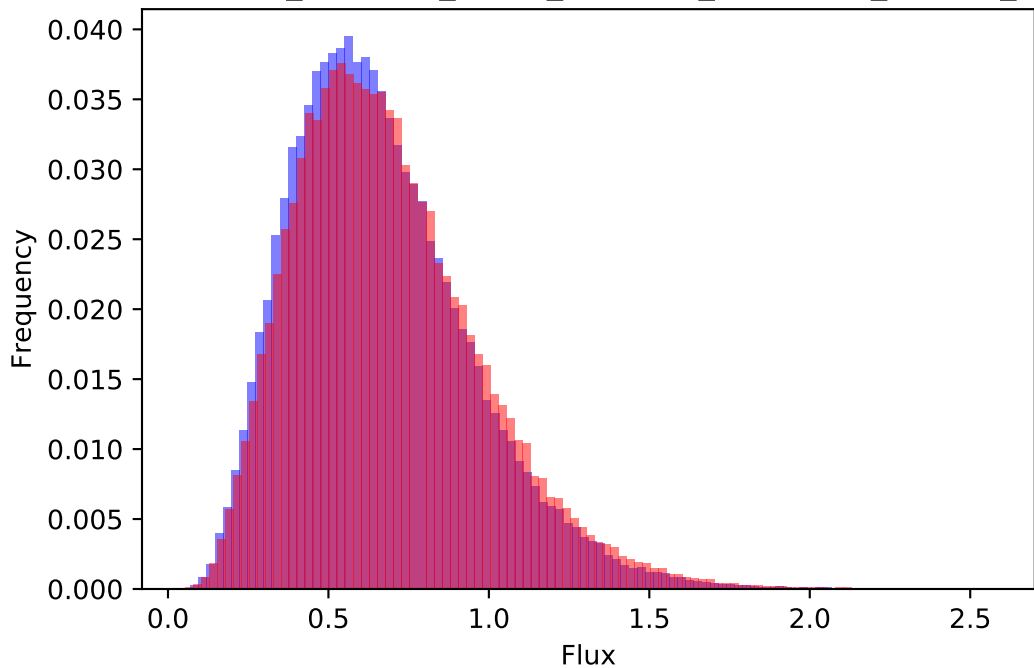
****229 : DHD_h + H_h + NADH_h --> NAD_h + THD_h****



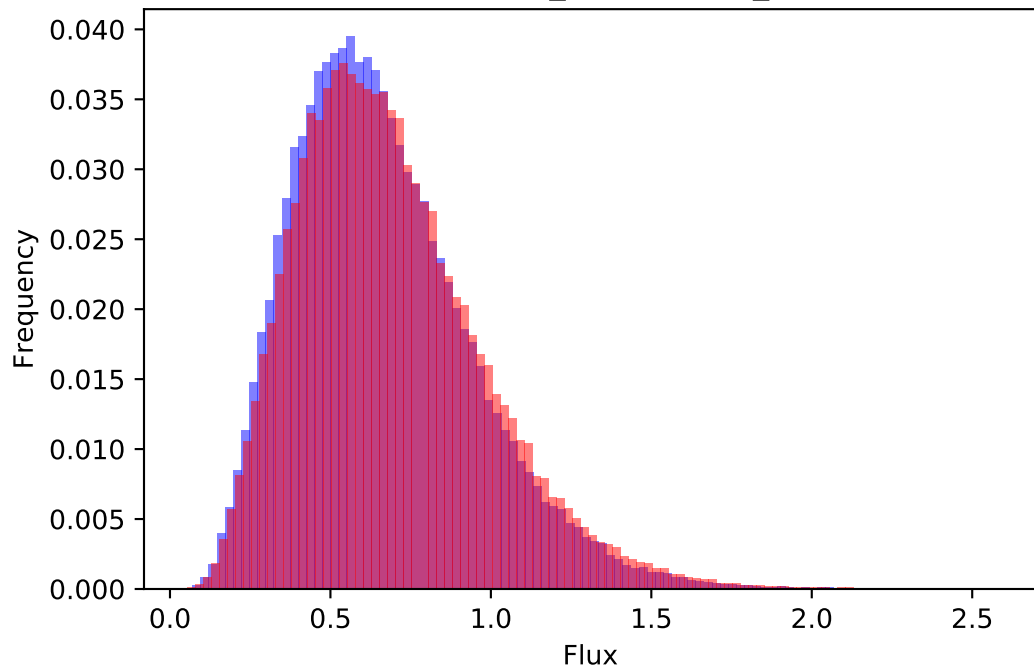
****230 : DHD_h + H_h + NADPH_h --> NADP_h + THD_h****



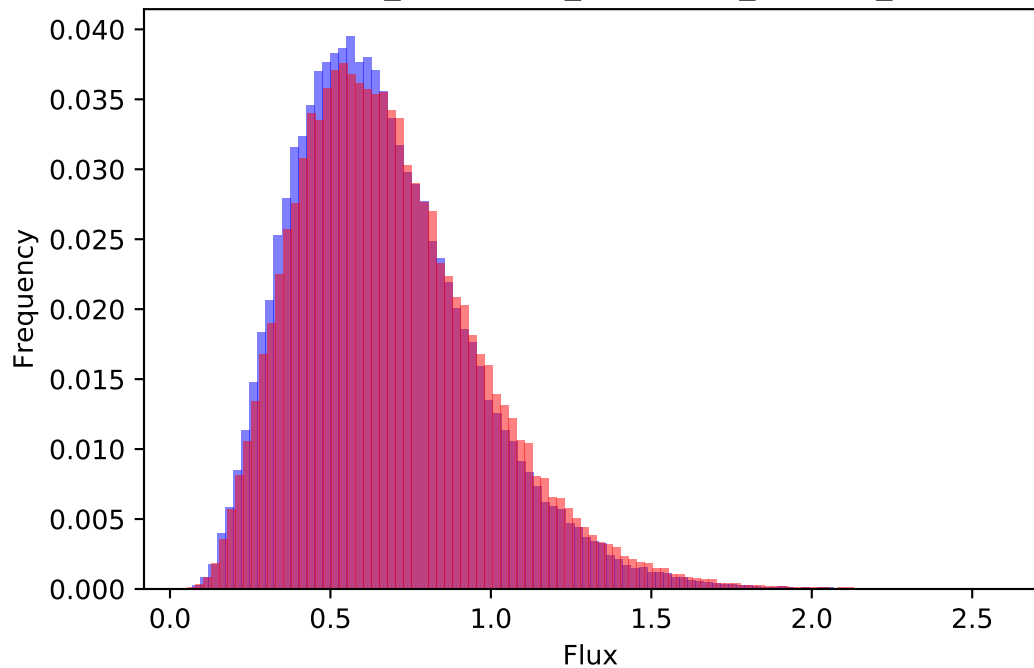
****231 : Glu_h + H2O_h + H_h + THD_h --> DAP_h + KG_h****



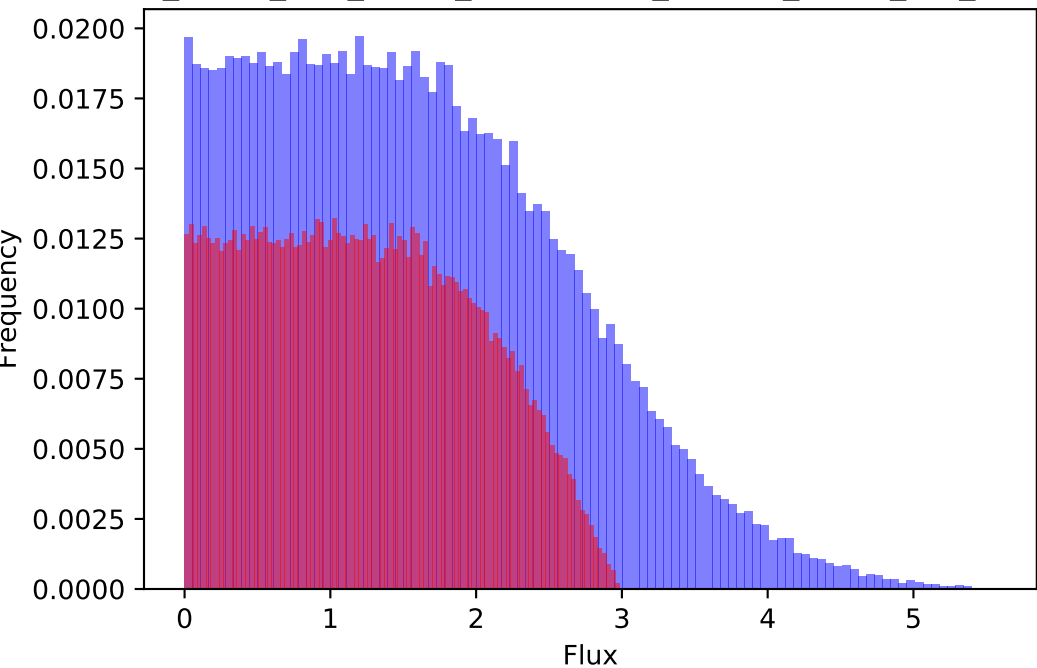
****232 : DAP_h --> mDAP_h****



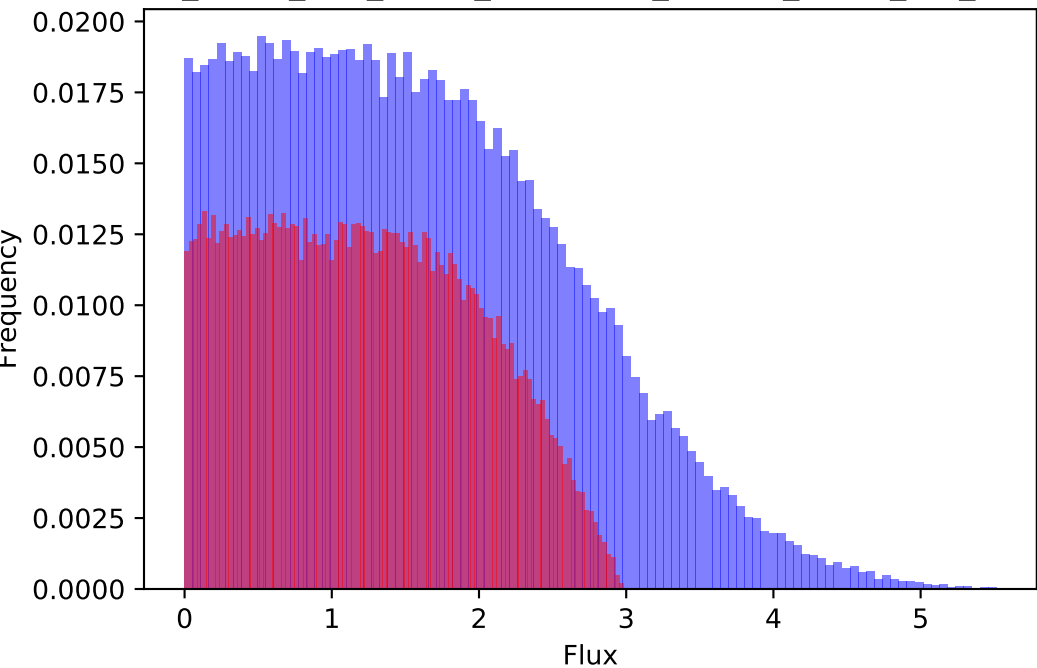
****233 : H_h + mDAP_h --> CO2_h + Lys_h****



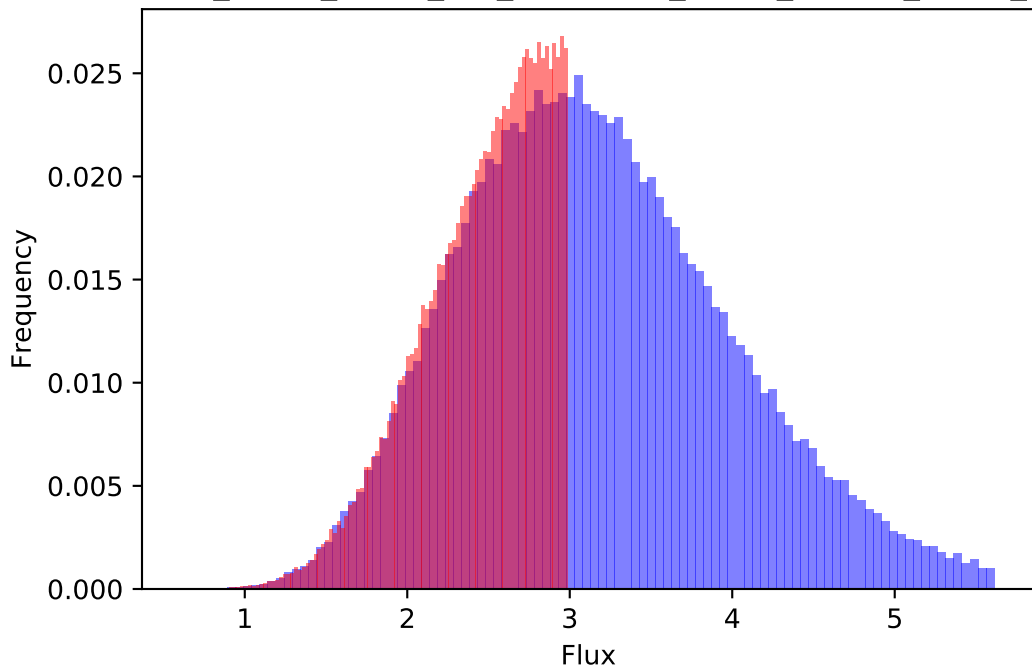
*234 : Asp_DASH_SeA_h + H_h + NADPH_h --> H_DASH_Ser_h + NADP_h



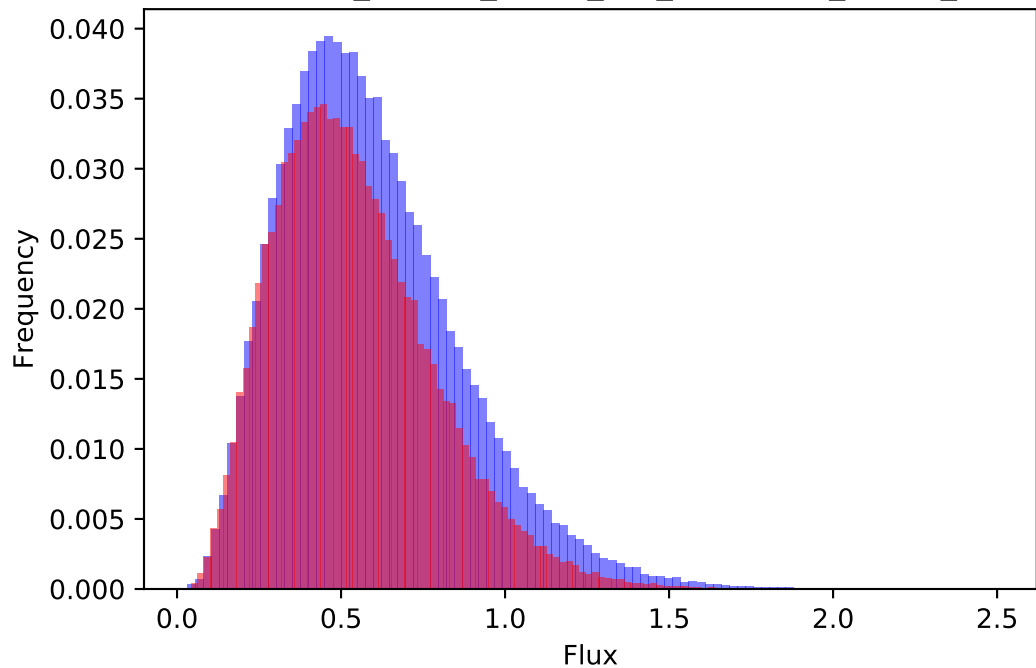
**235 : Asp_DASH_SeA_h + H_h + NADH_h --> H_DASH_Ser_h + NAD_h



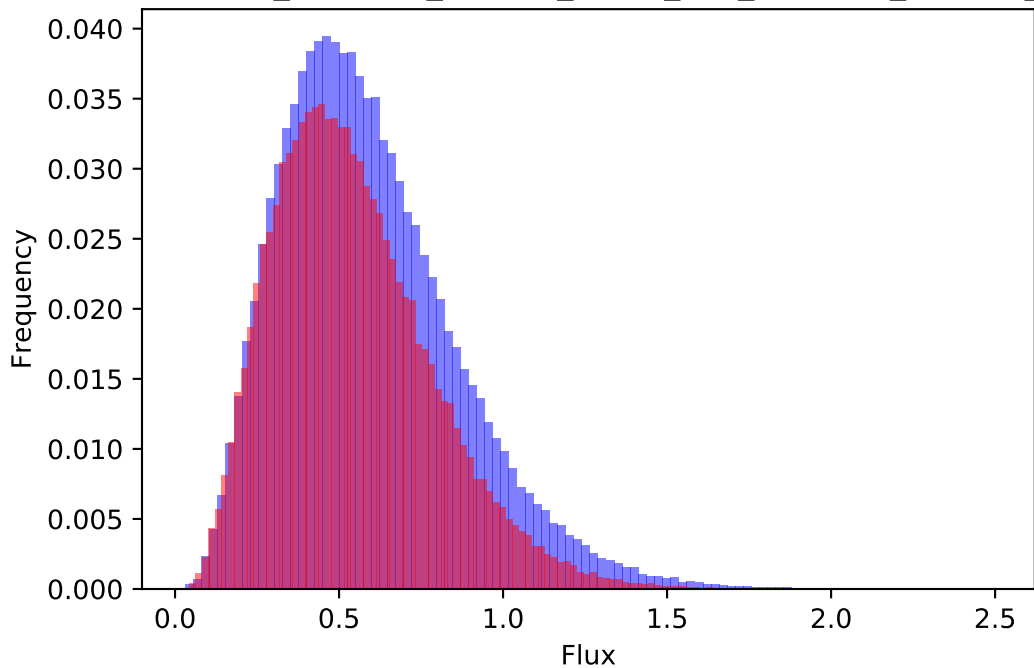
****236 : ATP_h + H_DASH_Ser_h --> ADP_h + H_h + PH_DASH_Ser_h****



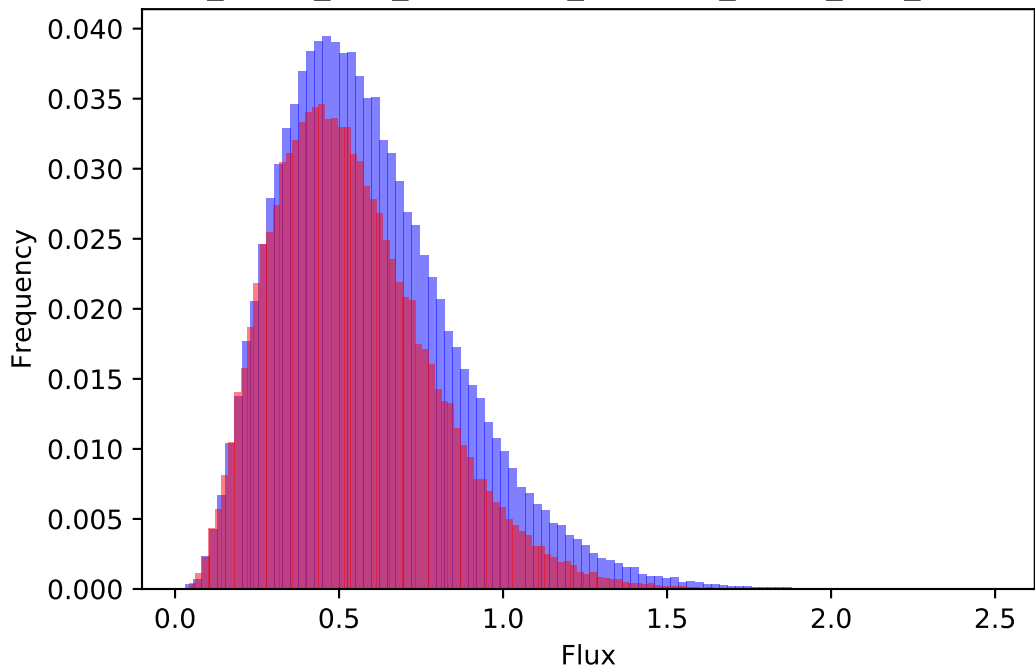
****237 : Cys_h + PH_DASH_Ser_h --> CTH_h + Pi_h****



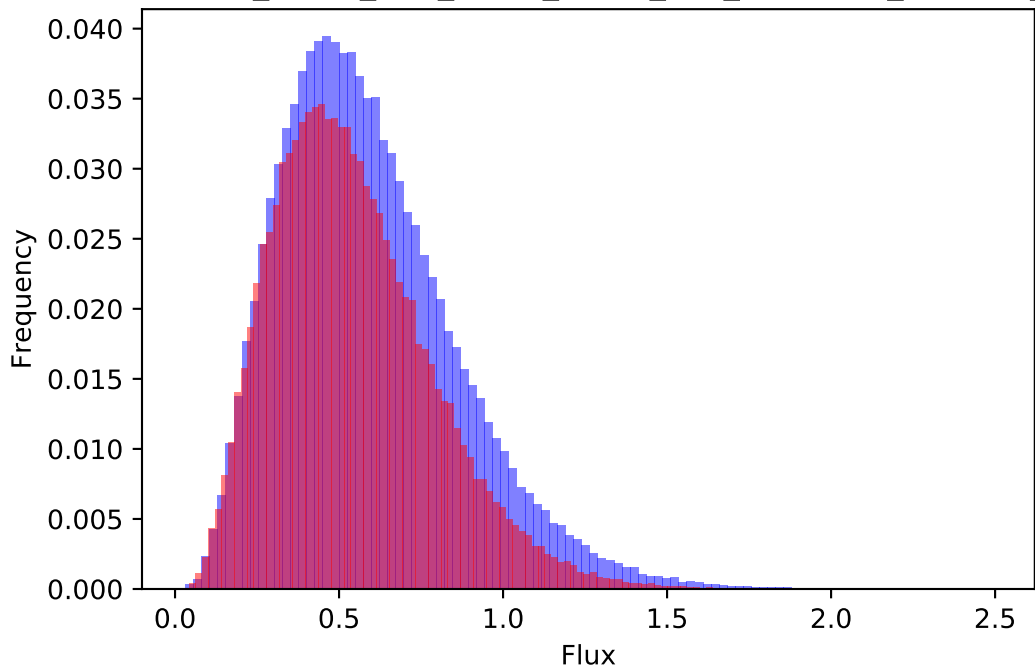
****238 : CTH_h + H2O_h --> H_DASH_Cys_h + NH4_h + Pyr_h****



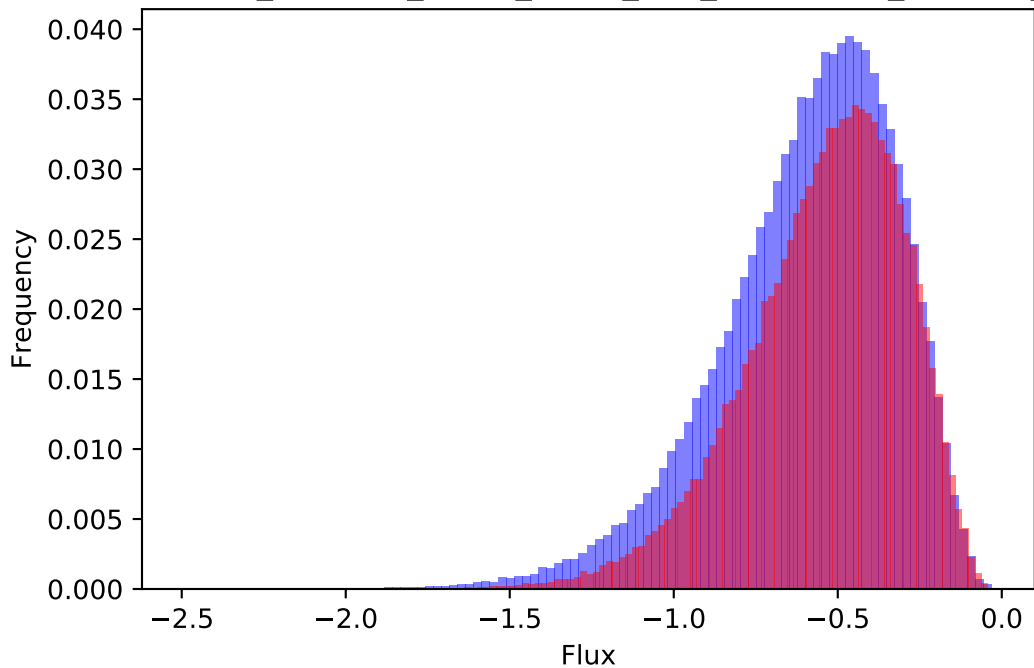
****239 : M_DASH_THF_c + NADH_c --> 5M_DASH_THF_c + NAD_c****



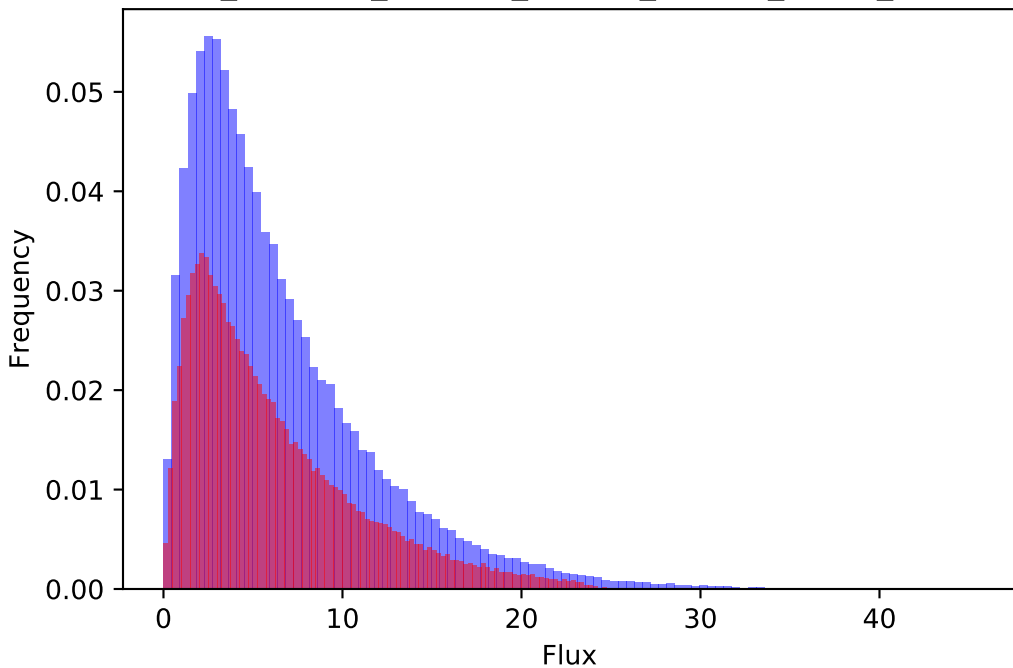
****240 : 5M_DASH_THF_c + H_DASH_Cys_c --> Met_c + THF_c****



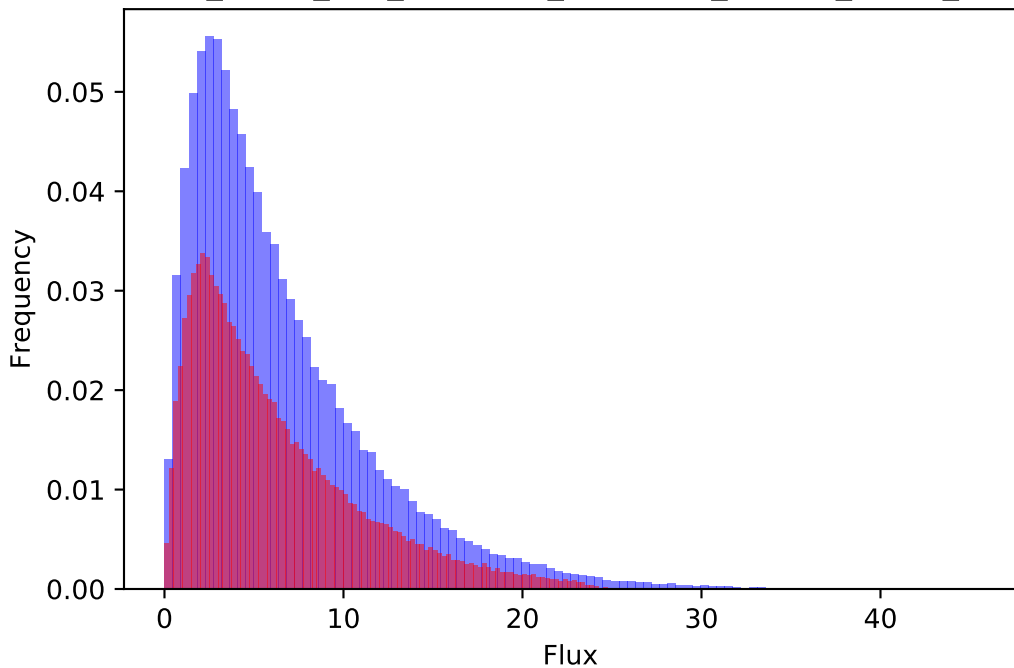
****241 : Gly_c + H2O_c + M_DASH_THF_c <=> Ser_c + THF_c****



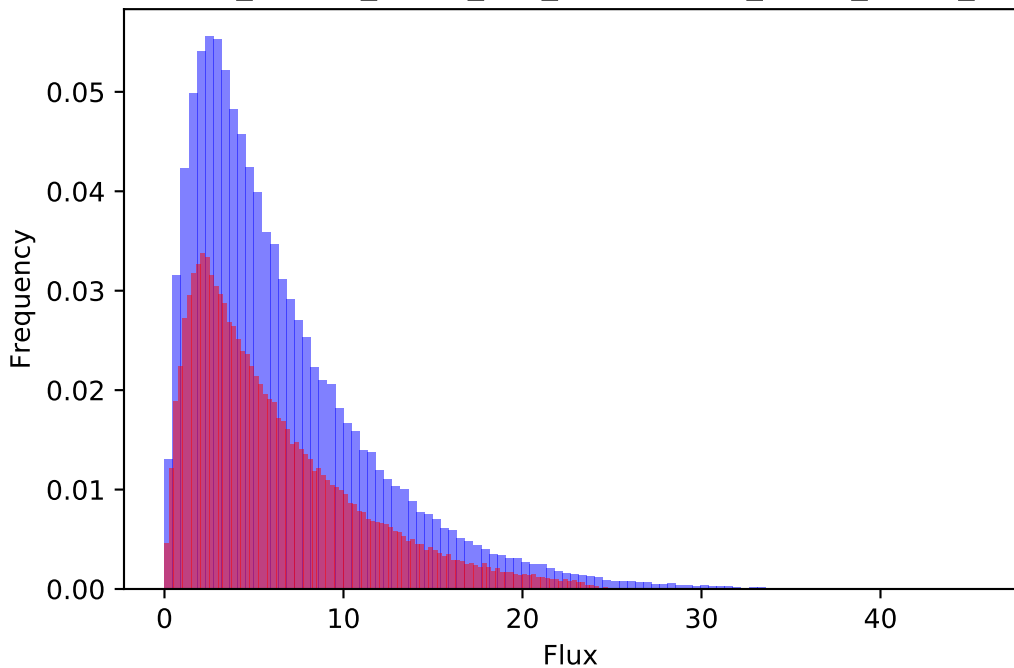
****242 : ATP_c + H2O_c + Met_c --> H_c + PPI_c + Pi_c + aMet_c****



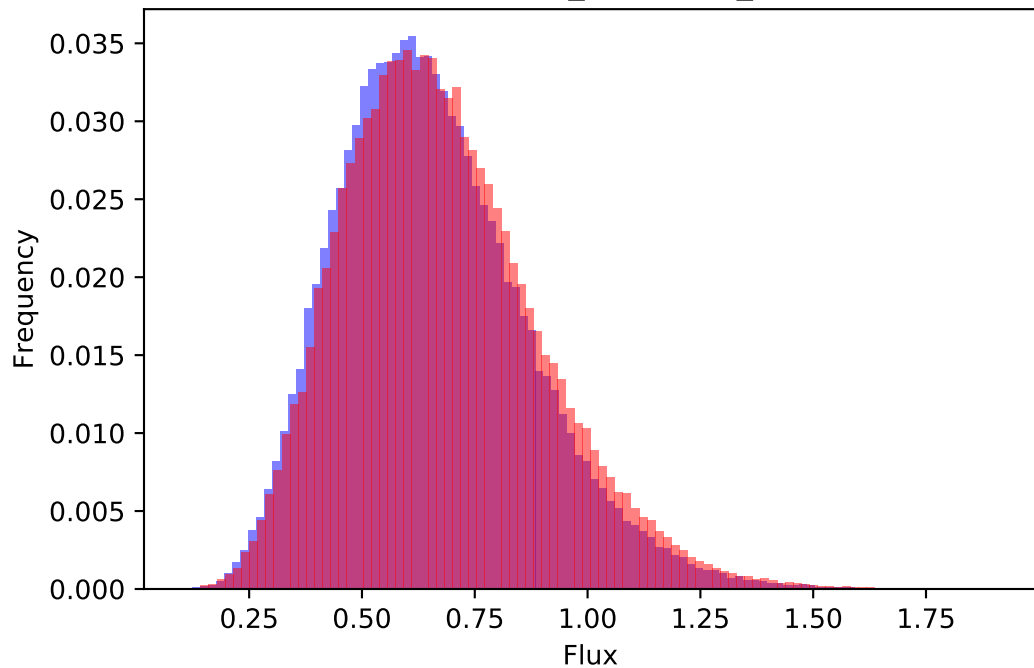
****243 : H_DASH_Cys_c + aMet_c --> Met_c + aH_DASH_Cys_c****



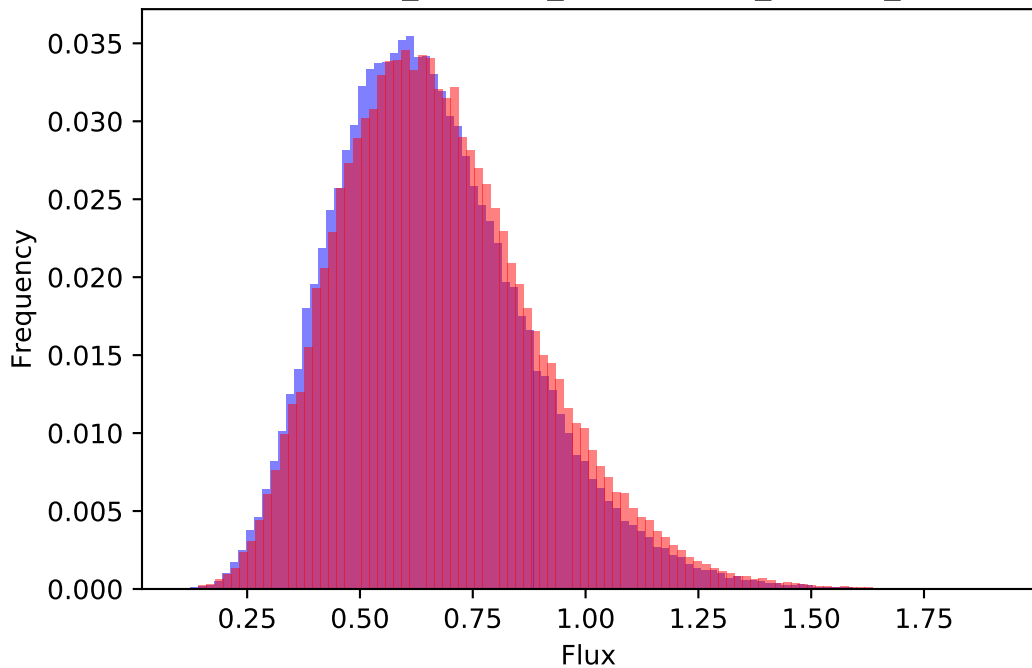
****244 : H2O_c + aH_DASH_Cys_c <=> ADN_c + H_DASH_Cys_c****



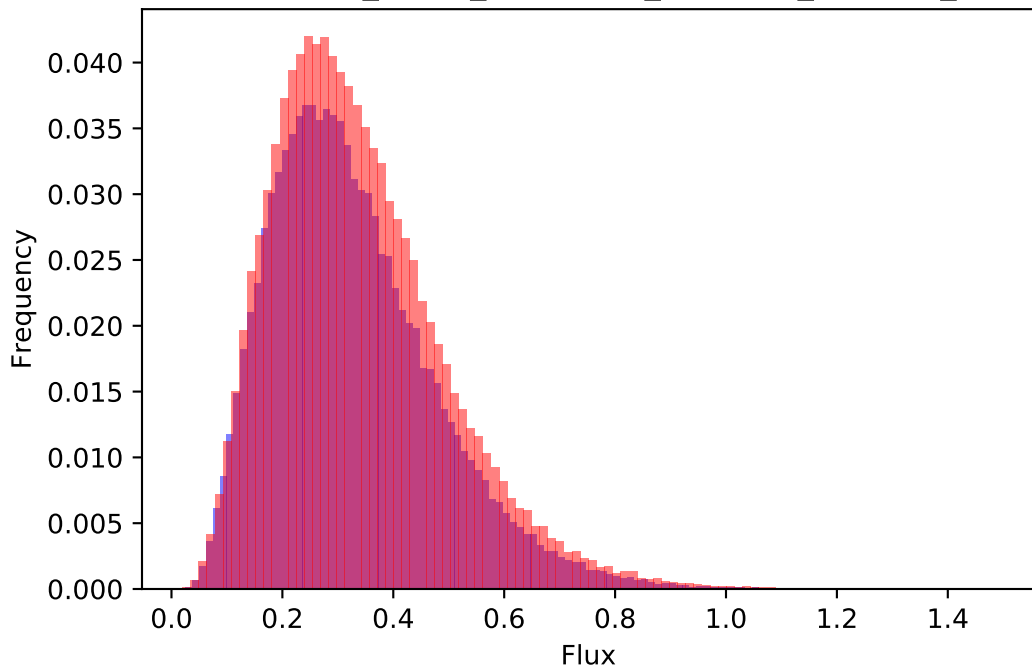
****245 : CHR_h --> PRE_h****



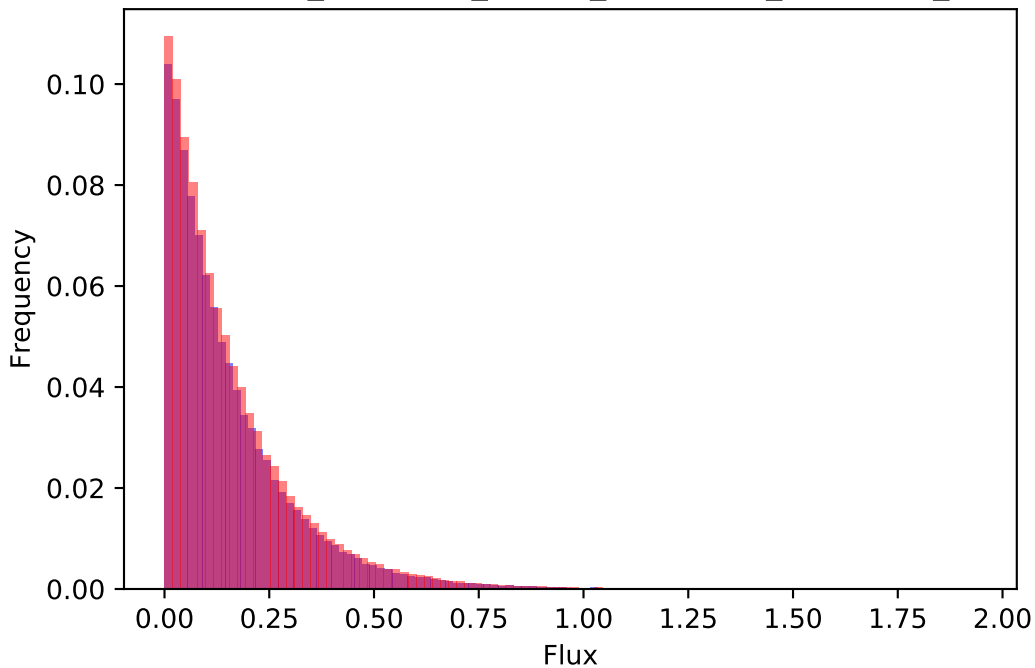
****246 : Glu_h + PRE_h <=> AGN_h + KG_h****



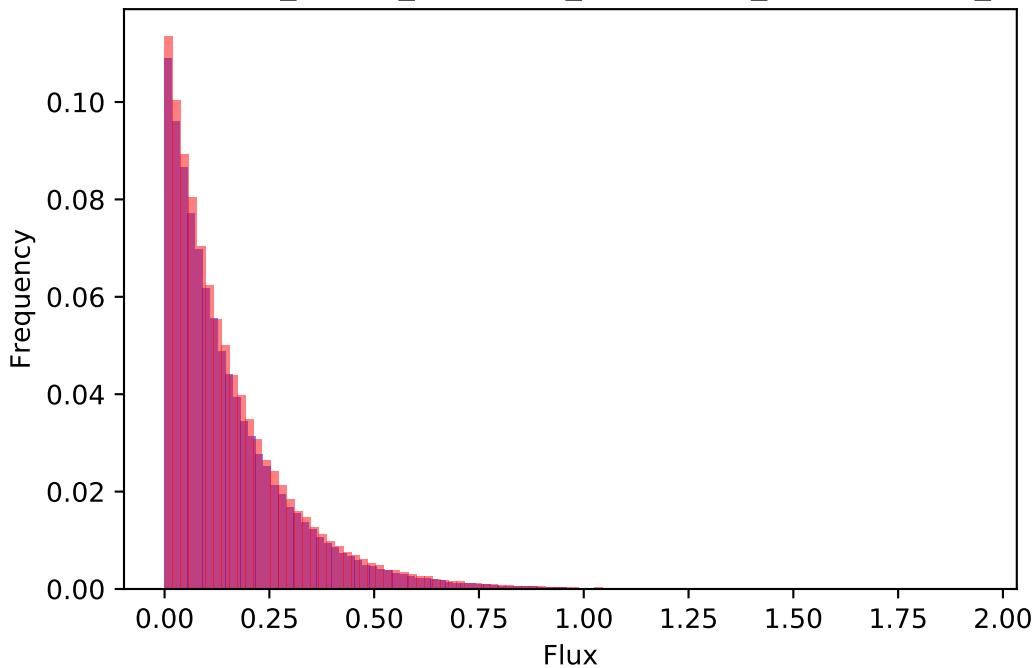
****247 : AGN_h + H_h --> CO2_h + H2O_h + Phe_h****



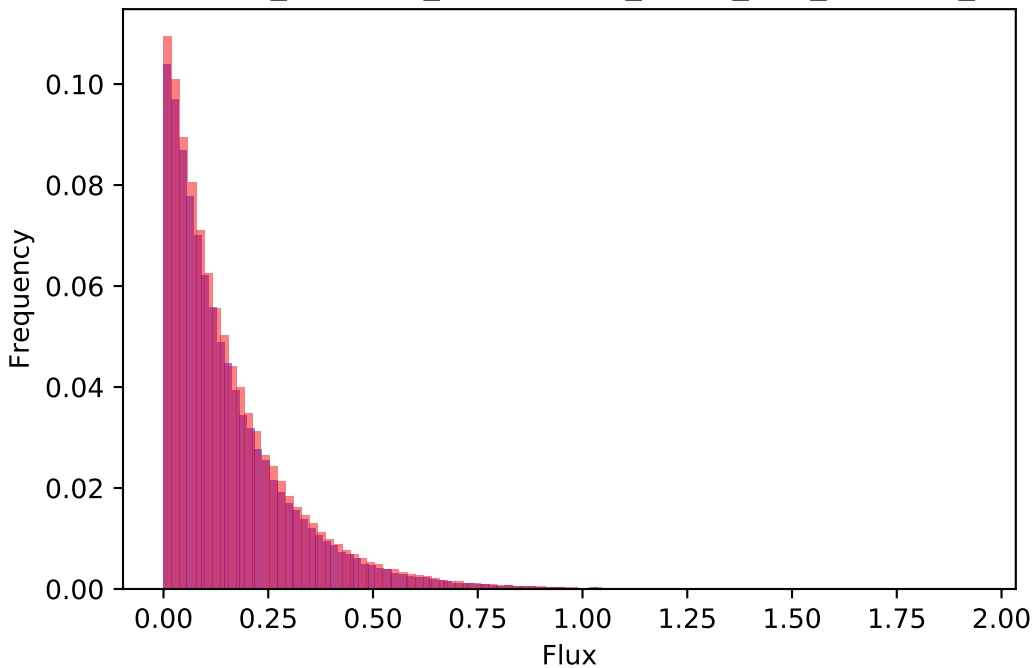
****248 : Arg_m + H2O_m + H_m --> Orn_m + urea_m****



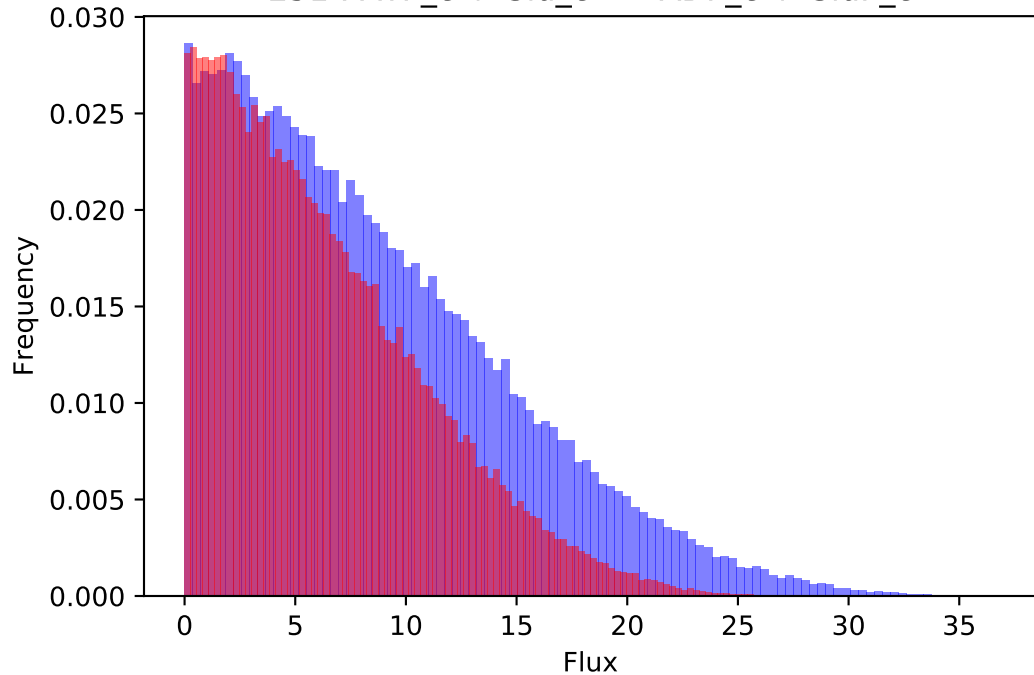
****249 : H2O_m + H_m + urea_m --> CO2_m + 2.0 NH4_m****



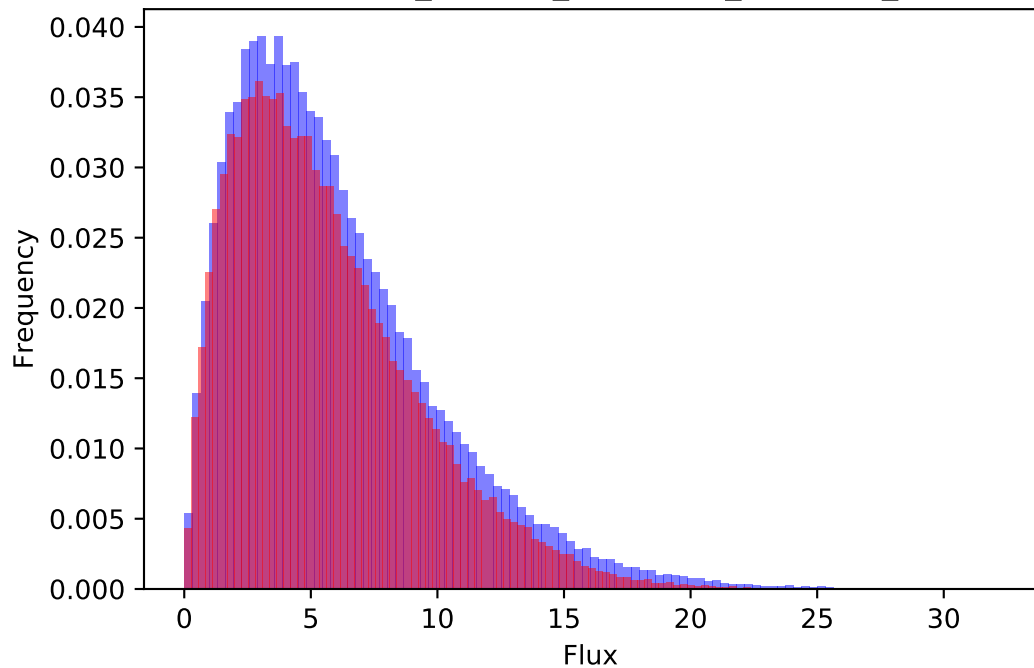
****250 : KG_m + Orn_m <=> Glu_DASH_SeA_m + Glu_m****



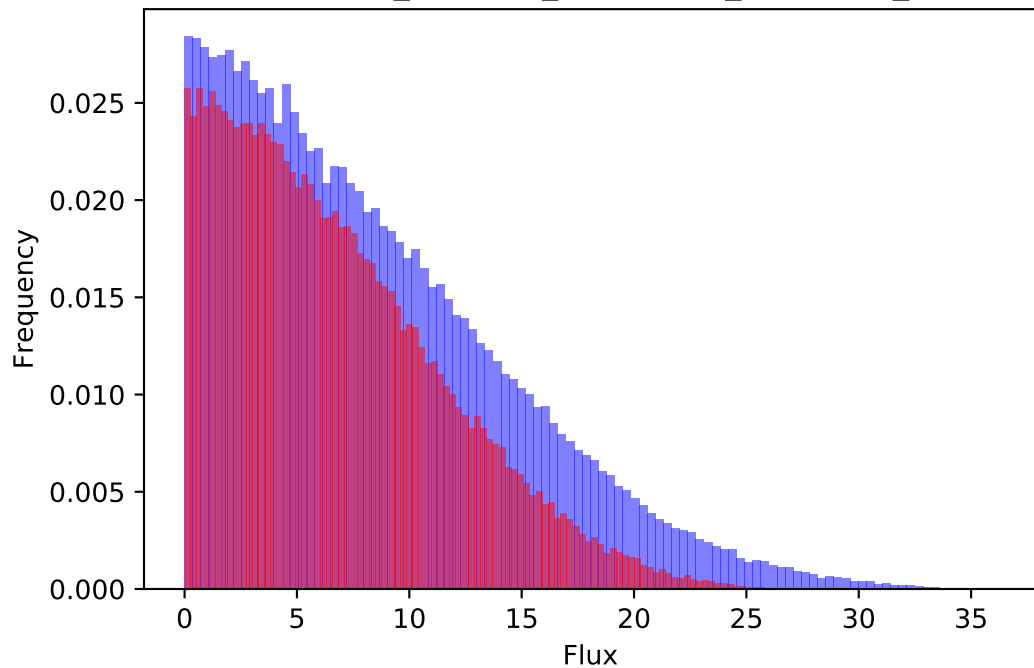
****251 : ATP_c + Glu_c --> ADP_c + GluP_c****



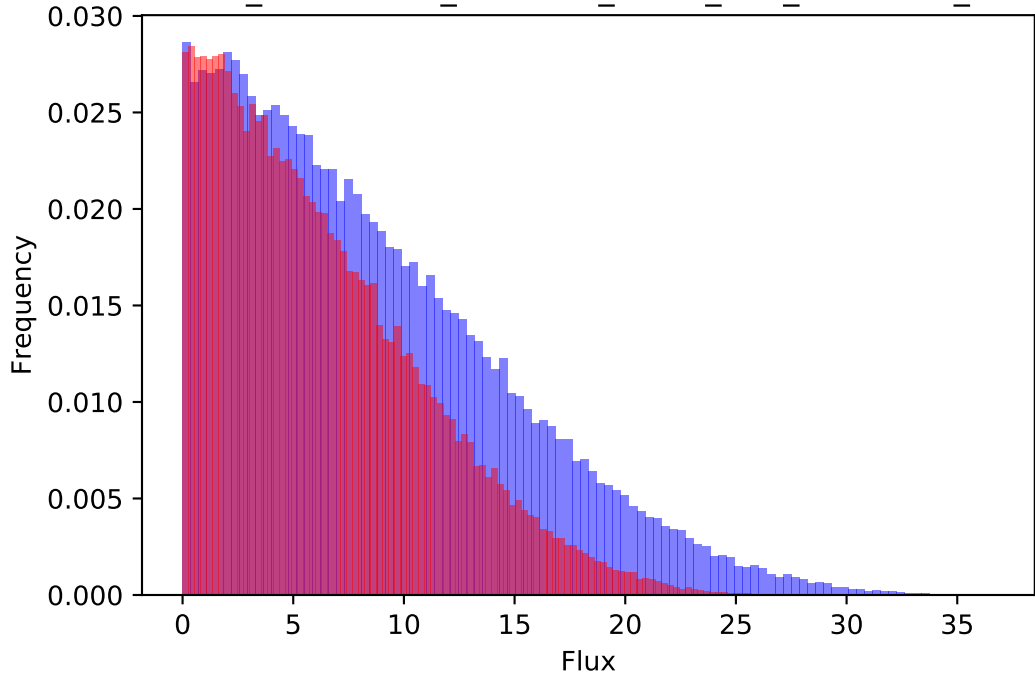
****252 : ATP_h + Glu_h --> ADP_h + GluP_h****



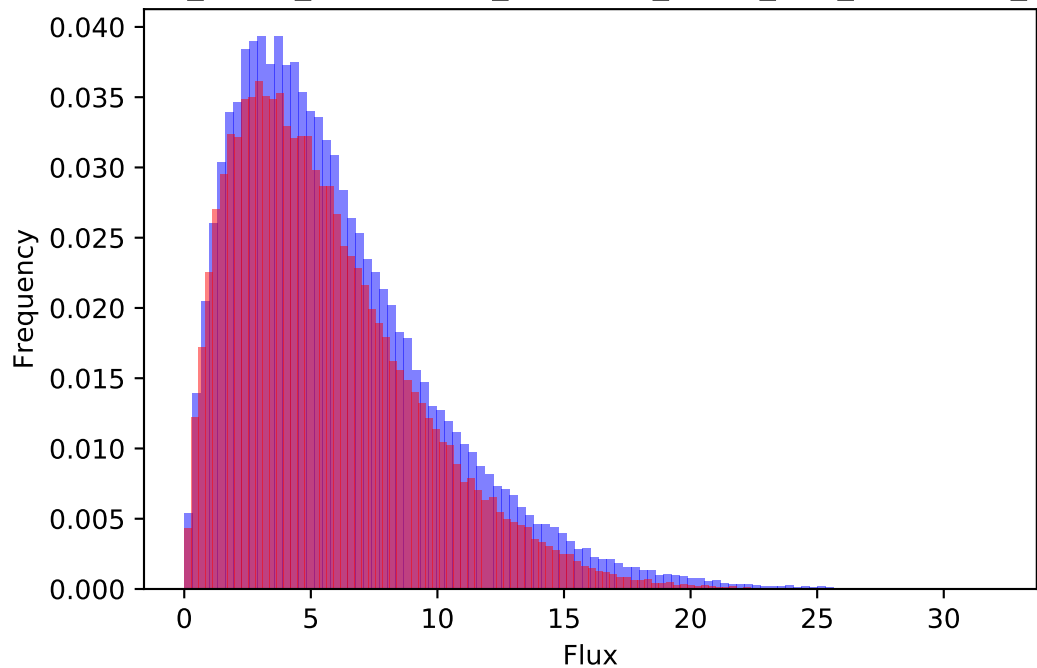
****253 : ATP_m + Glu_m --> ADP_m + GluP_m****



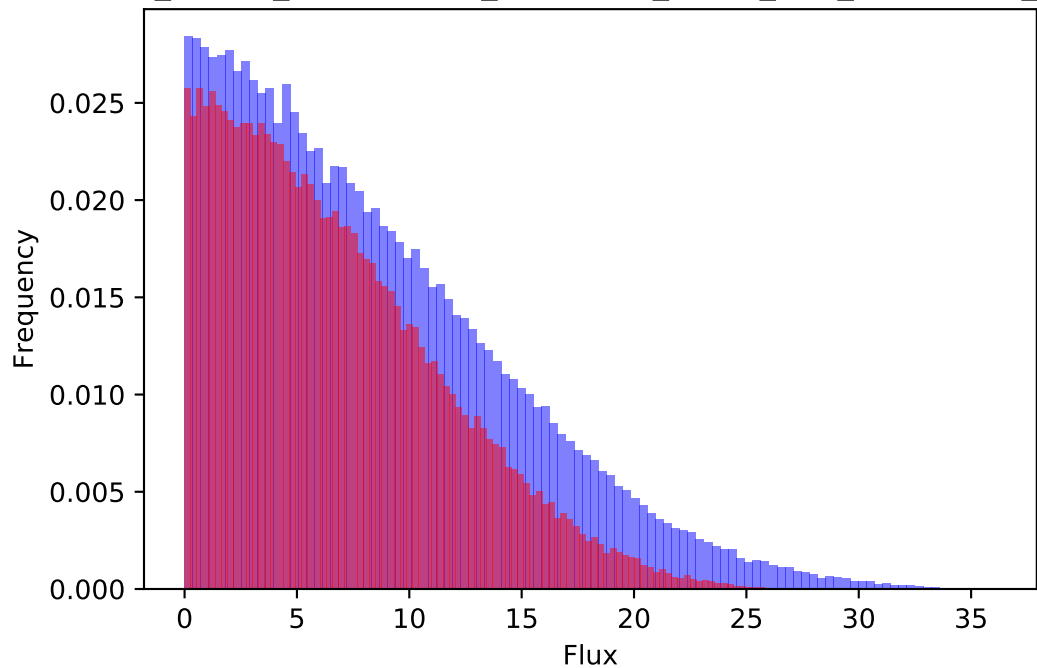
****254 : GluP_c + NADPH_c --> Glu_DASH_SeA_c + NADP_c + Pi_c****



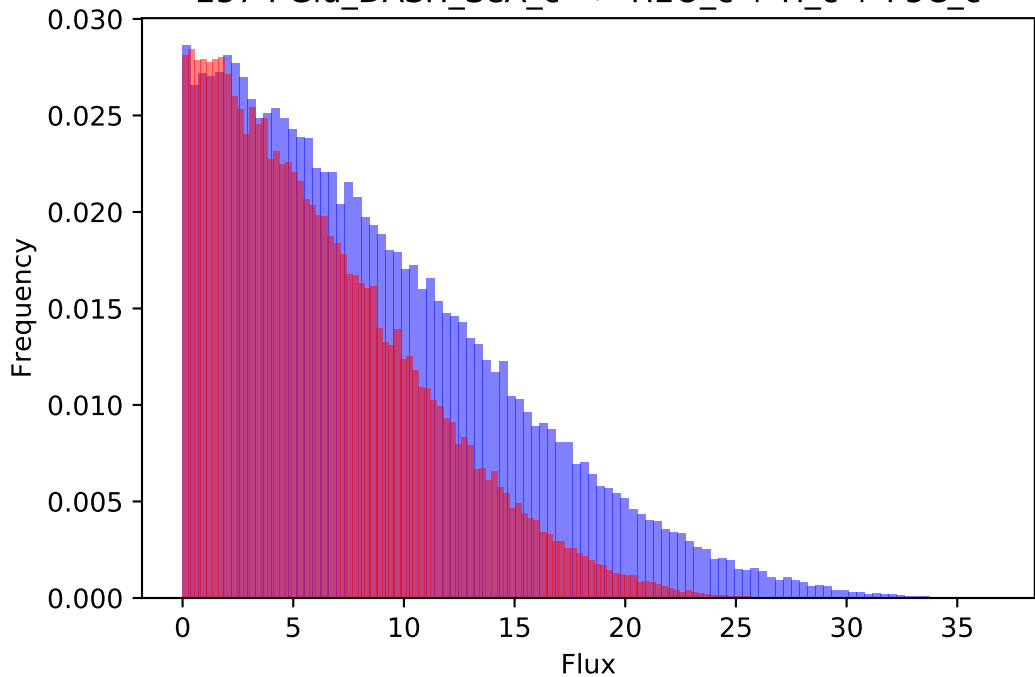
*255 : GluP_h + H_h + NADPH_h --> Glu_DASH_SeA_h + NADP_h + Pi_h



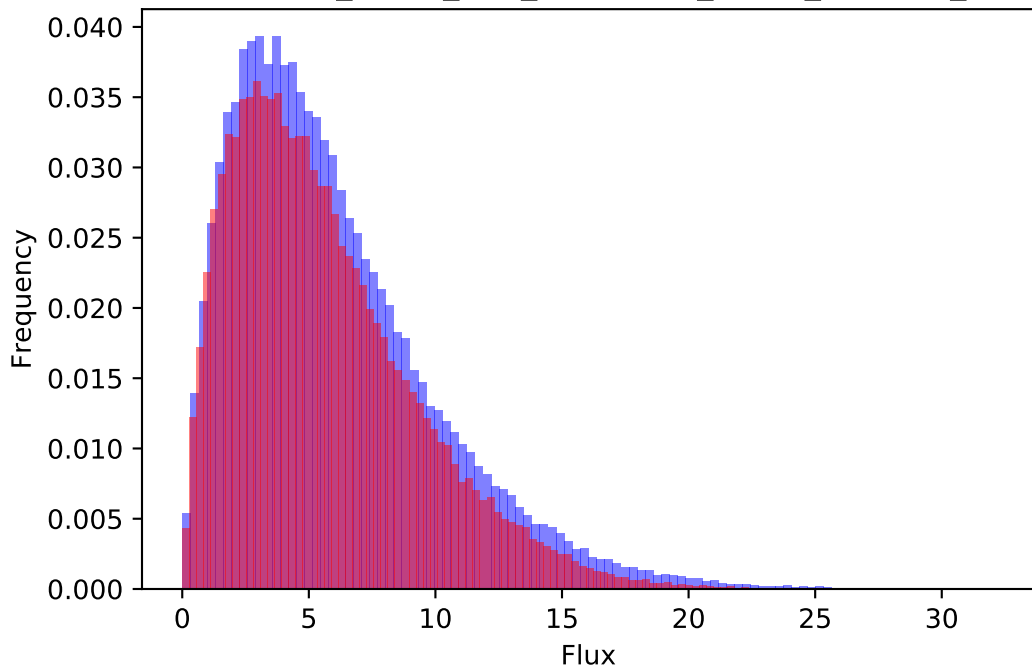
256 : GluP_m + H_m + NADPH_m --> Glu_DASH_SeA_m + NADP_m + Pi_m



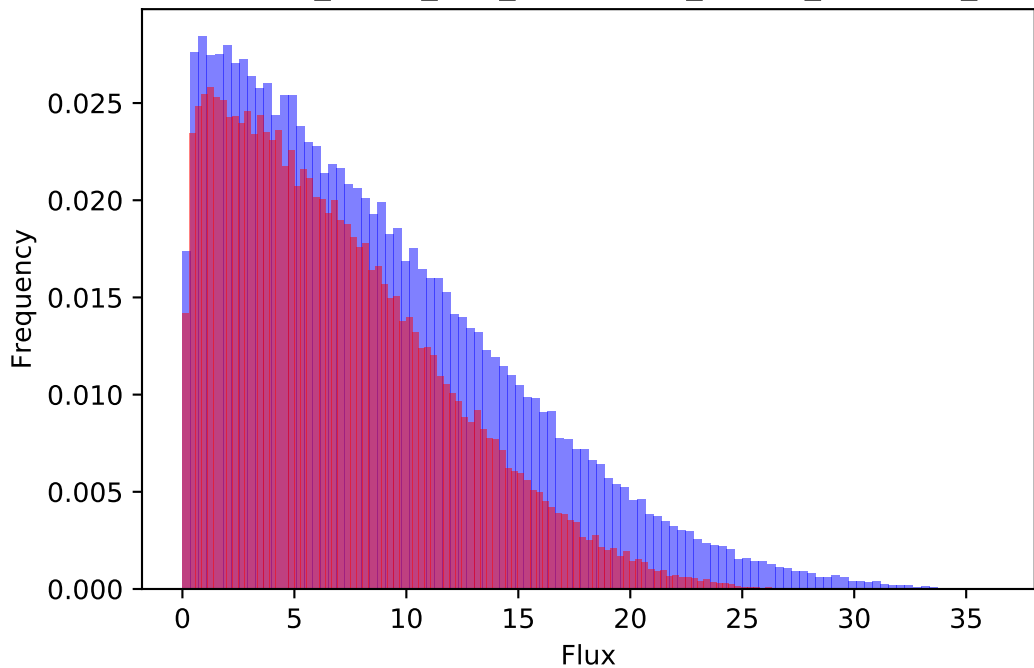
****257 : Glu_DASH_SeA_c --> H2O_c + H_c + P5C_c****



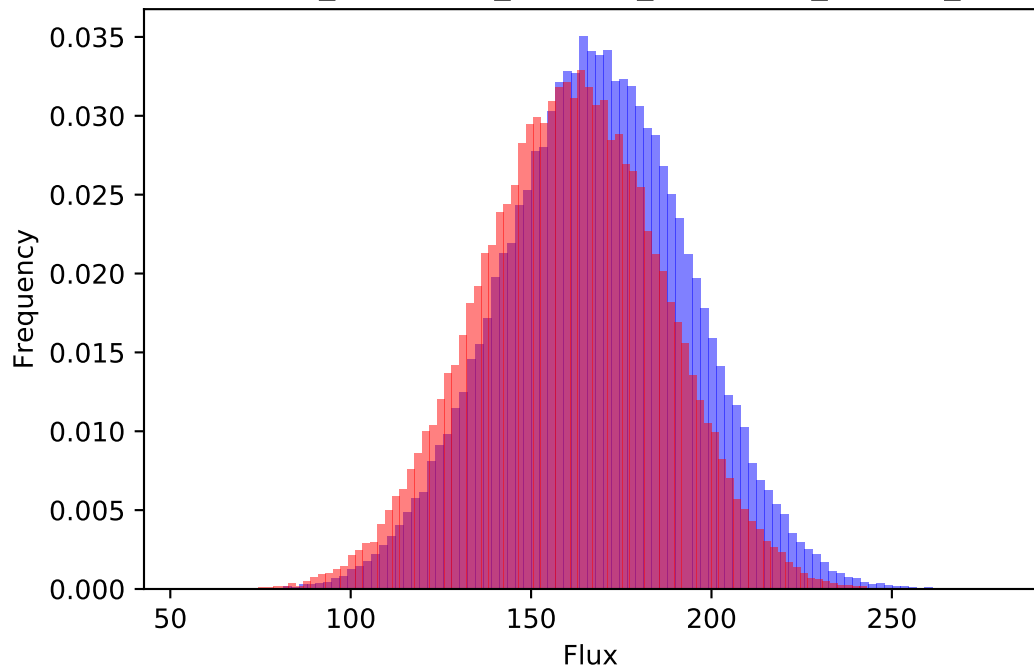
****258 : Glu_DASH_SeA_h --> H2O_h + H_h + P5C_h****



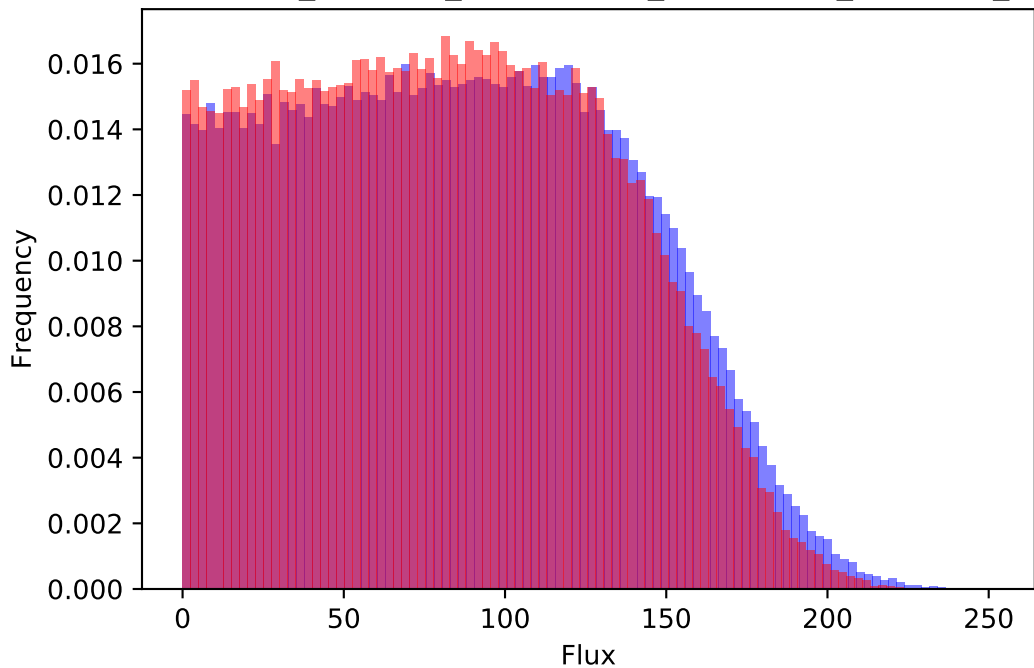
****259 : Glu_DASH_SeA_m --> H2O_m + H_m + P5C_m****



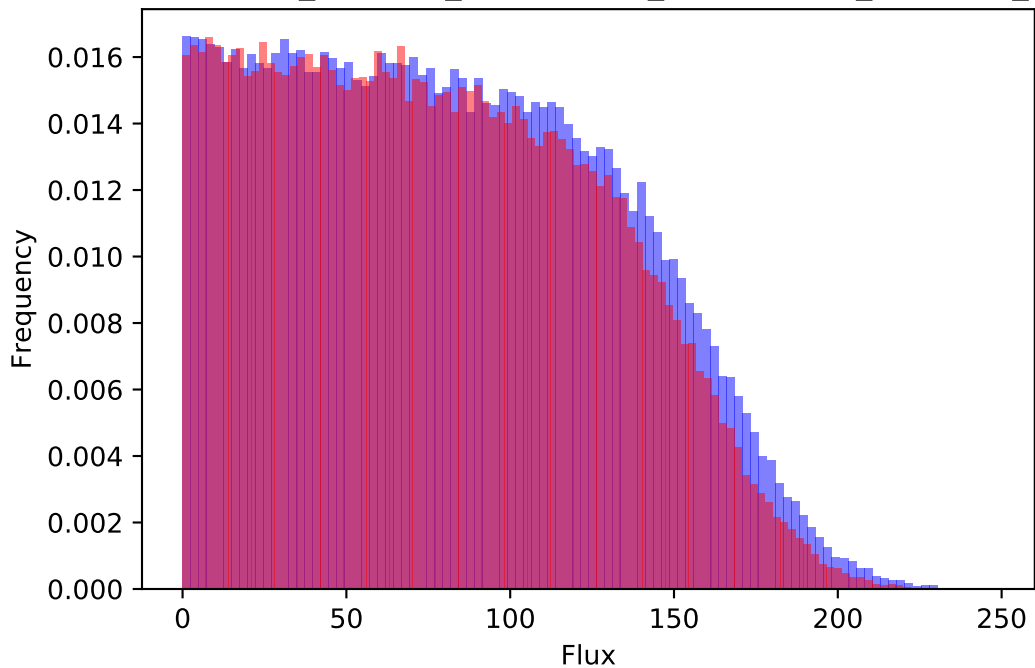
****260 : H_c + NADH_c + P5C_c --> NAD_c + Pro_c****



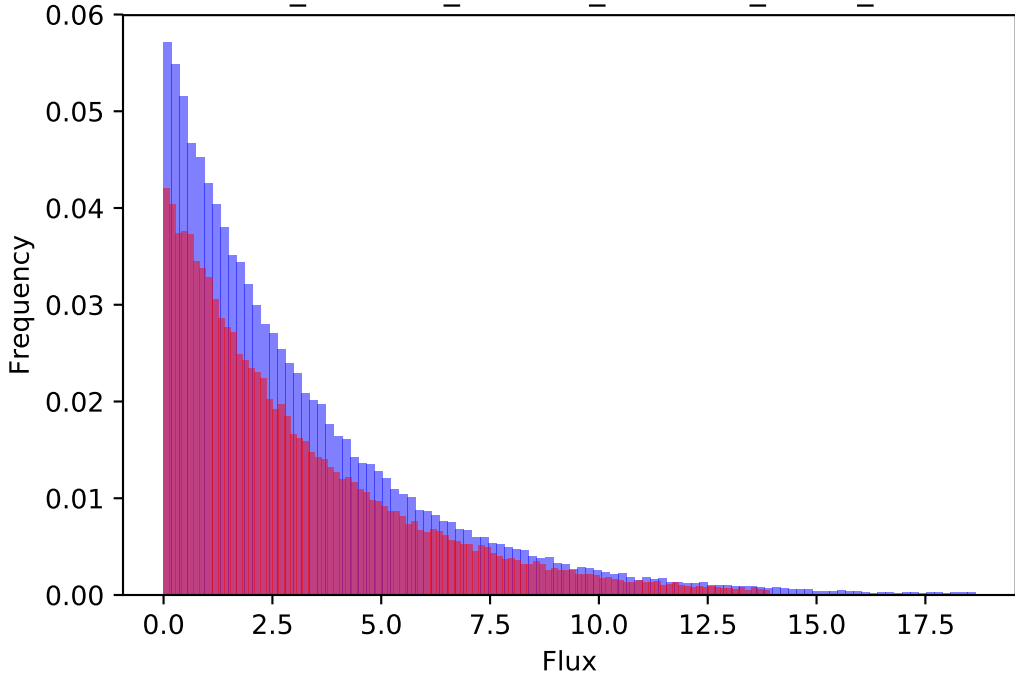
****261 : NAD_m + Pro_m --> 2.0 H_m + NADH_m + P5C_m****



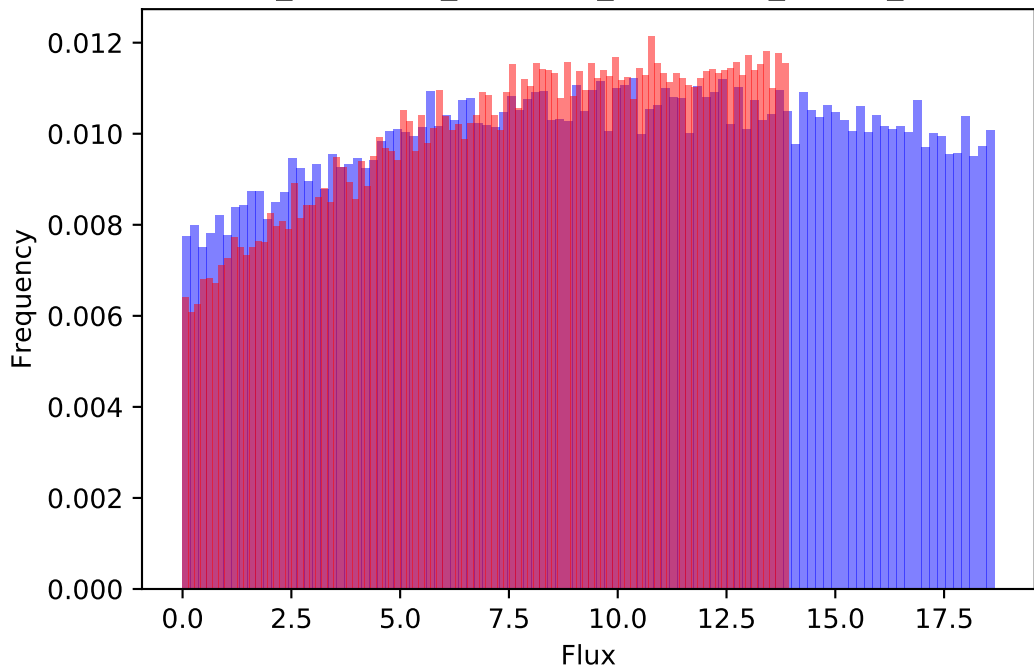
****262 : NADP_m + Pro_m --> 2.0 H_m + NADPH_m + P5C_m****



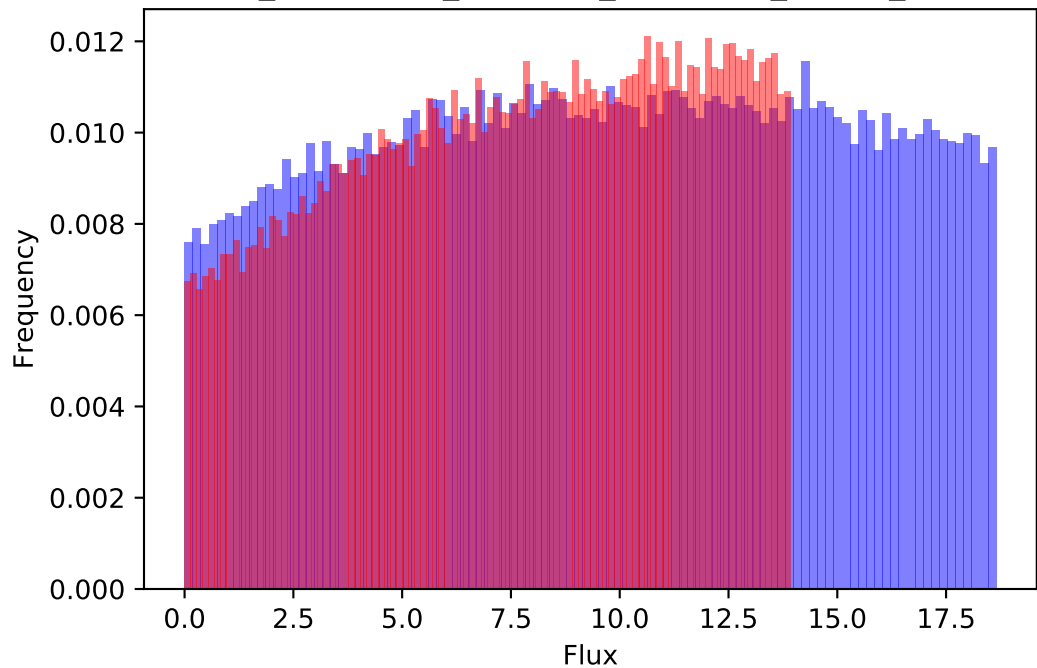
263 : 2.0 H2O_h + NAD_h + P5C_h --> Glu_h + H_h + NADH_h



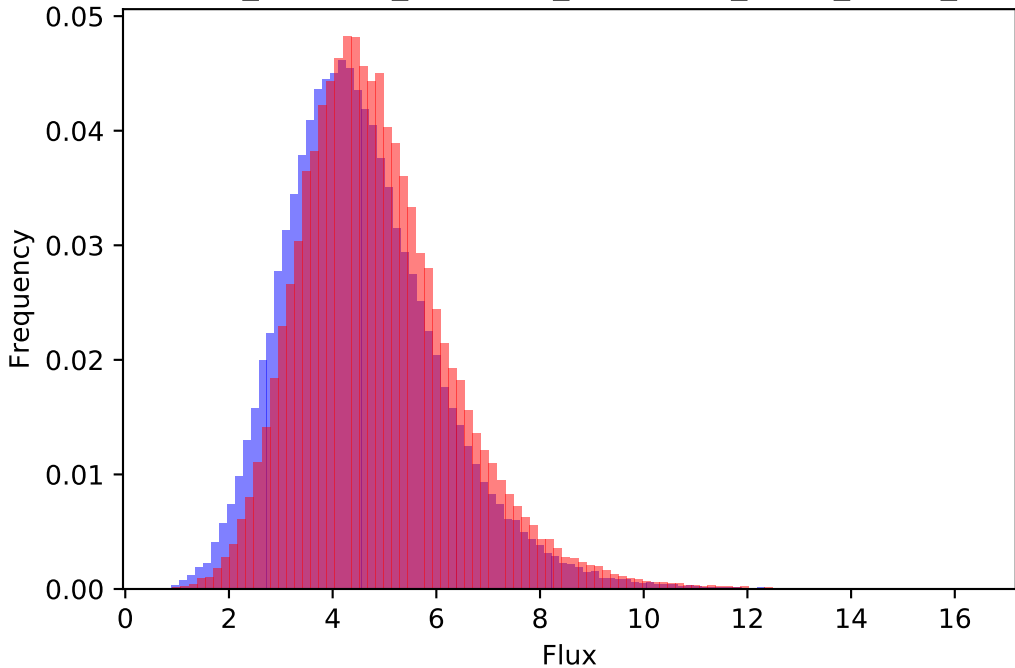
****264 : 2.0 H2O_m + NAD_m + P5C_m --> Glu_m + H_m + NADH_m****



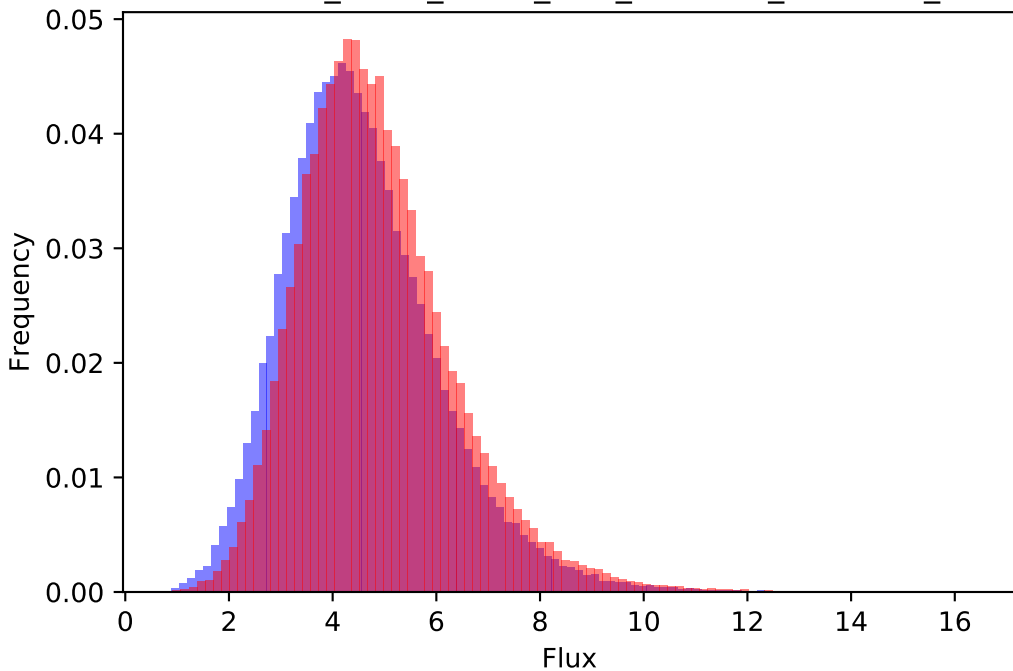
****265 : 2.0 H2O_m + NADP_m + P5C_m --> Glu_m + H_m + NADPH_m***



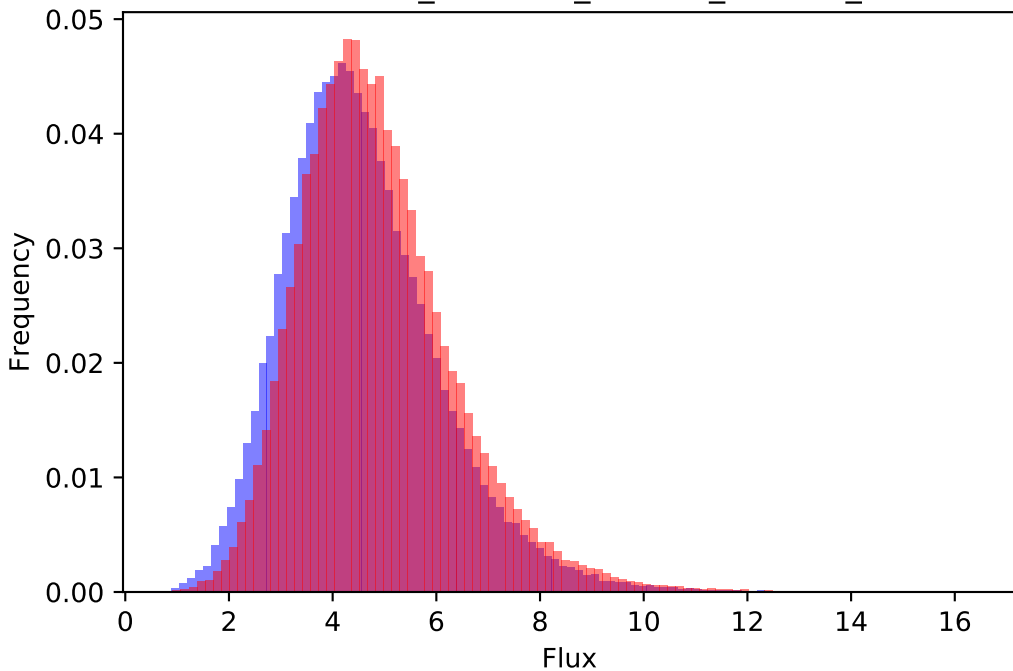
****266 : NAD_h + PGA_h <=> H_h + NADH_h + P_DASH_HPR_h****



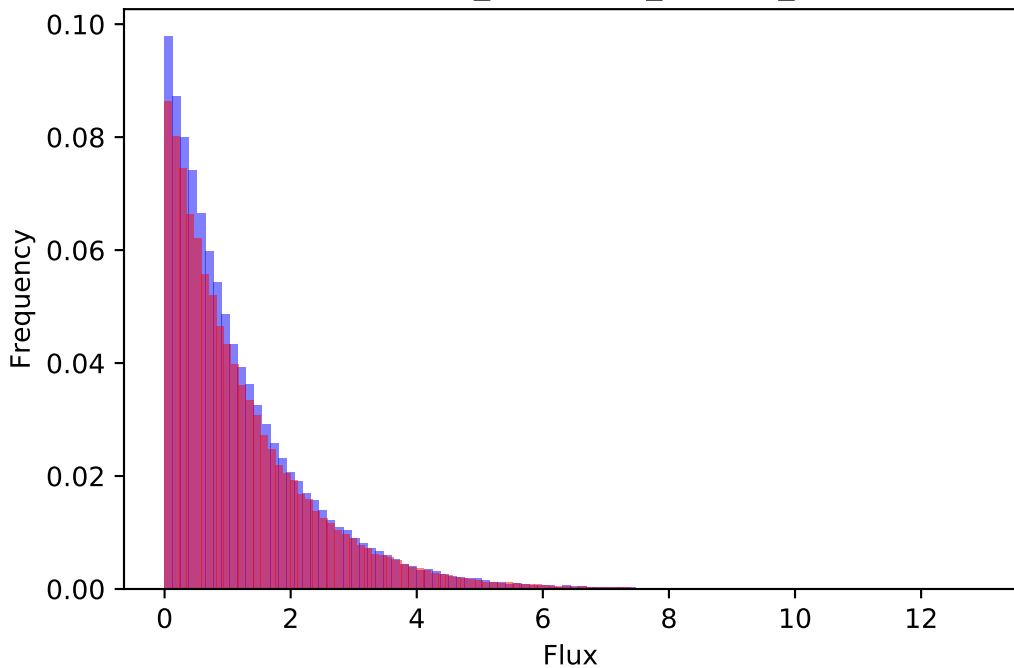
****267 : Glu_h + P_DASH_HPR_h --> KG_h + PSer_h****



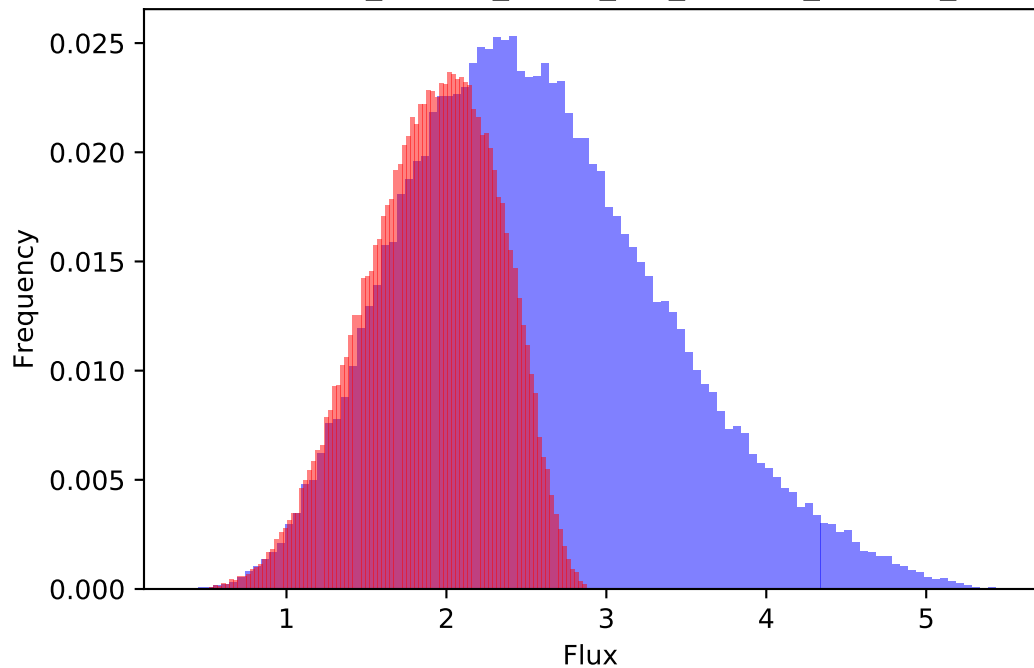
****268 : H2O_h + PSer_h --> Pi_h + Ser_h****



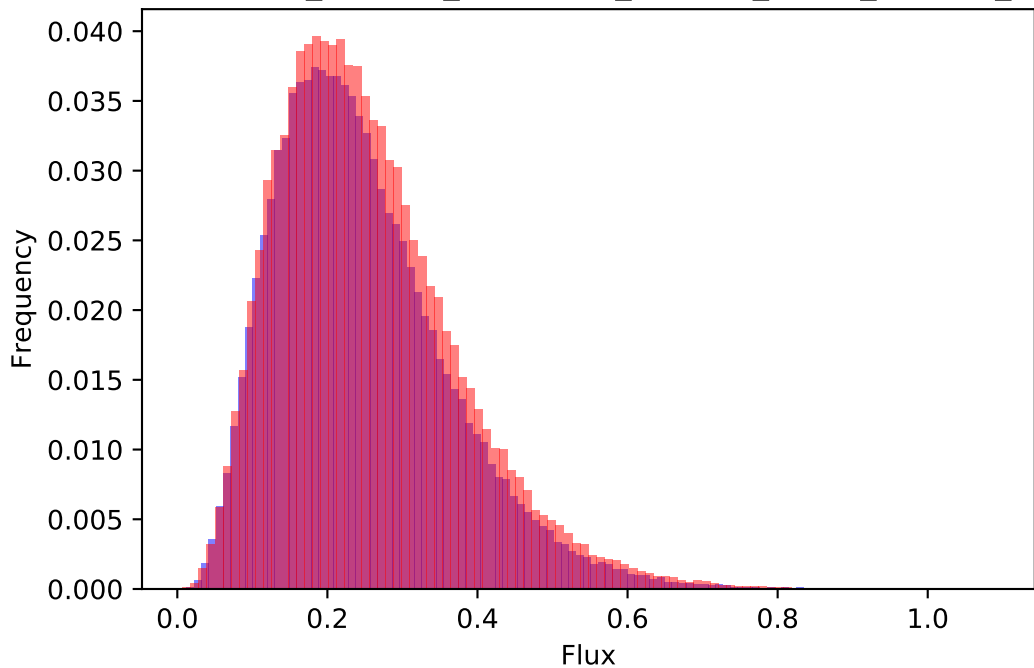
****269 : Ser_c --> NH4_c + Pyr_c****



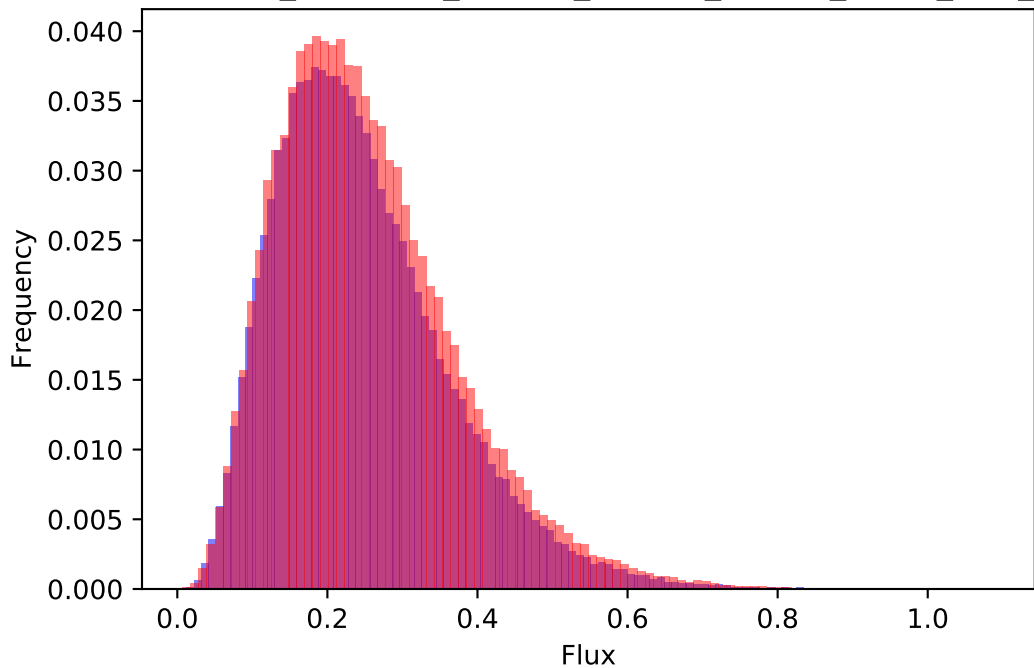
****270 : H2O_h + PH_DASH_Ser_h --> Pi_h + Thr_h****



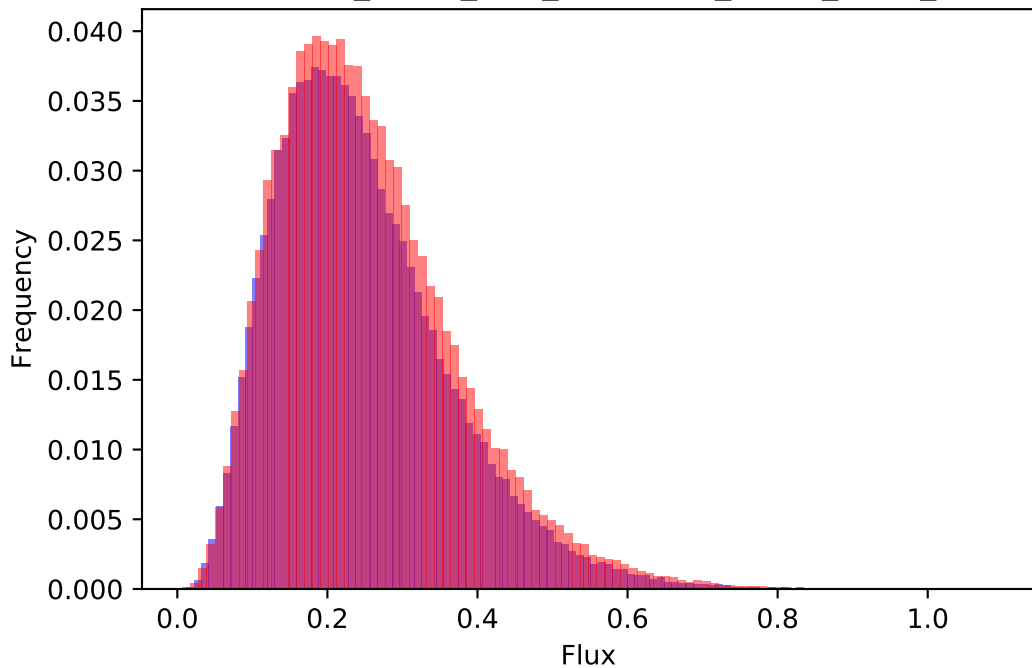
****271 : CHR_h + Gln_h --> ANT_h + Glu_h + H_h + Pyr_h****



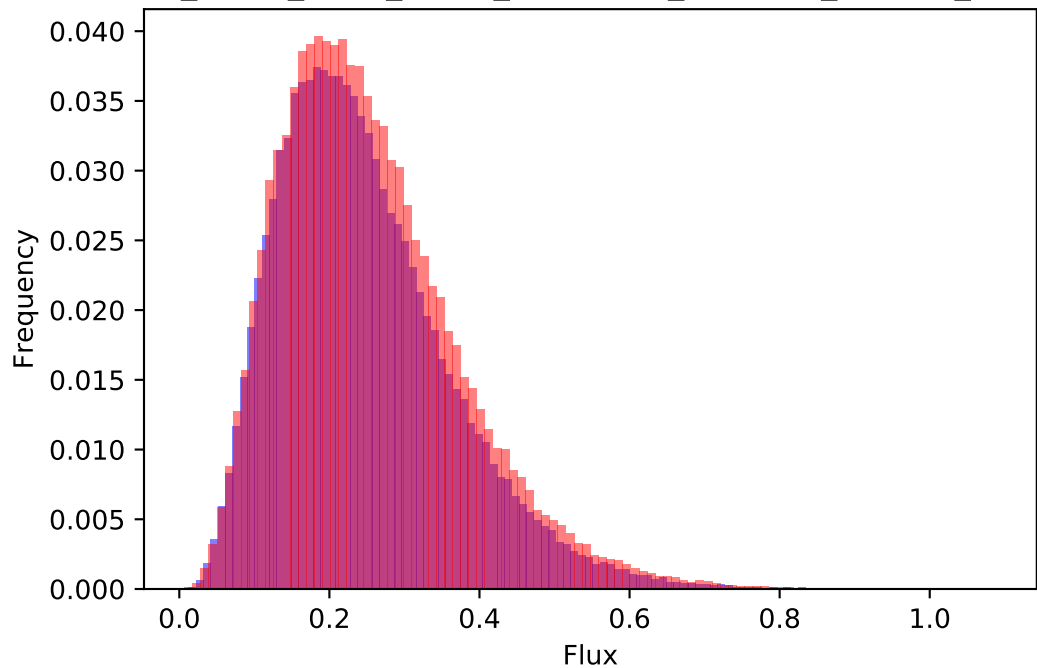
****272 : ANT_h + PRPP_h --> H_h + PPI_h + PR_DASH_ANT_h****



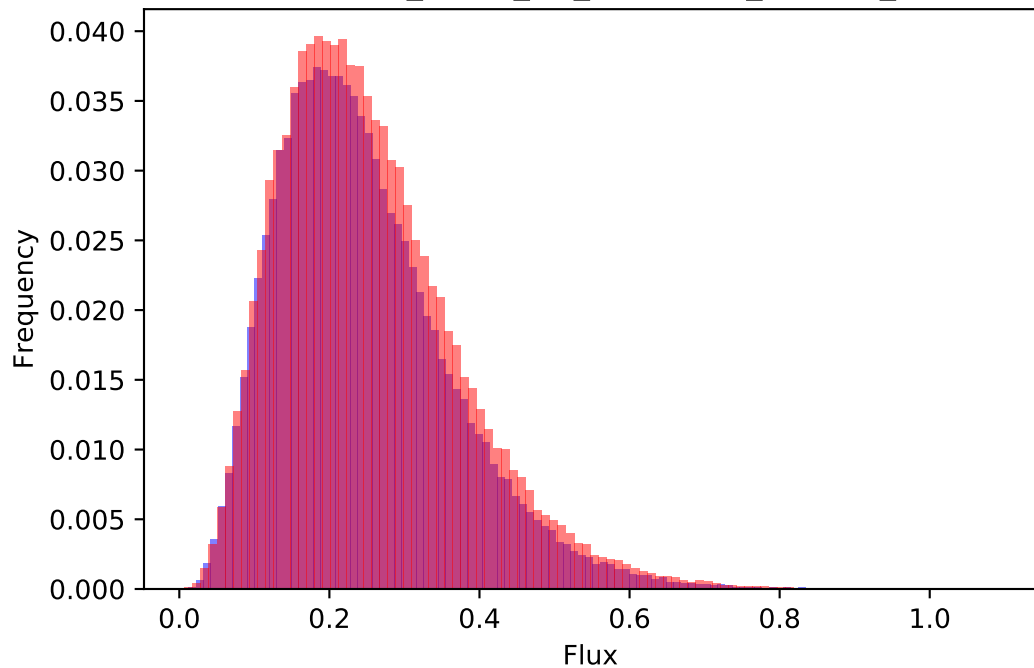
****273 : PR_DASH_ANT_h --> CPD_DASH_Ru5P_h****



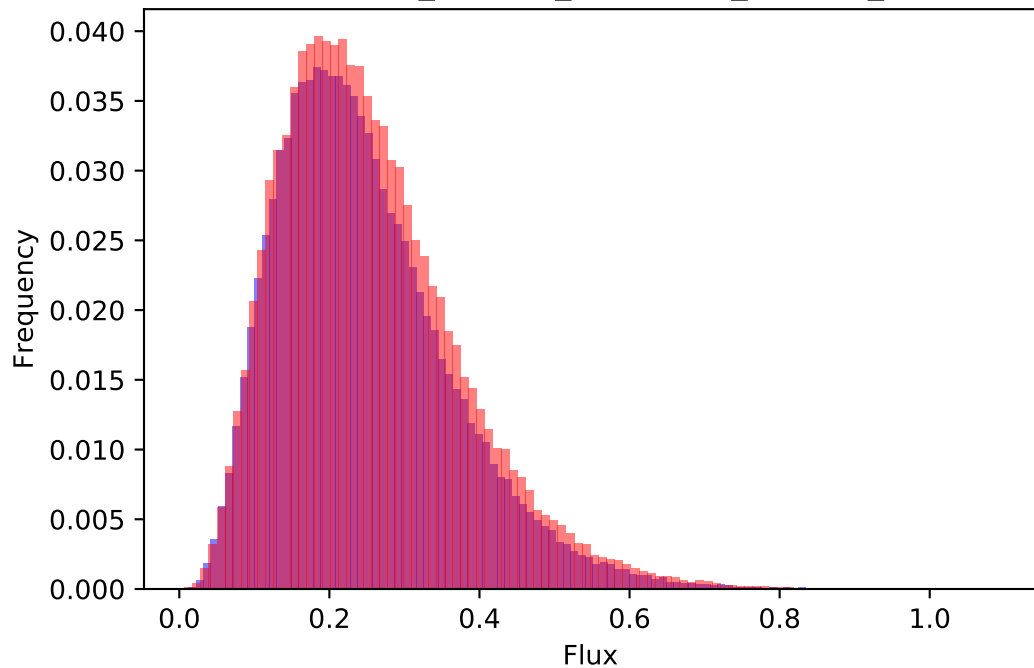
*274 : CPD_DASH_Ru5P_h + H_h --> CO2_h + H2O_h + Ind_DASH_GP_h



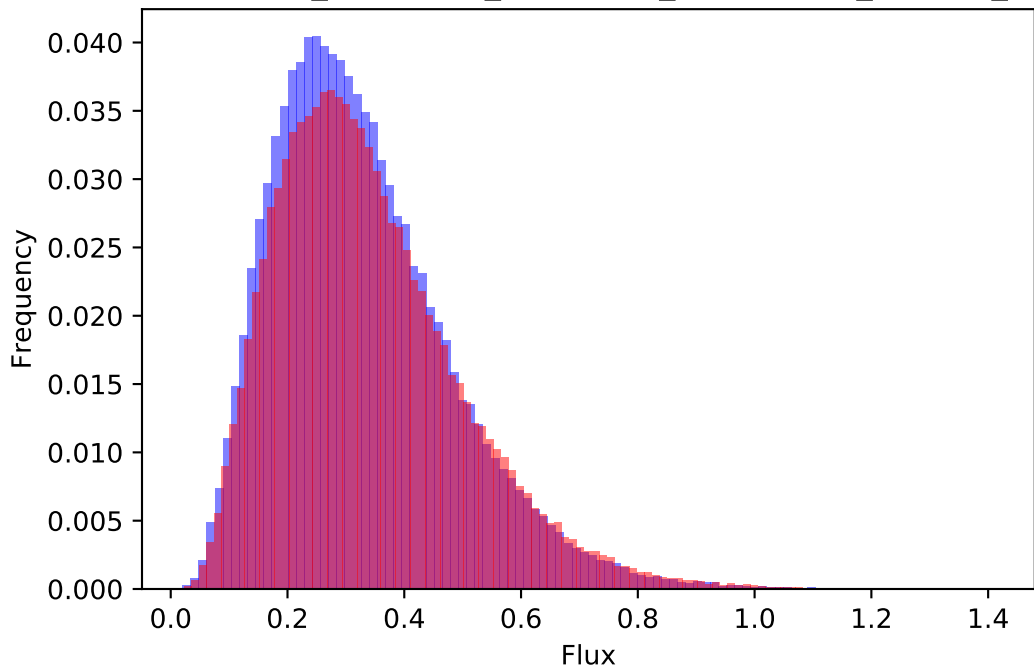
****275 : Ind_DASH_GP_h --> GAP_h + Ind_h****



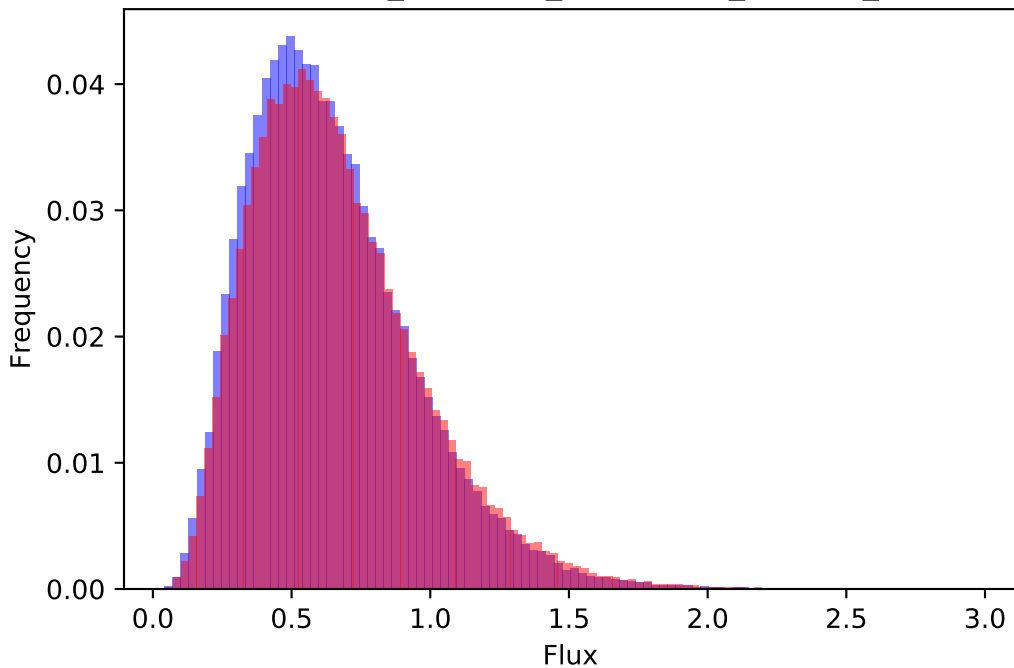
****276 : Ind_h + Ser_h --> H2O_h + Trp_h****



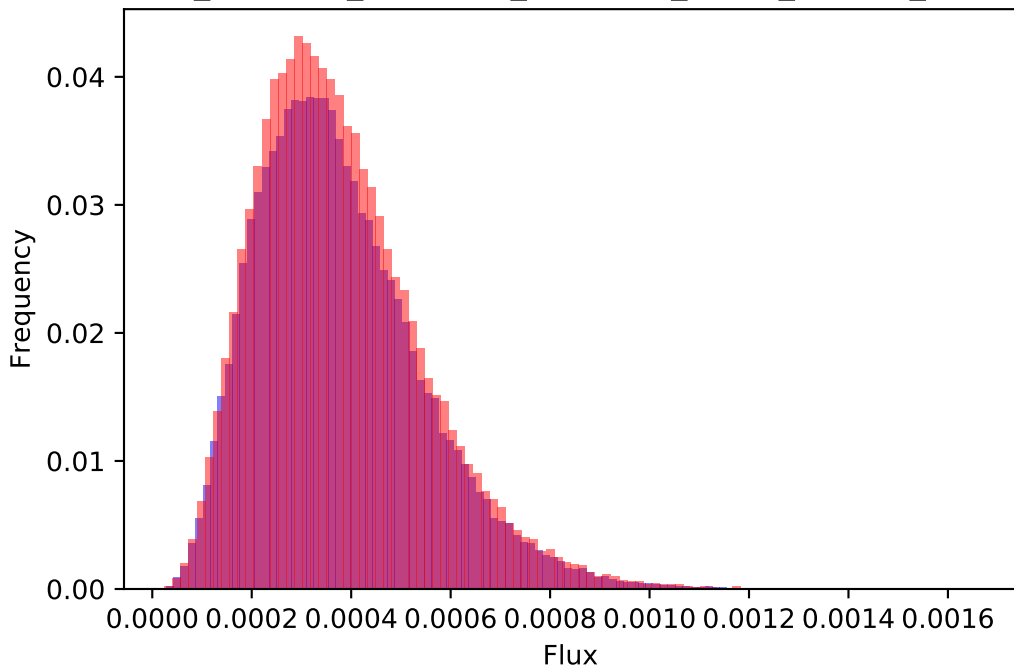
****277 : AGN_h + NADP_h --> CO2_h + NADPH_h + Tyr_h****



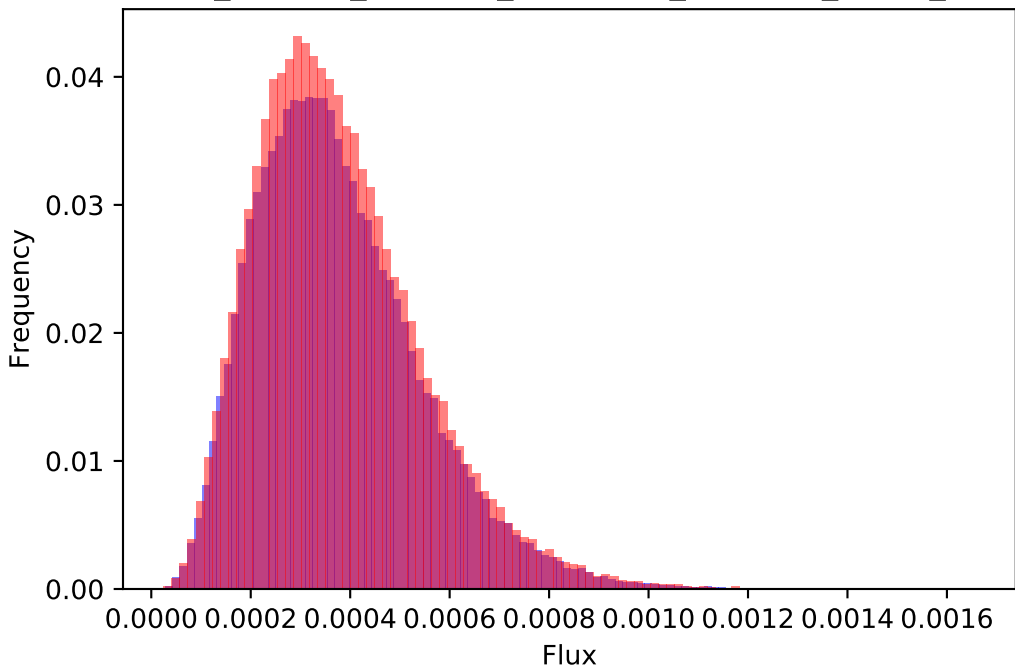
****278 : Glu_h + MOB_h <=> KG_h + Val_h****



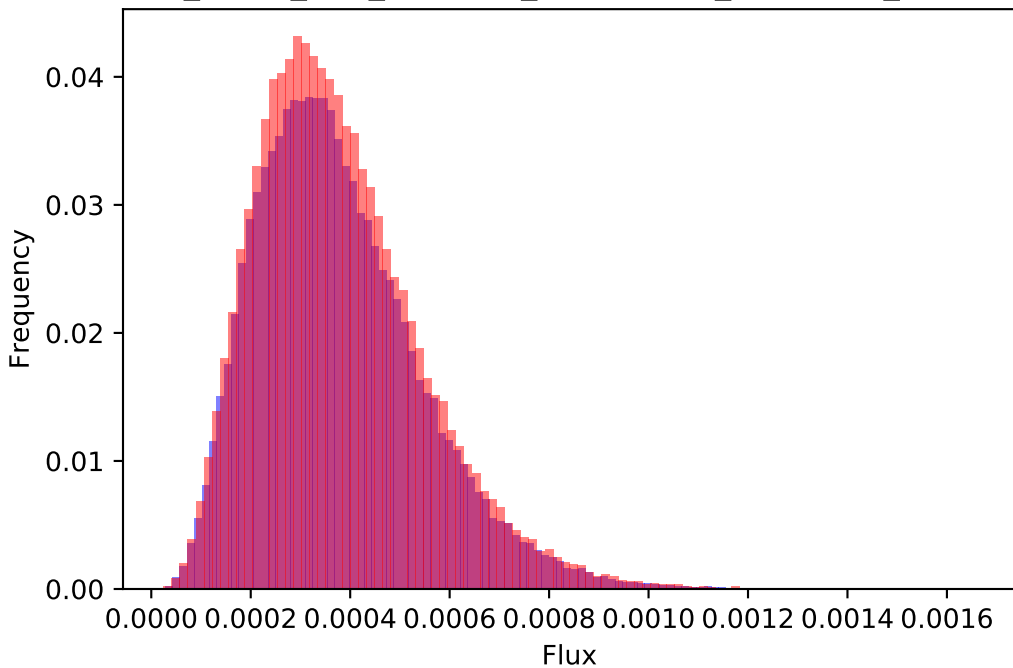
279 : Gln_h + H2O_h + PRPP_h --> Glu_h + H_h + PPI_h + PRA_h



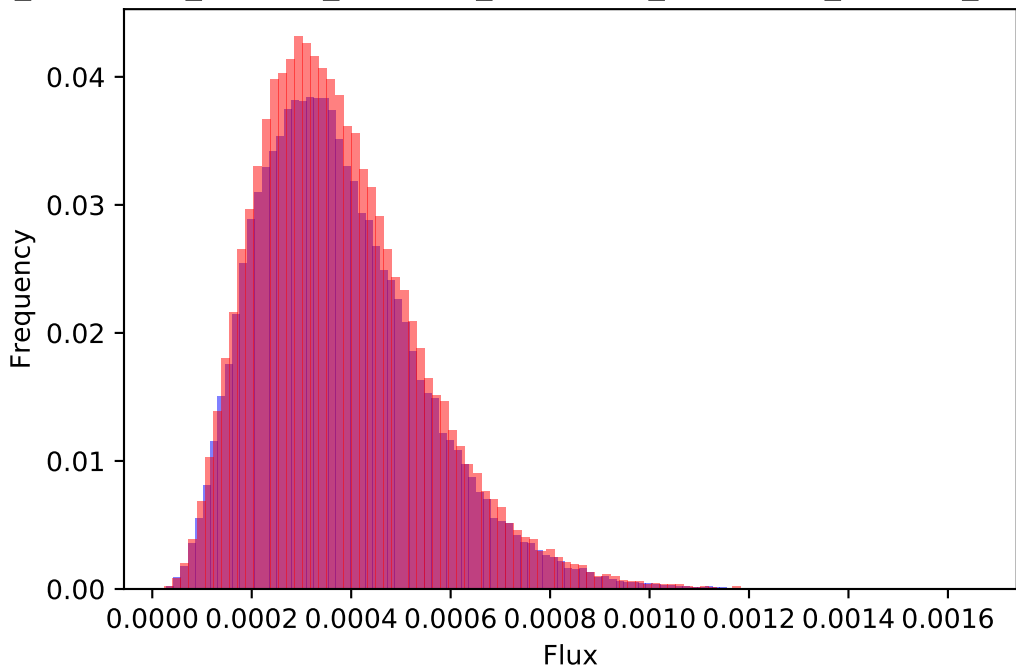
280 : ATP_h + Gly_h + PRA_h --> ADP_h + GAR_h + H_h + Pi_h



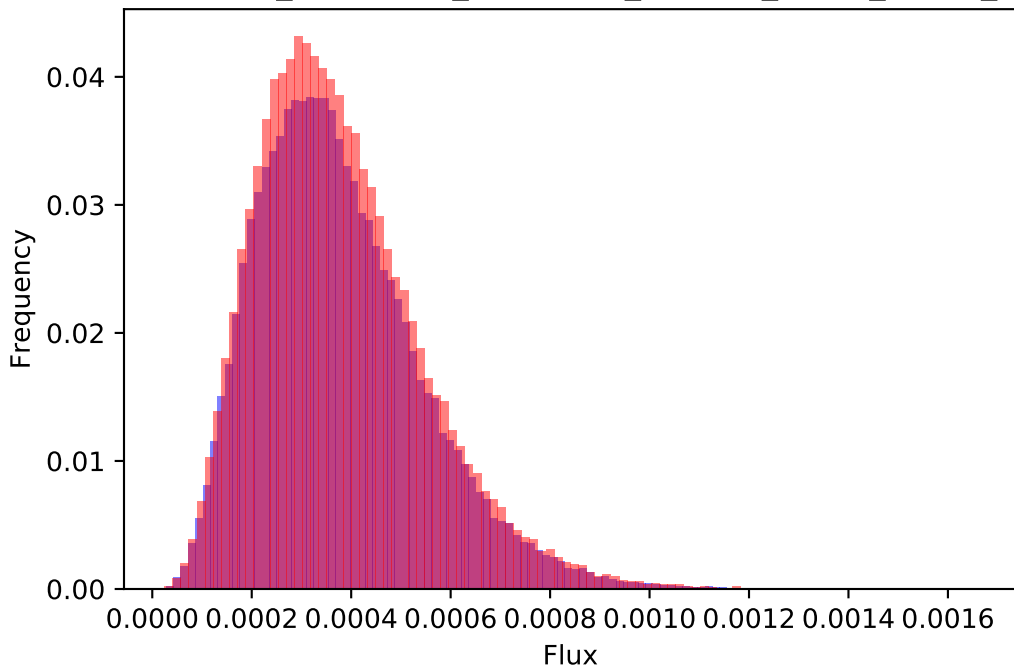
281 : F_DASH_THF_h + GAR_h --> FGAR_h + 2.0 H_h + THF_h



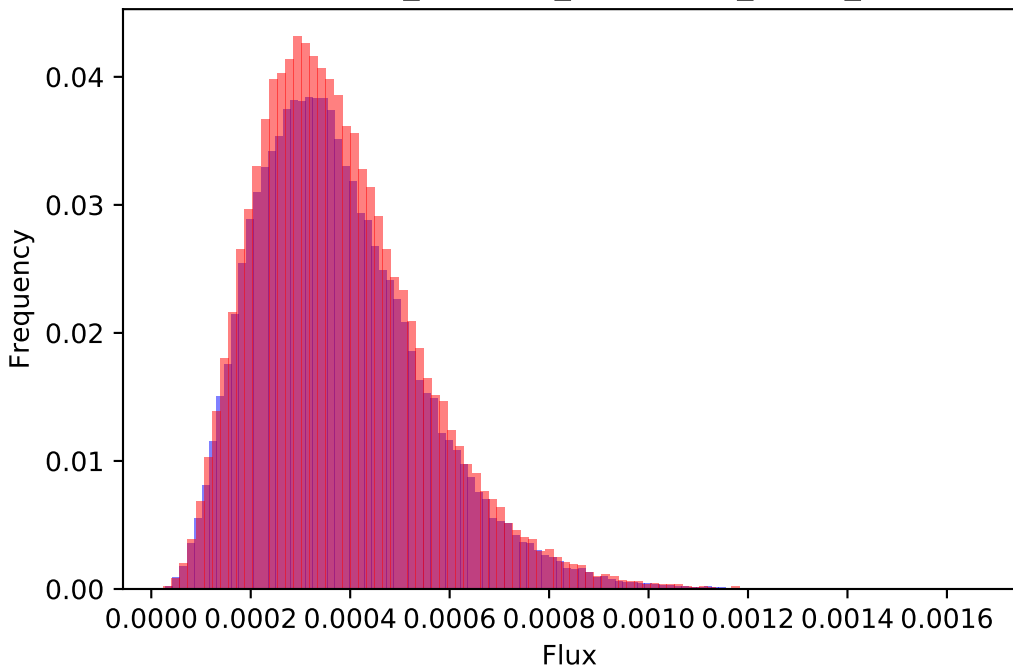
TP_h + FGAR_h + Gln_h + H2O_h --> ADP_h + FGAM_h + Glu_h + 2.0 H₂



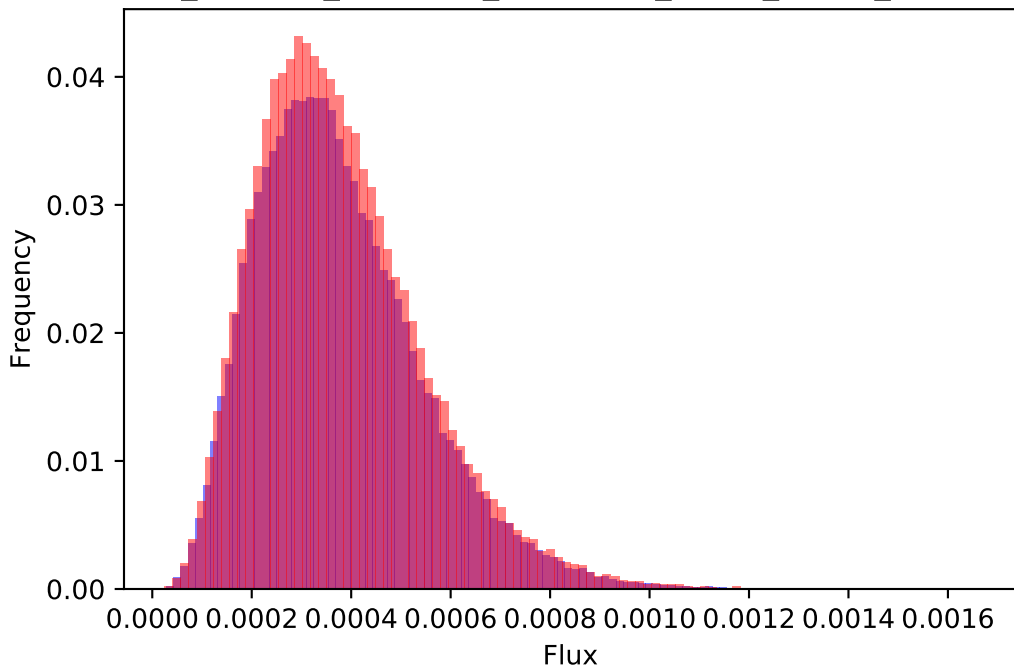
283 : $\text{ATP_h} + \text{FGAM_h} \rightarrow \text{ADP_h} + \text{AIR_h} + \text{H_h} + \text{Pi_h}$



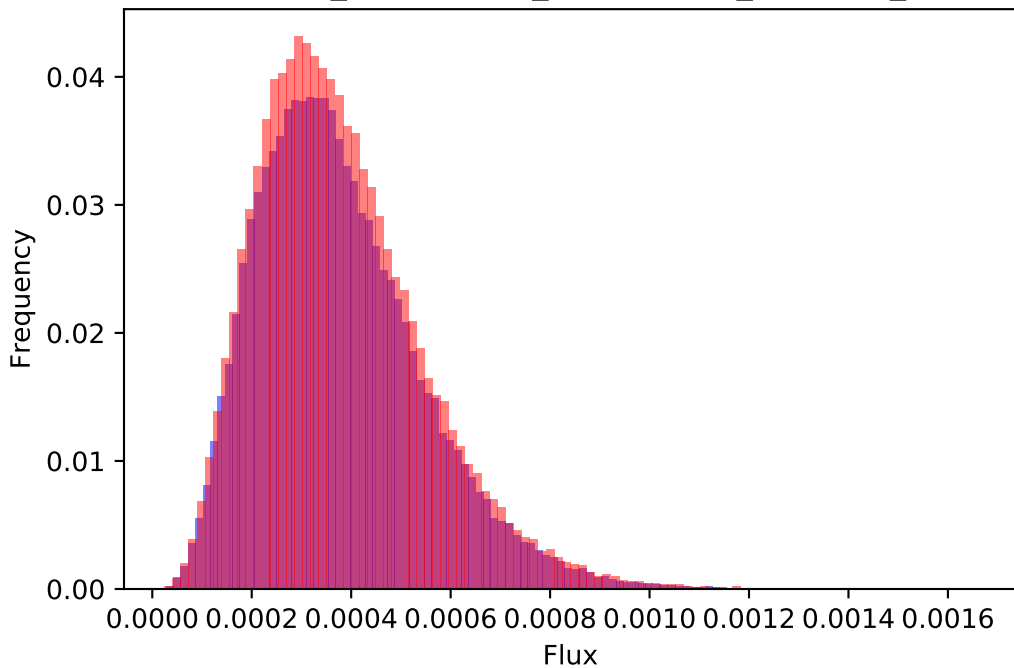
284 : AIR_h + CO2_h --> CAIR_h + H_h



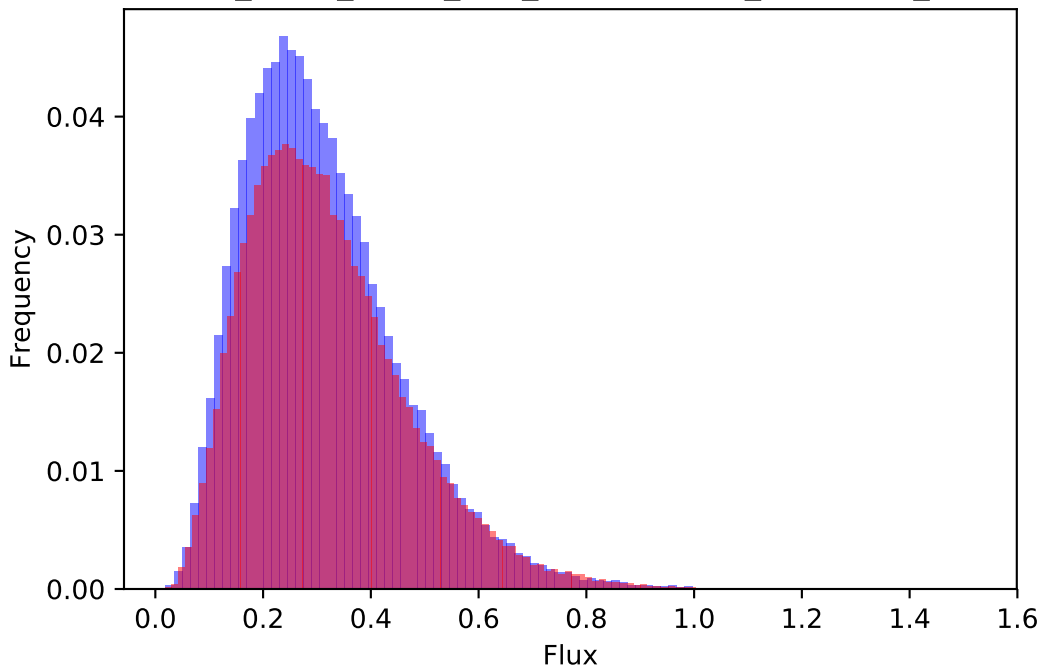
285 : $\text{ATP_h} + \text{Asp_h} + \text{CAIR_h} \rightarrow \text{ADP_h} + \text{H_h} + \text{Pi_h} + \text{SAICAR_h}$



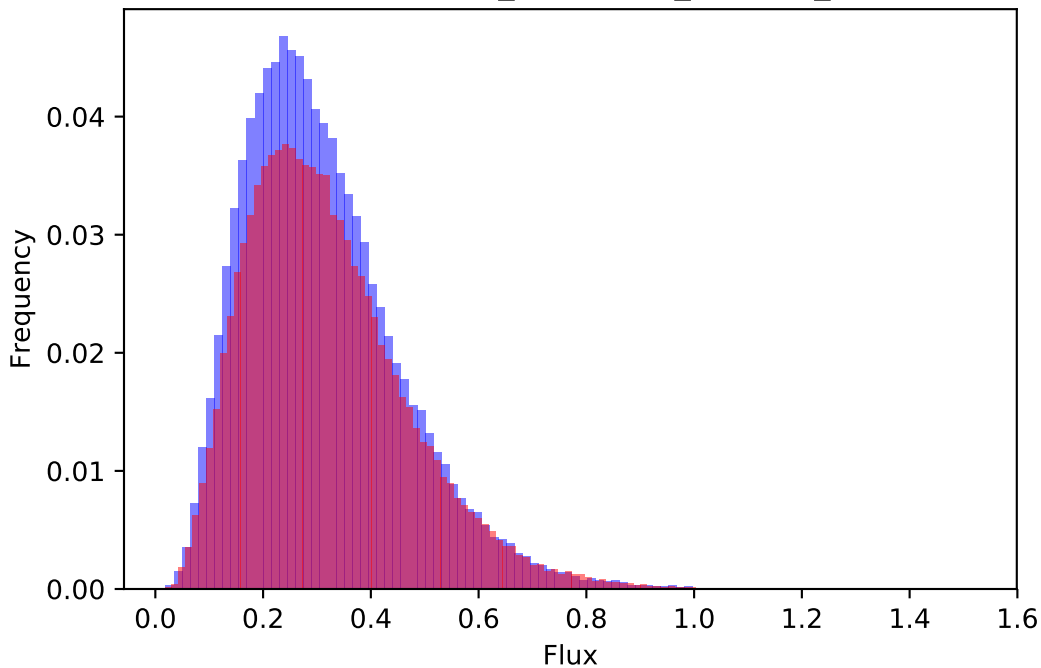
286 : H_h + SAICAR_h --> AICAR_h + Fum_h



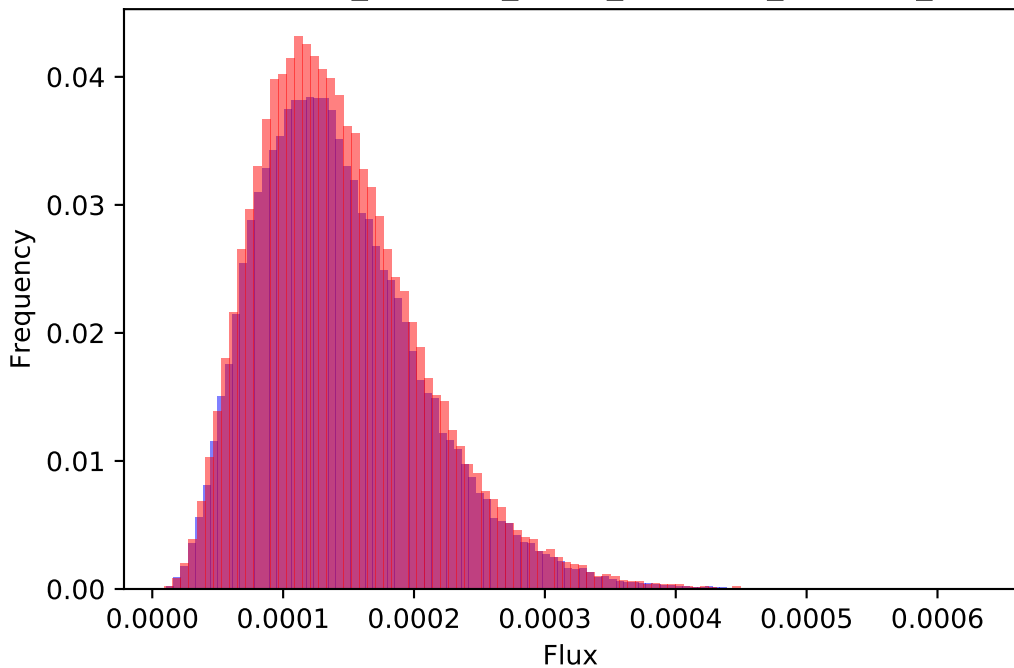
****287 : AICAR_h + F_DASH_THF_h --> FAICAR_h + 2.0 H_h + THF_h****



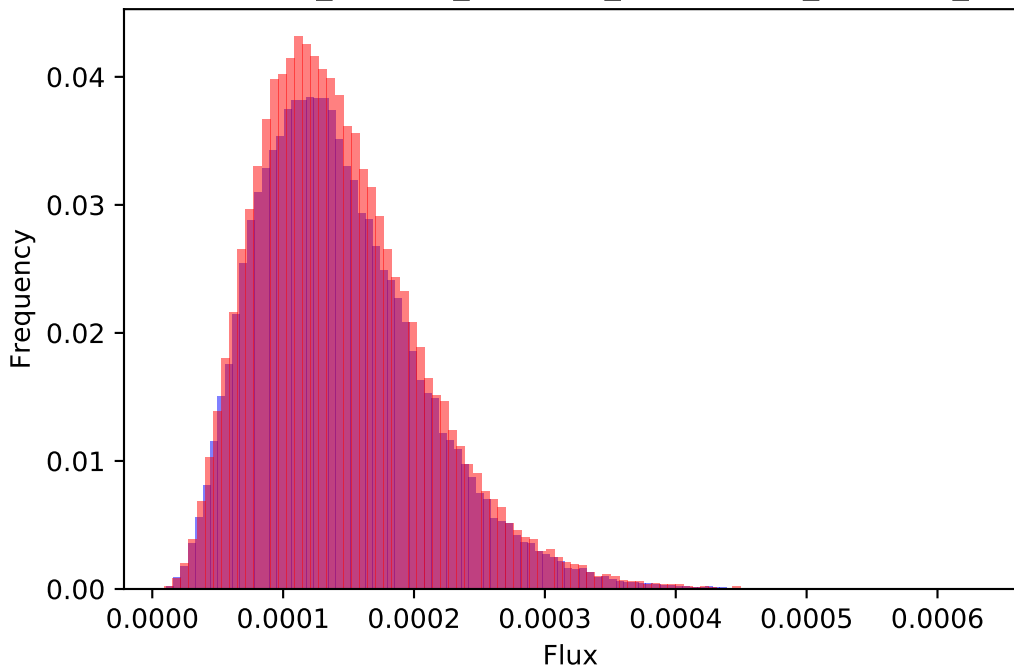
****288 : FAICAR_h --> H2O_h + IMP_h****



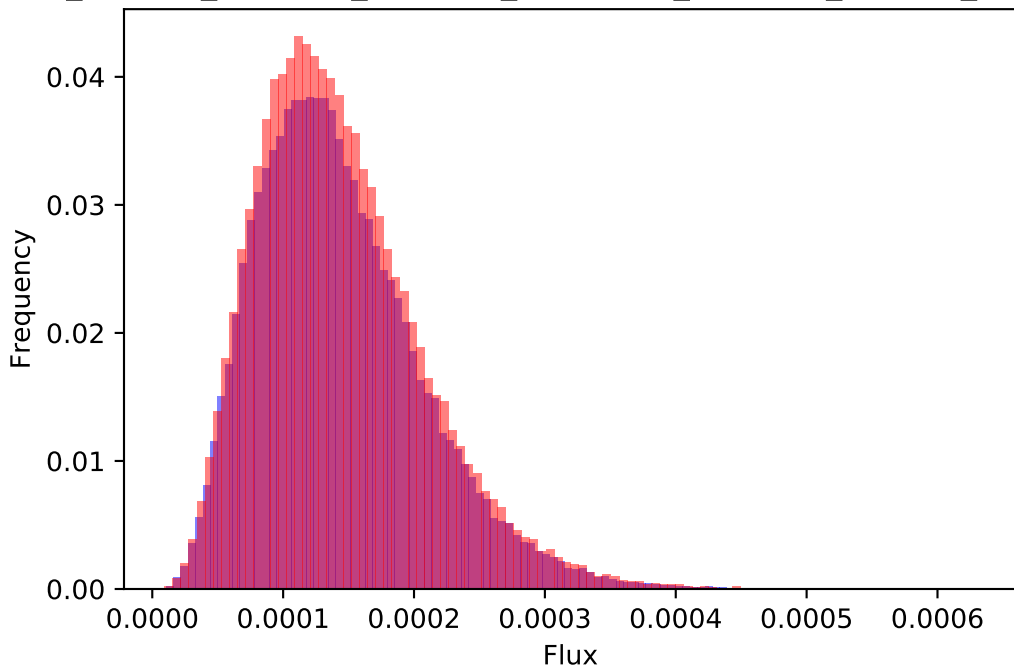
289 : AMP_c + H2O_c + H_c --> IMP_c + NH4_c



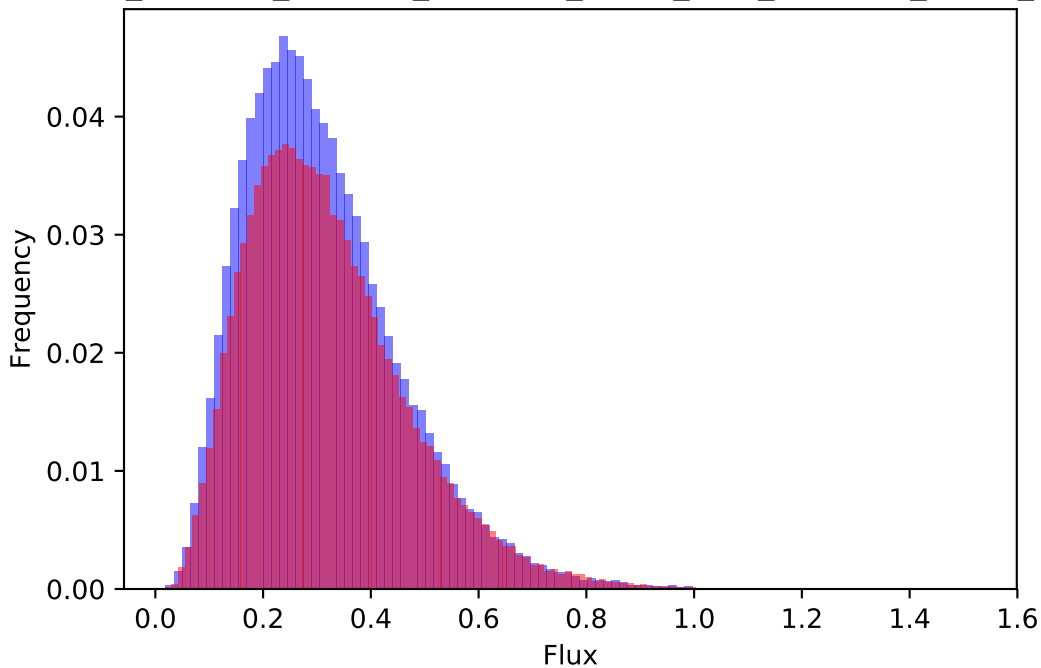
290 : H2O_c + IMP_c + NAD_c --> NADH_c + XMP_c



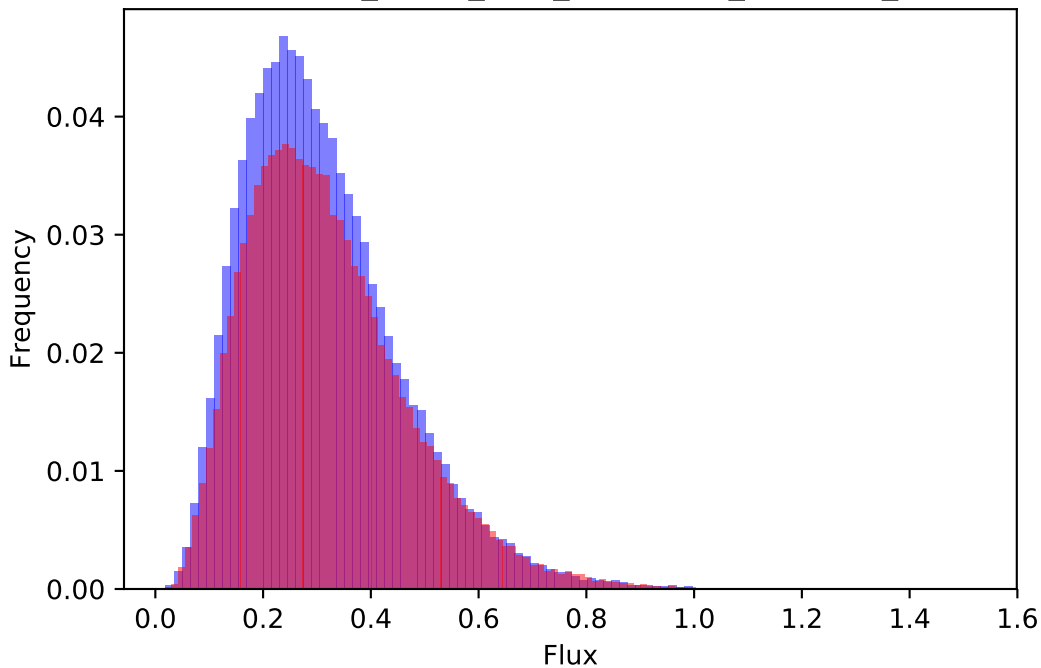
: ATP_c + Gln_c + H2O_c + XMP_c --> AMP_c + GMP_c + Glu_c + H_c +



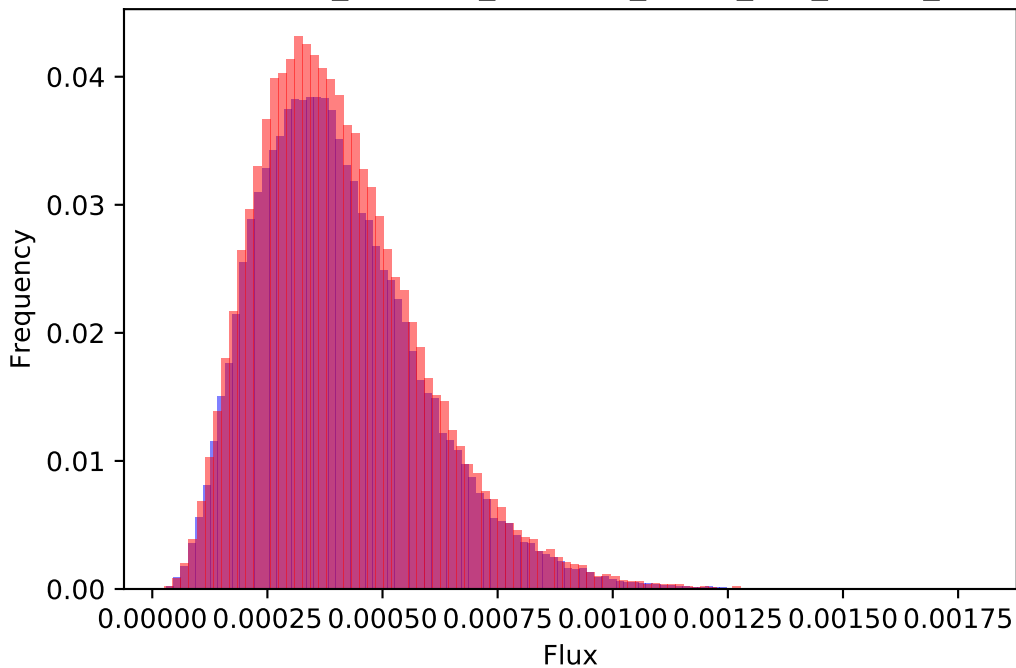
292 : Asp_h + GTP_h + IMP_h --> DC_DASH_AMP_h + GDP_h + H_h + Pi



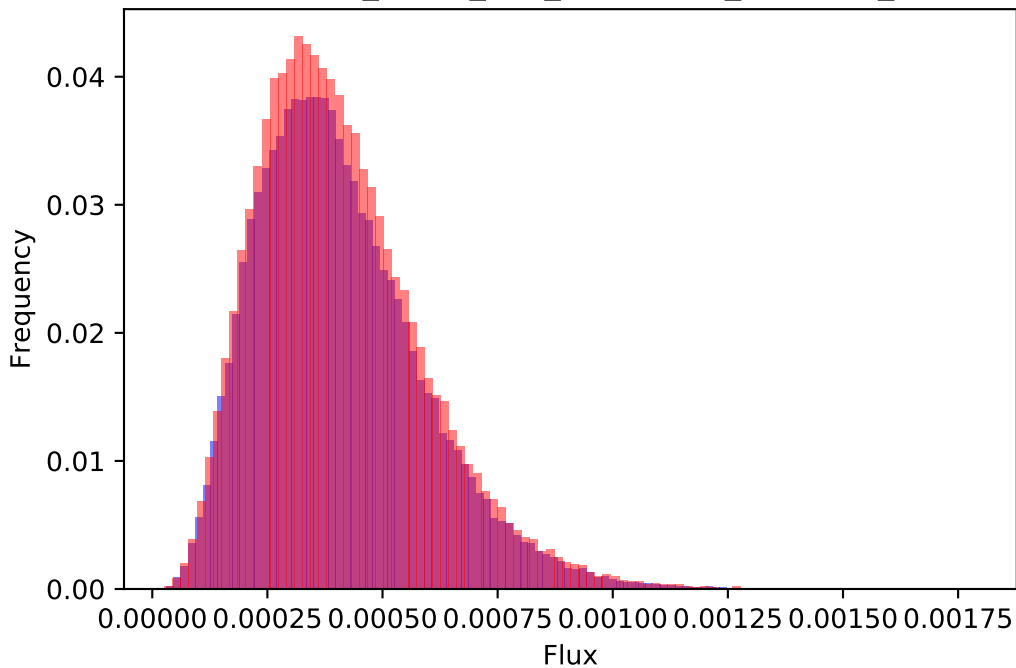
****293 : DC_DASH_AMP_h --> AMP_h + Fum_h****



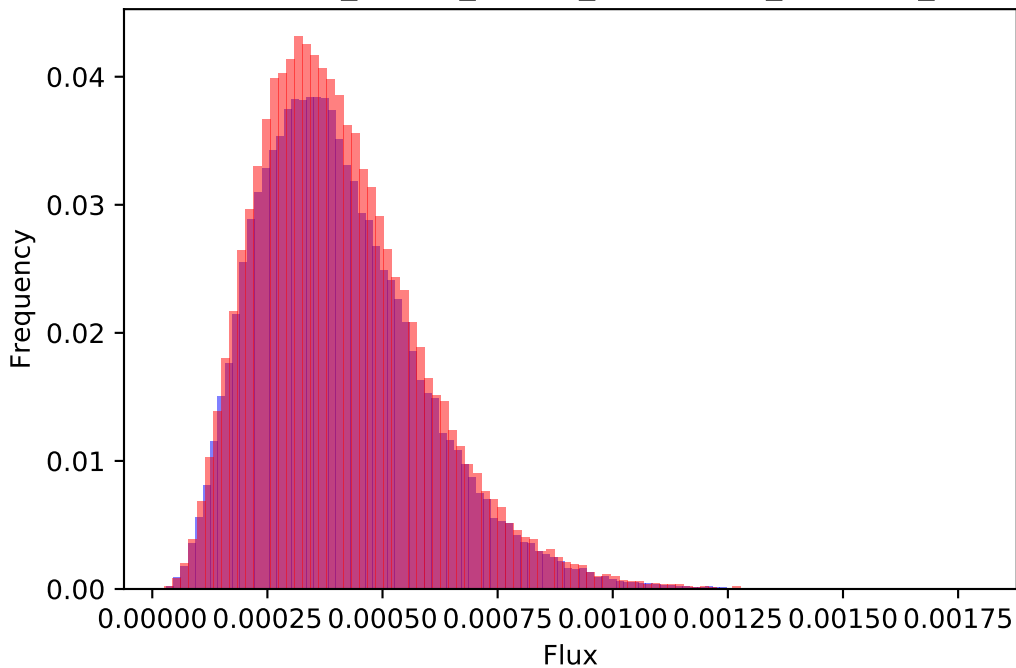
294 : Asp_h + CBP_h --> CB_DASH_Asp_h + Pi_h



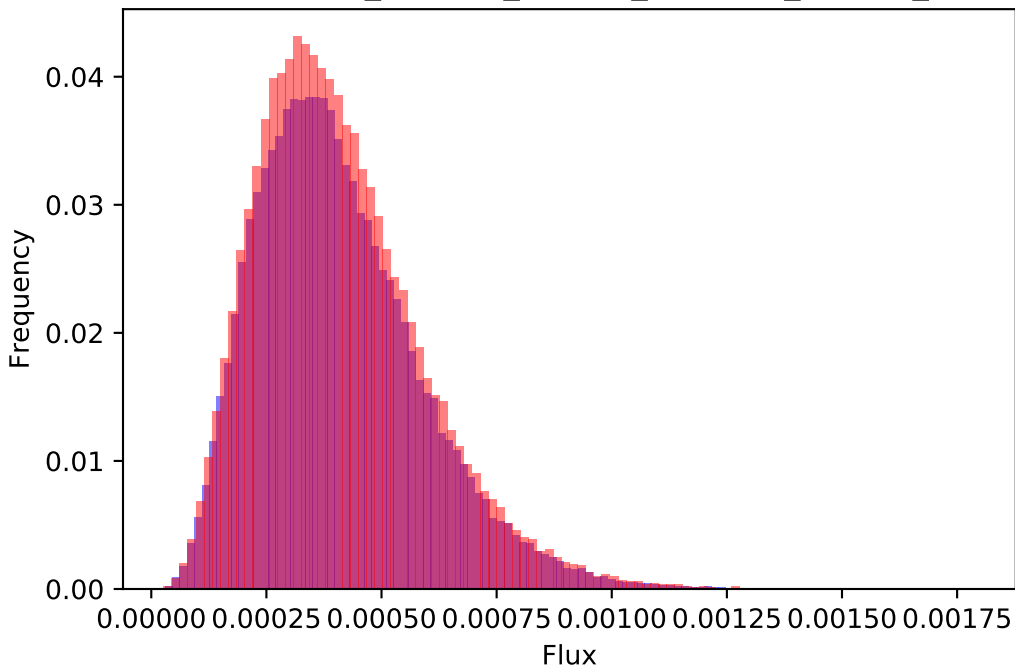
295 : CB_DASH_Asp_h --> DHO_h + H2O_h



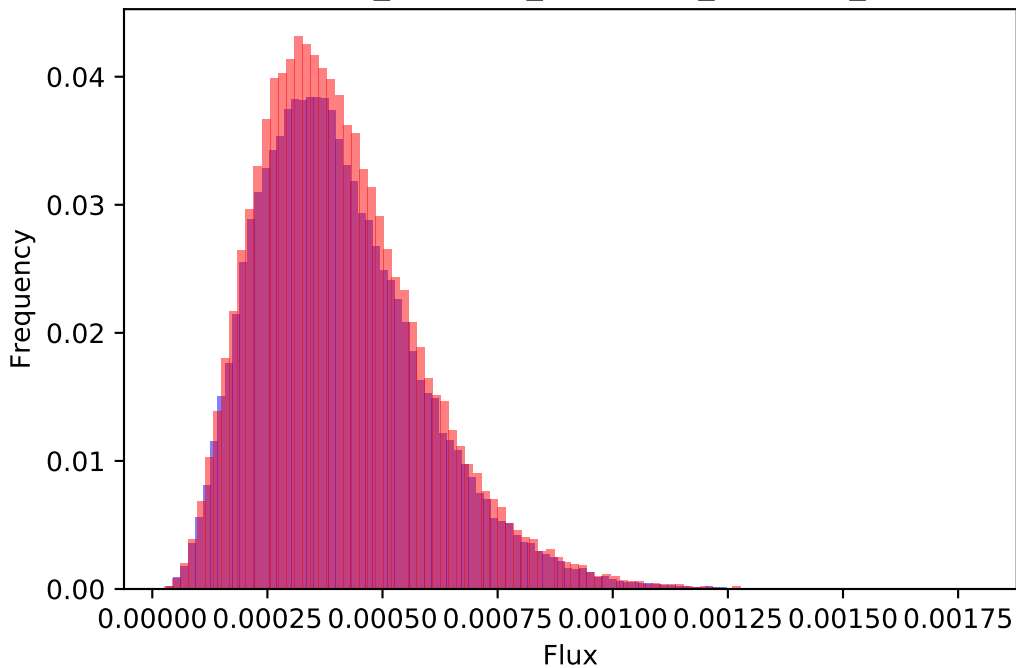
296 : DHO_m + H_m + Q_m --> QH2_m + orO_m

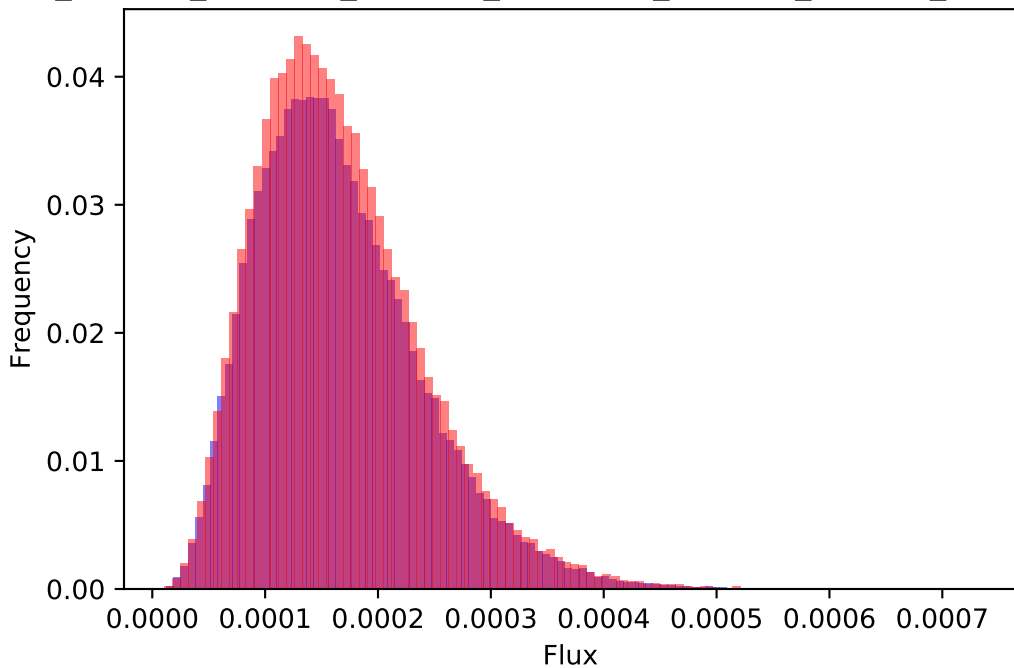
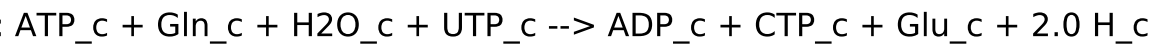


297 : PRPP_c + orO_c --> H_c + OMP_c + PPI_c

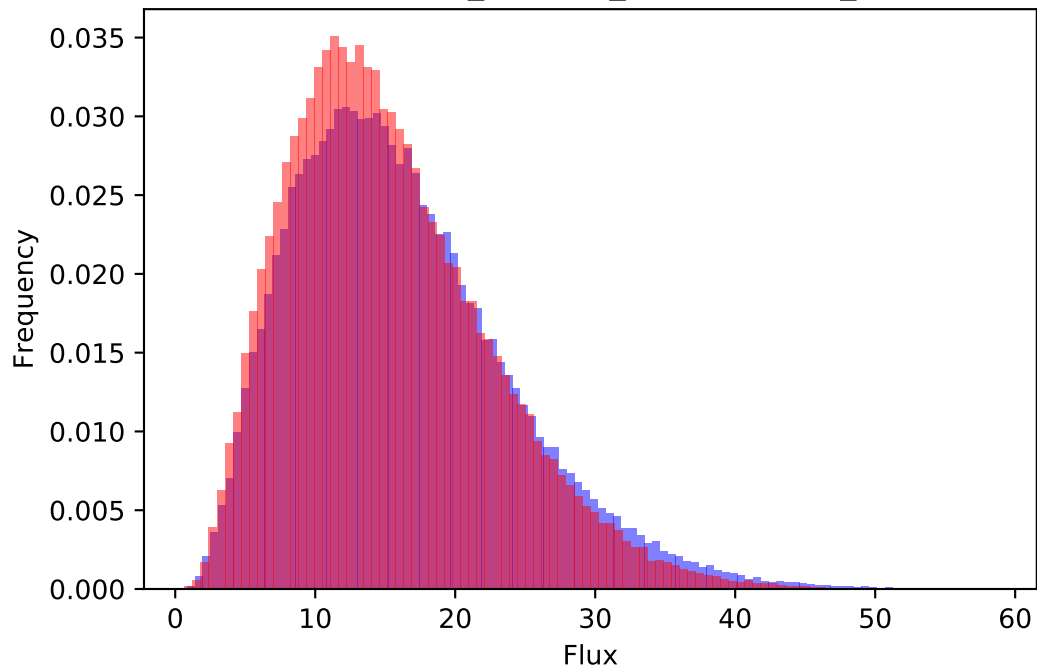


298 : H_c + OMP_c --> CO2_c + UMP_c

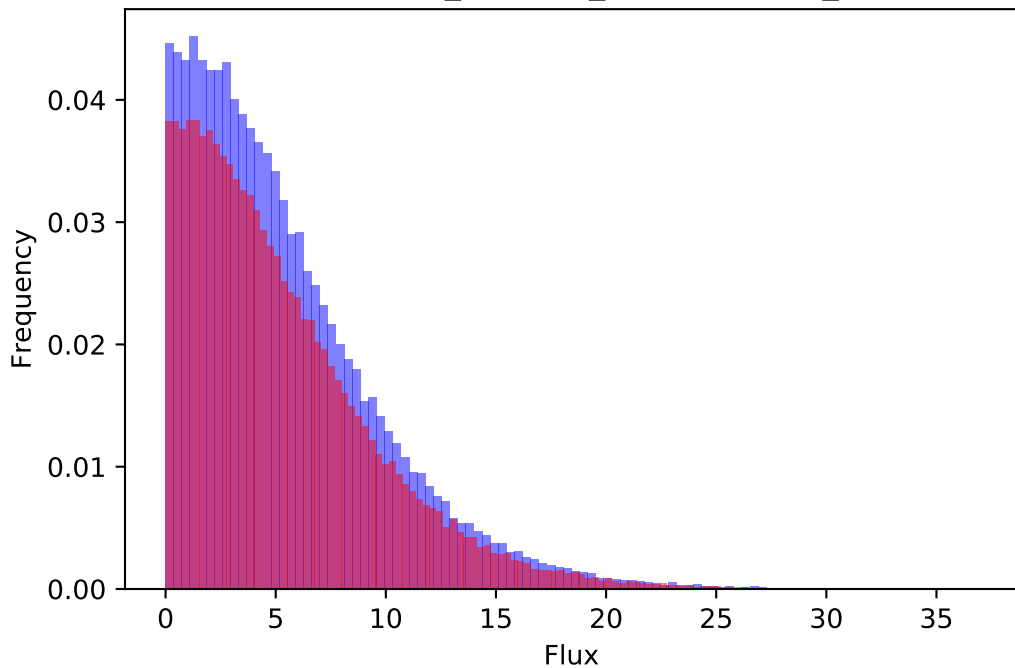




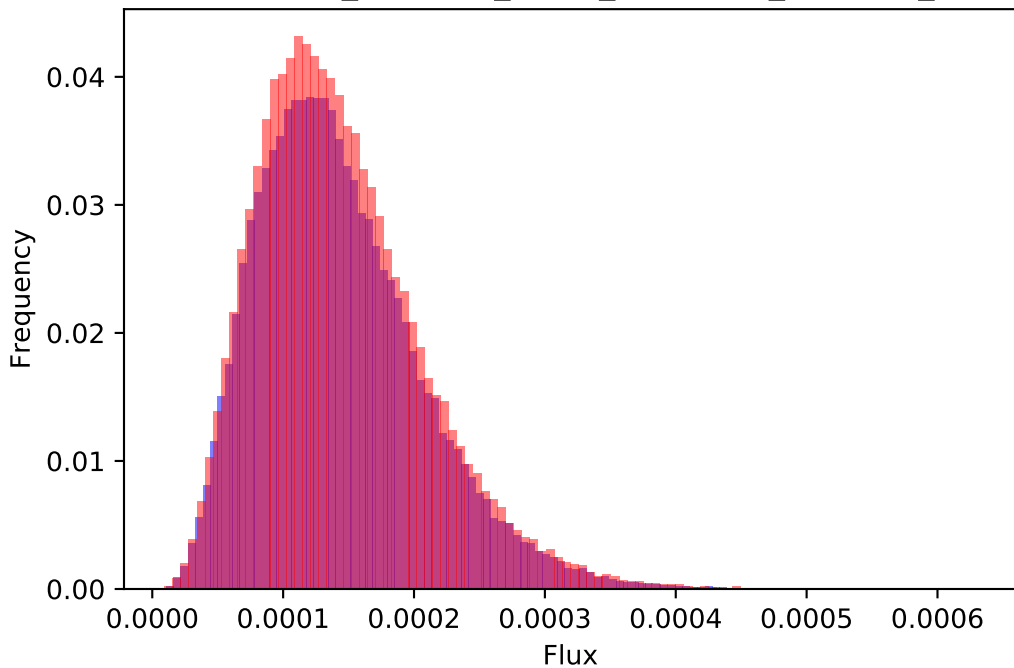
****300 : AMP_c + ATP_c --> 2.0 ADP_c****

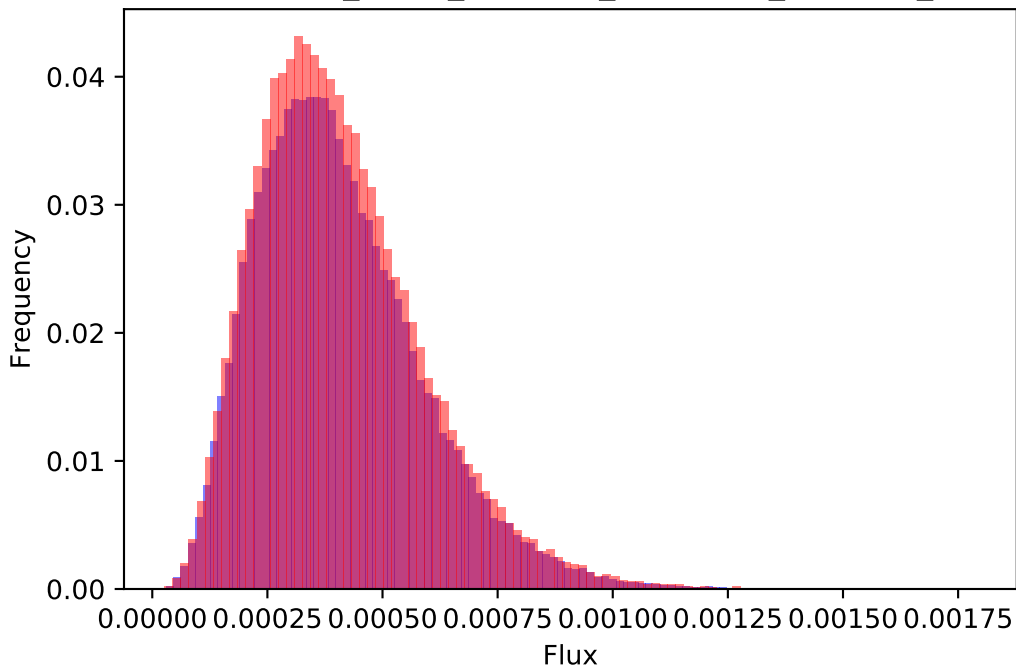


****301 : AMP_h + ATP_h --> 2.0 ADP_h****

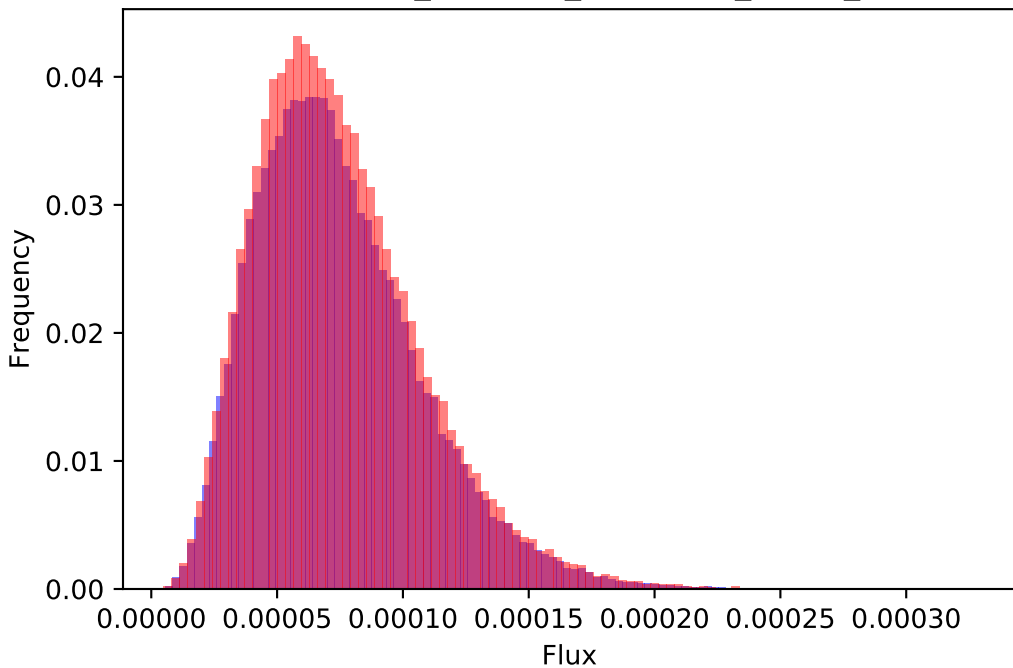


302 : ATP_c + GMP_c + H_c --> ADP_c + GDP_c

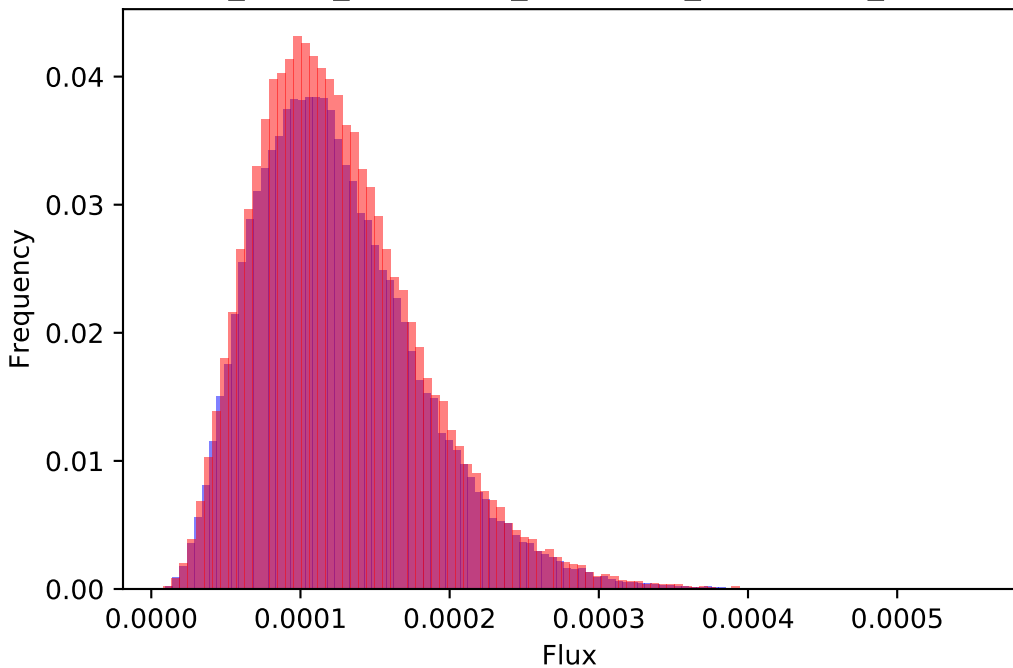




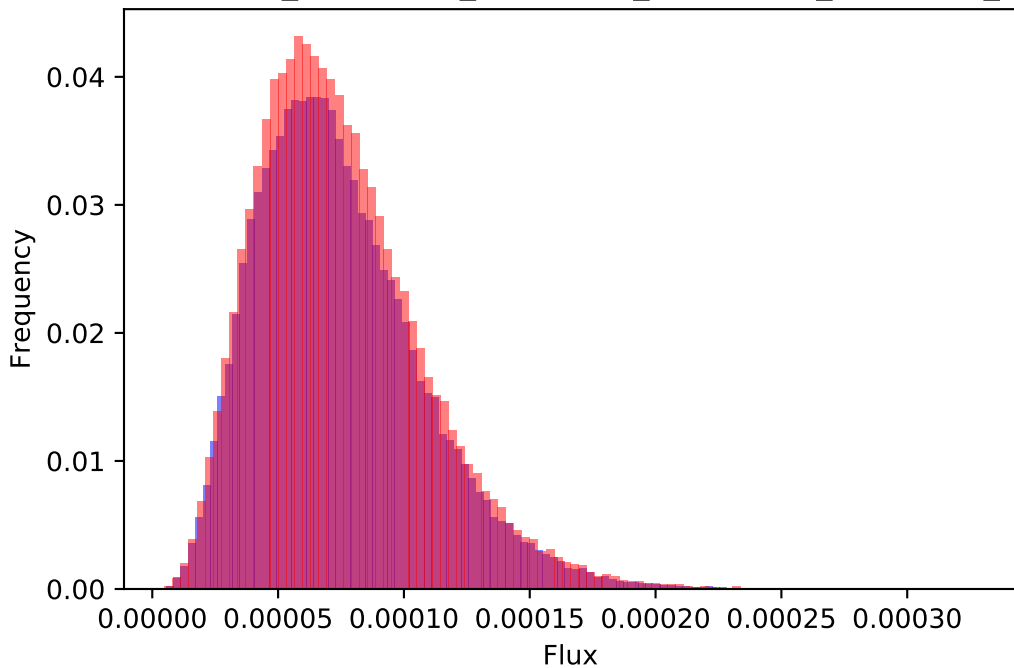
304 : CTP_c + H2O_c --> CDP_c + Pi_c



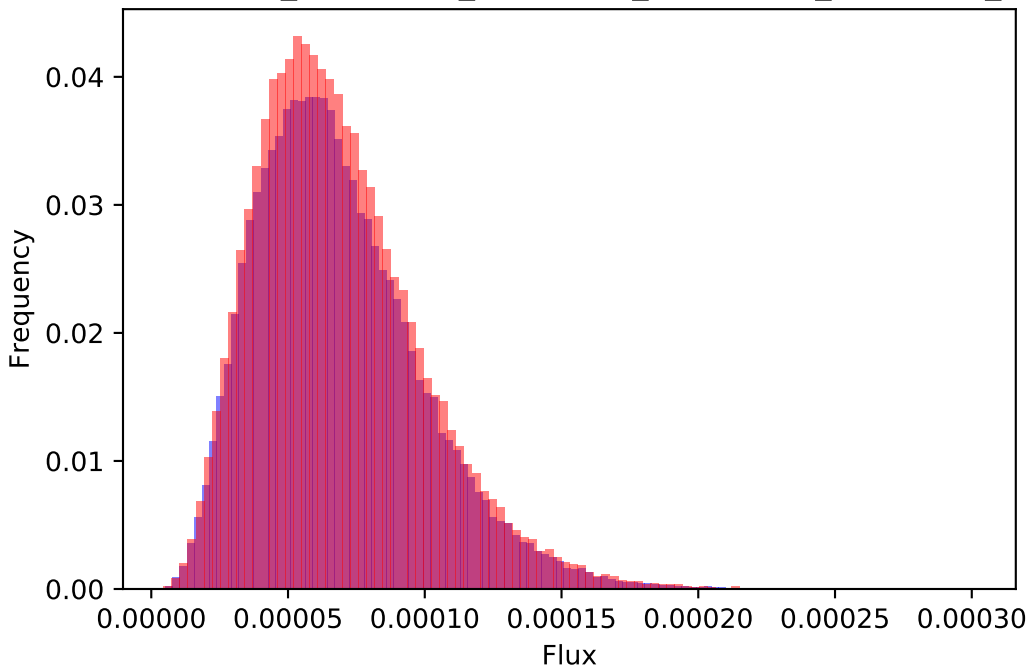
305 : ADP_c + H_c + TRXrd_c --> H2O_c + TRXox_c + dADP_c



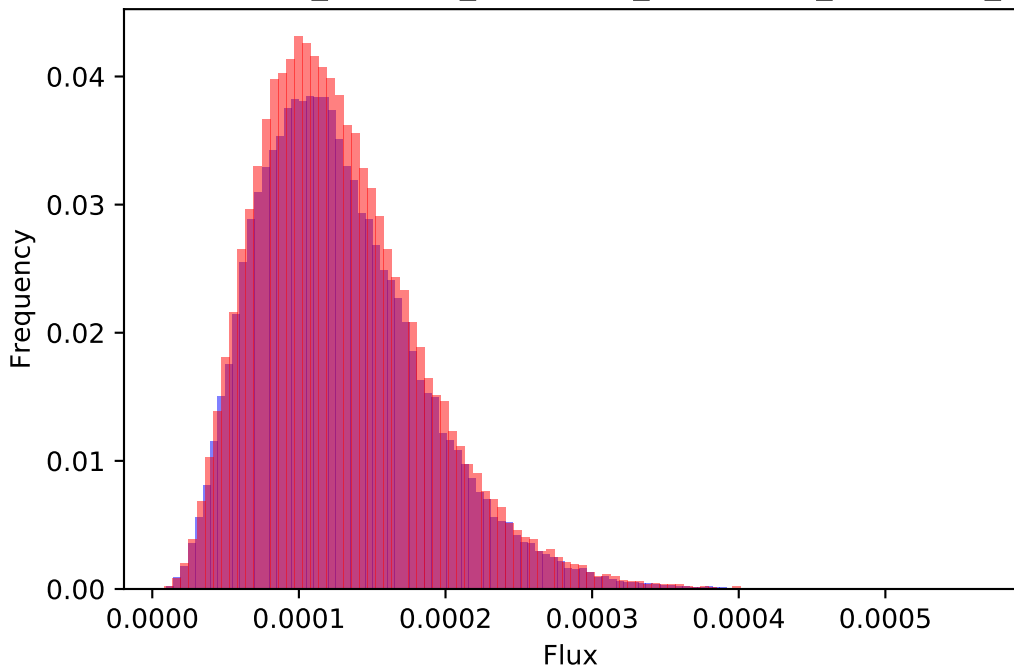
306 : CDP_c + TRXrd_c --> H2O_c + TRXox_c + dCDP_c



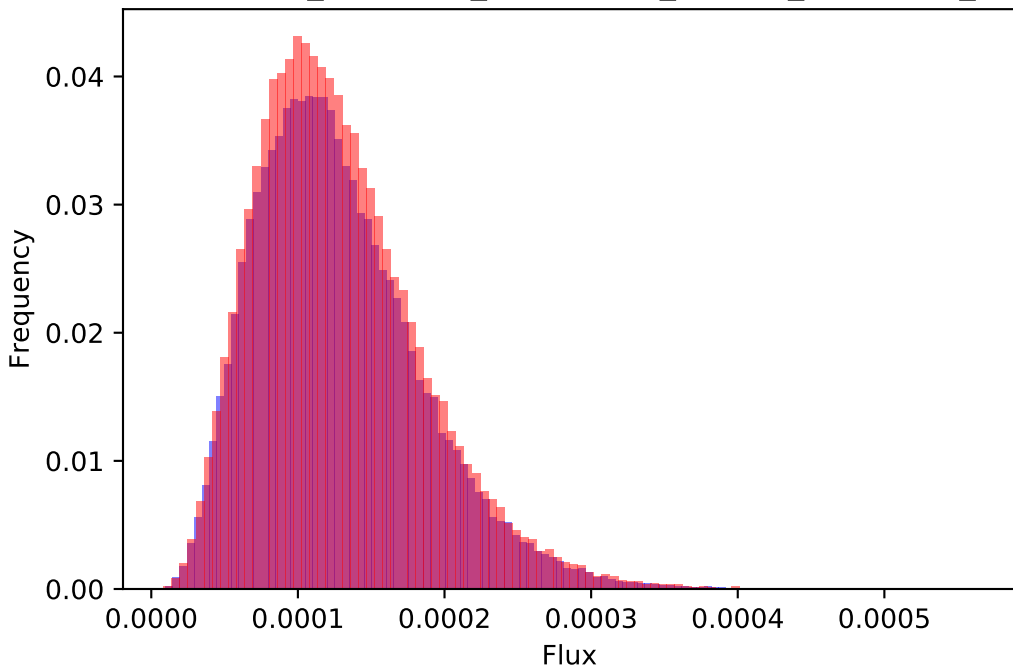
307 : GDP_c + TRXrd_c --> H2O_c + TRXox_c + dGDP_c



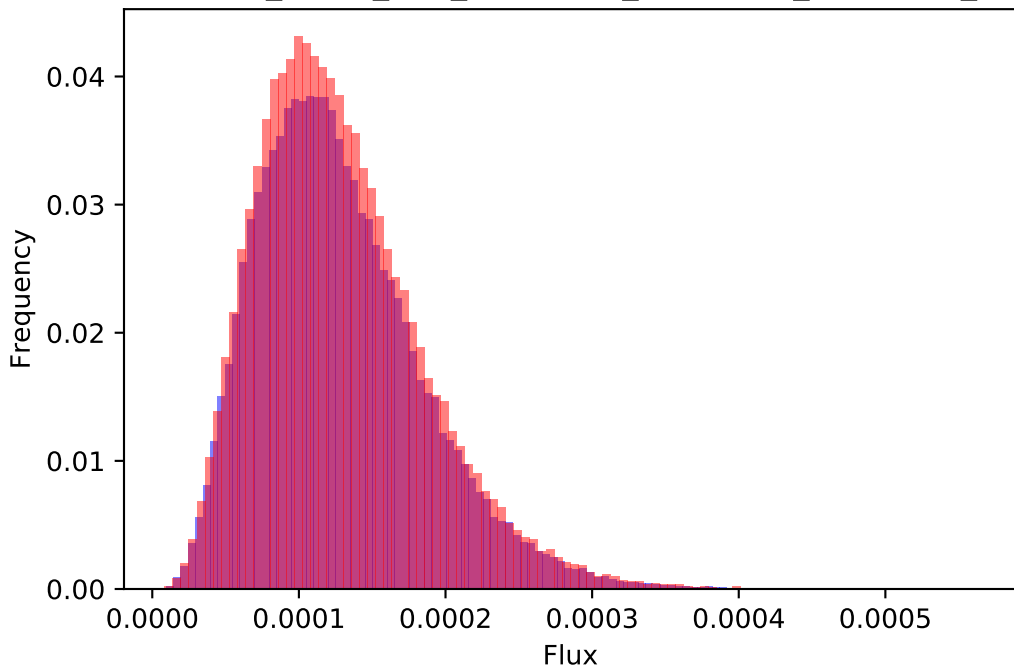
308 : TRXrd_c + UDP_c --> H2O_c + TRXox_c + dUDP_c



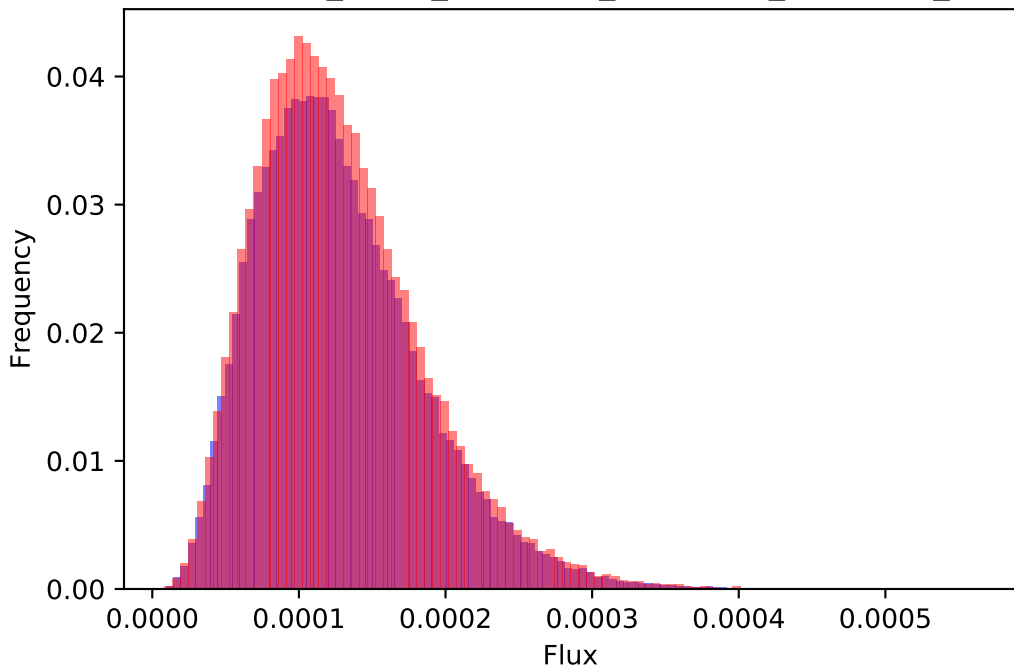
309 : H₂O_c + dUTP_c --> 2.0 H_c + PPI_c + dUMP_c



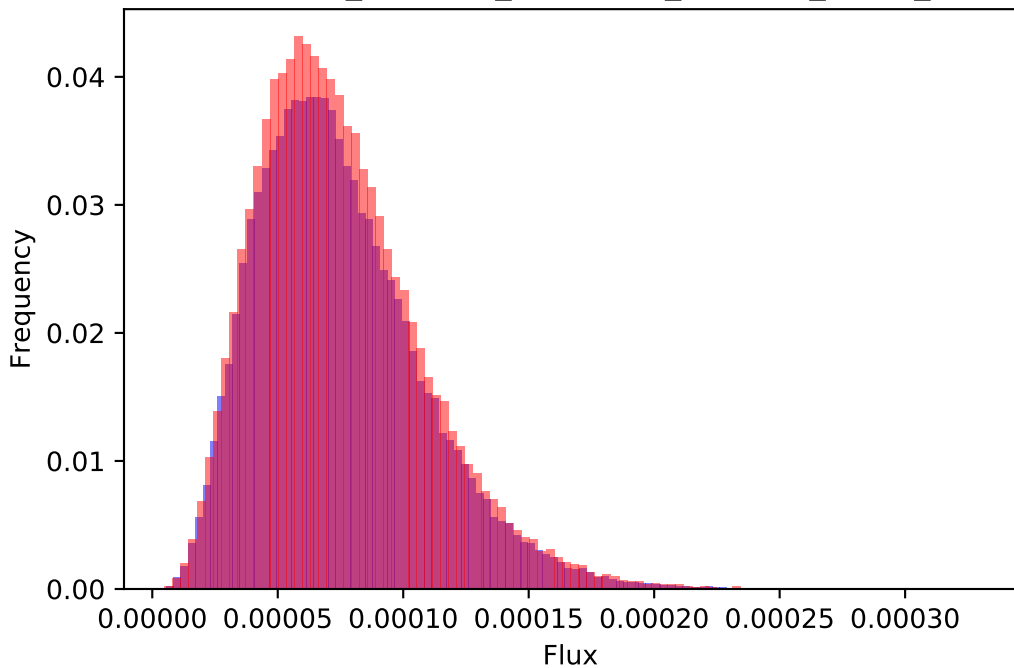
310 : M_DASH_THF_c + dUMP_c --> DHF_c + dTMP_c



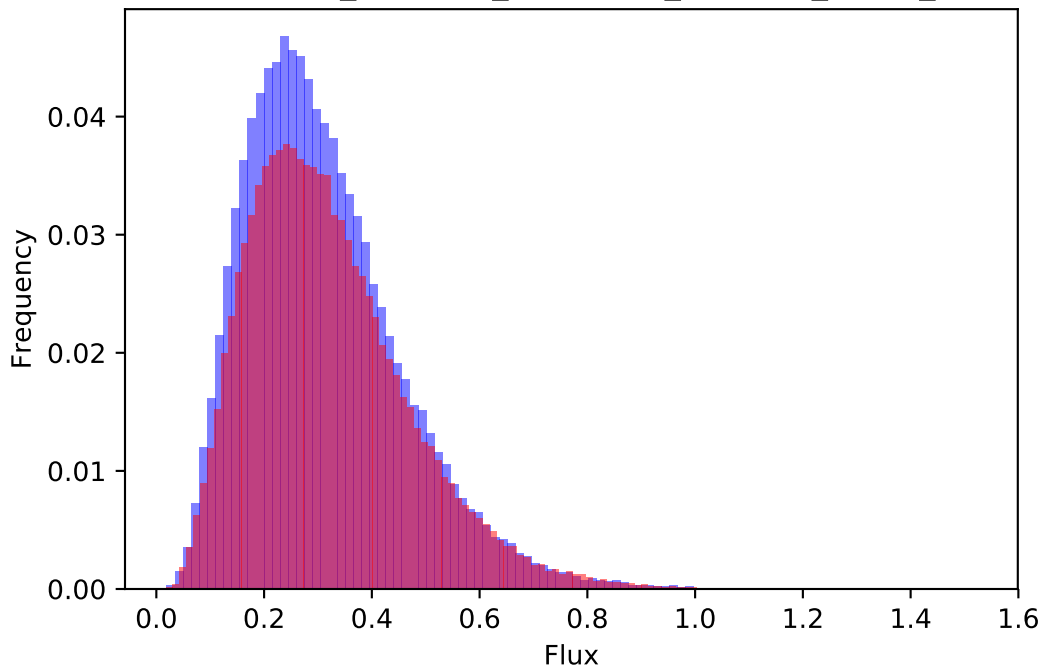
311 : ATP_c + H_c + dTMP_c --> ADP_c + dTDP_c



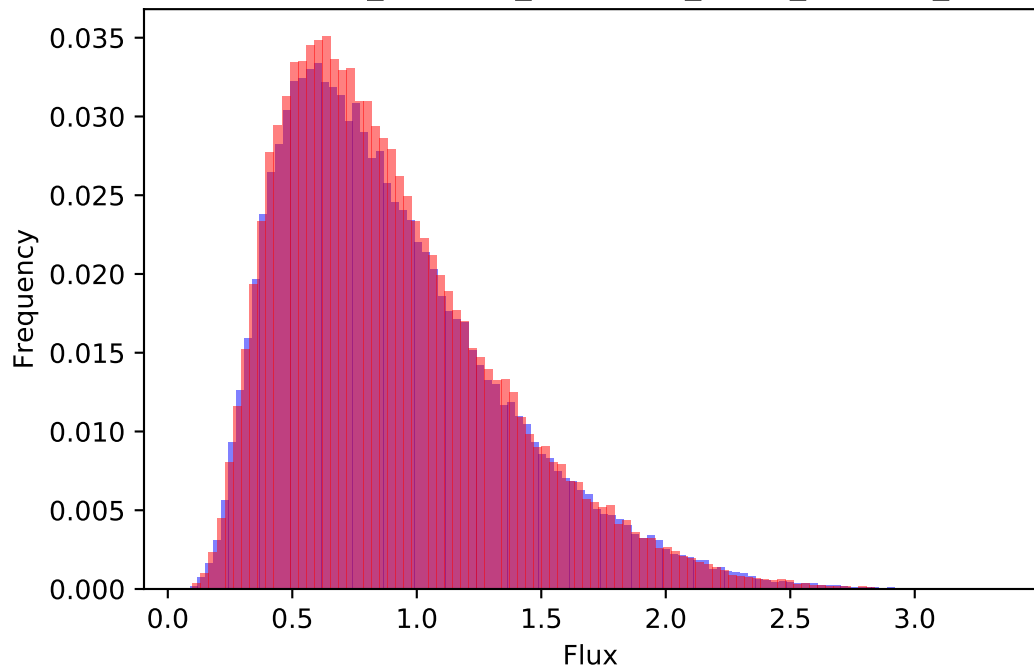
312 : ATP_c + GDP_c --> ADP_c + GTP_c + H_c

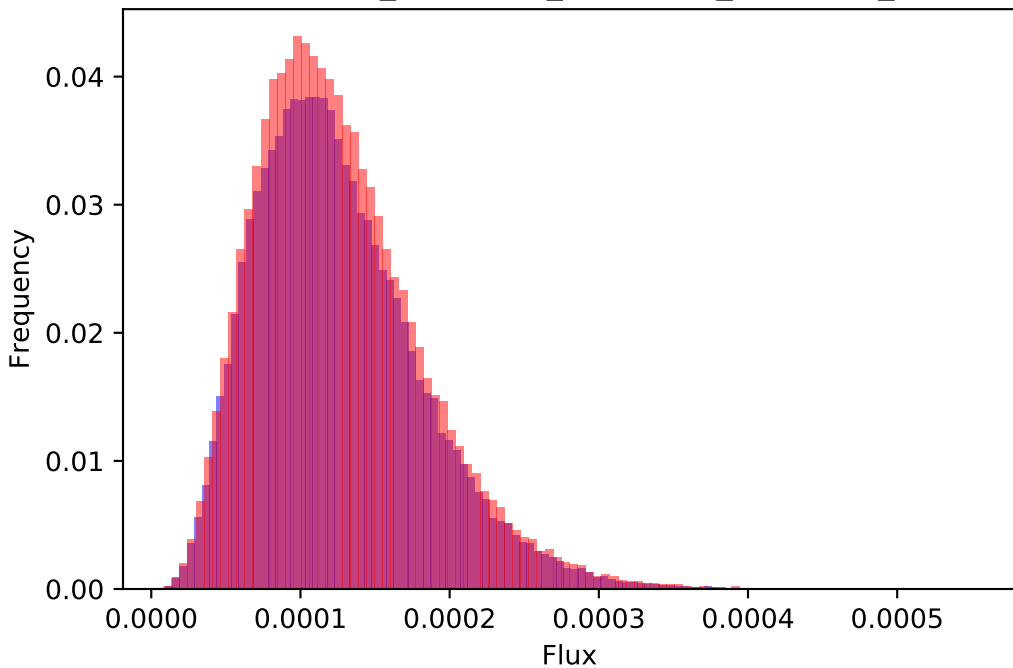
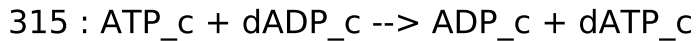


****313 : ATP_h + GDP_h --> ADP_h + GTP_h + H_h****

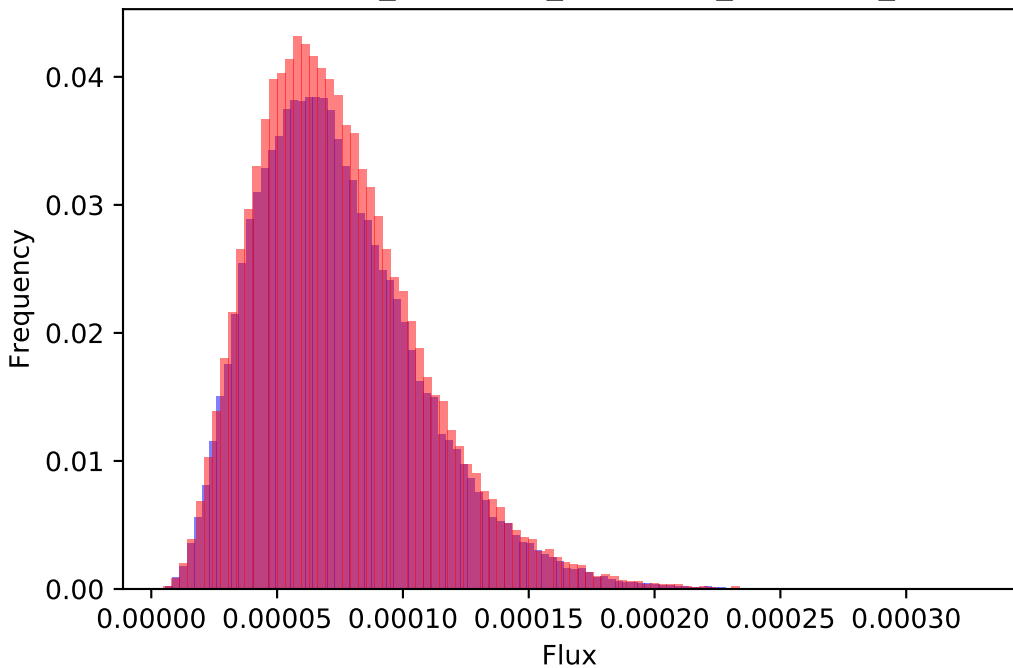


314 : ATP_c + UDP_c --> ADP_c + H_c + UTP_c

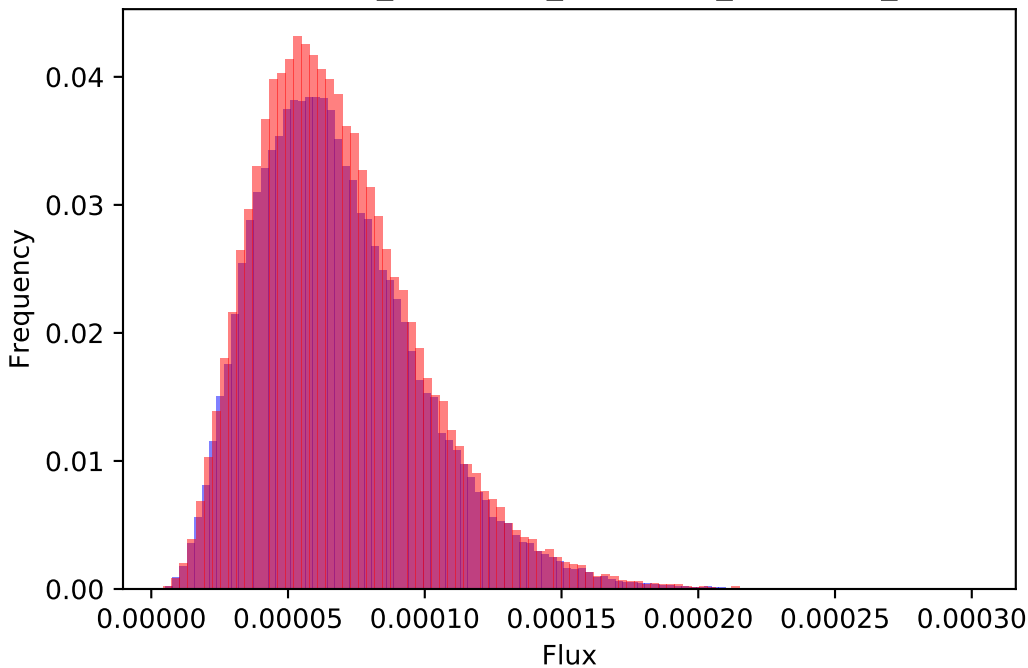




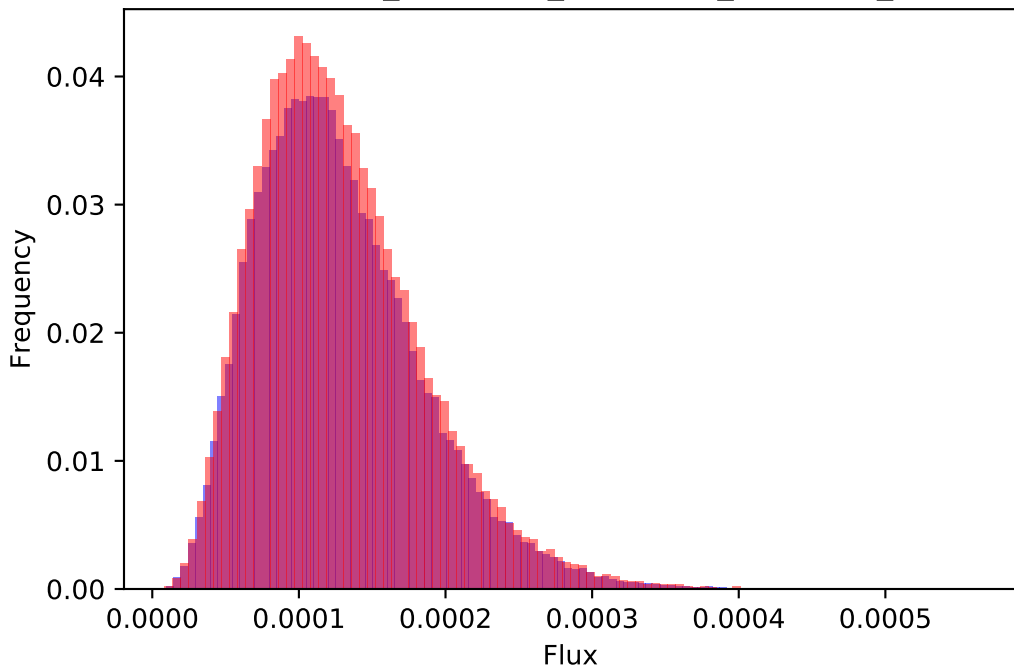
316 : ATP_c + dCDP_c --> ADP_c + dCTP_c



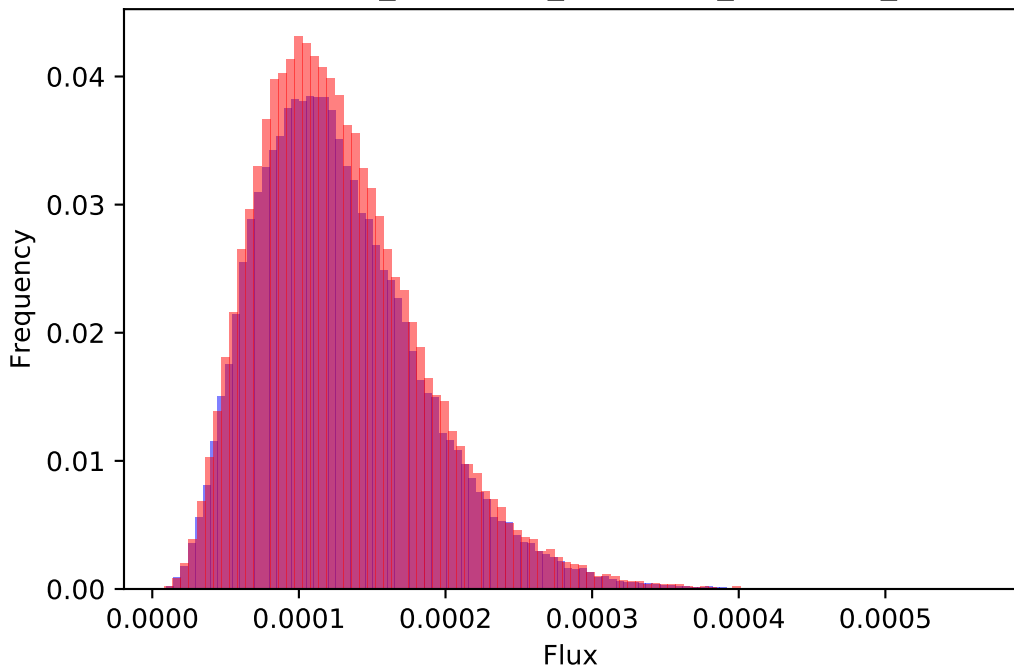
317 : ATP_c + dGDP_c --> ADP_c + dGTP_c



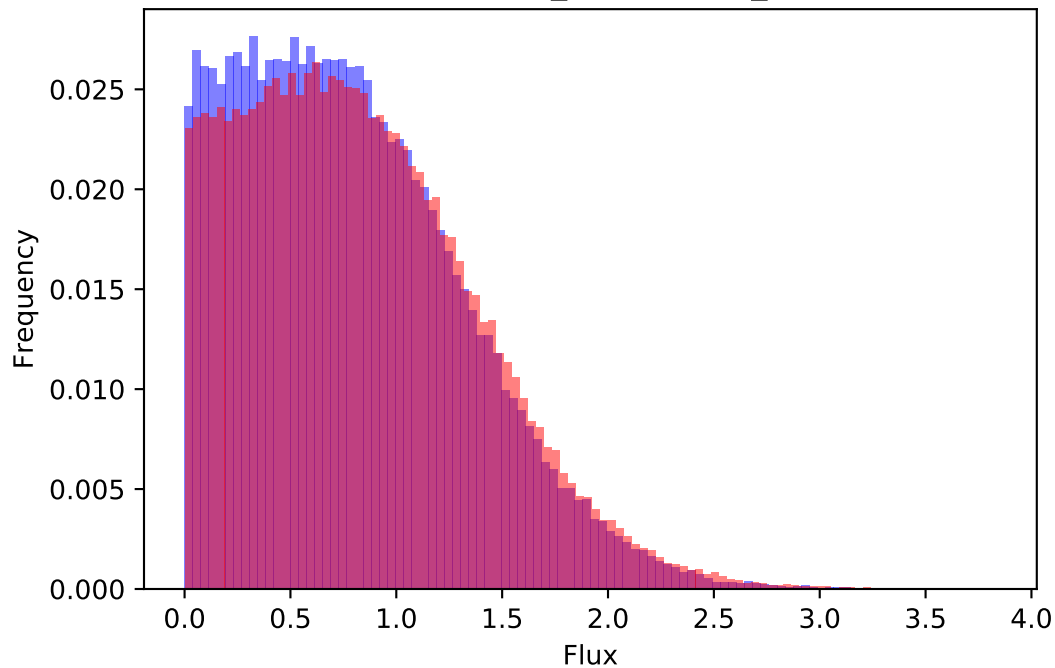
318 : ATP_c + dTDP_c --> ADP_c + dTTP_c



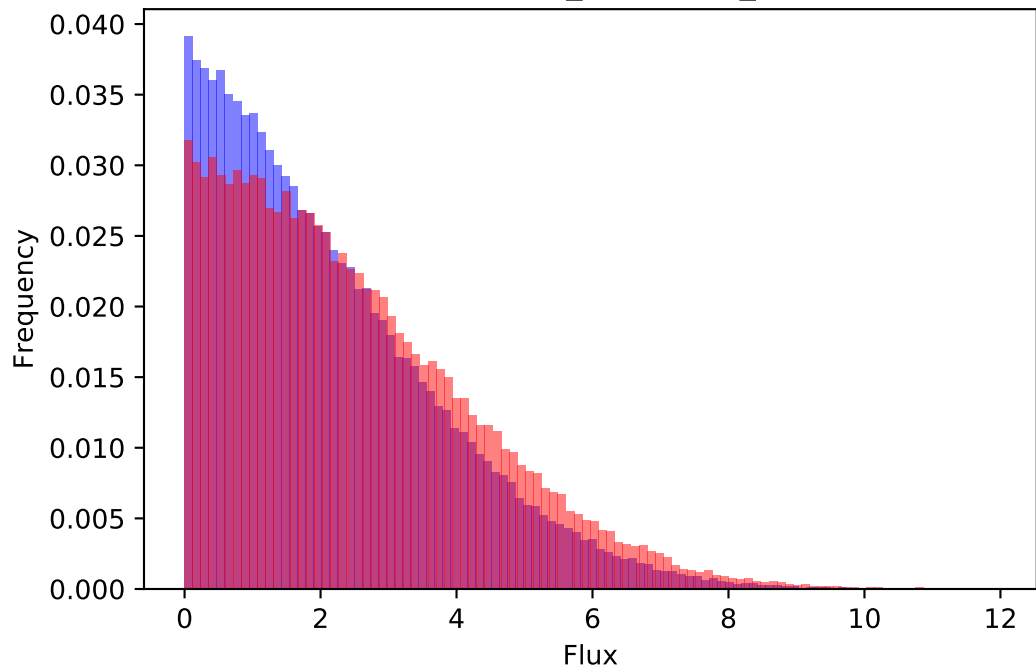
319 : ATP_c + dUDP_c --> ADP_c + dUTP_c



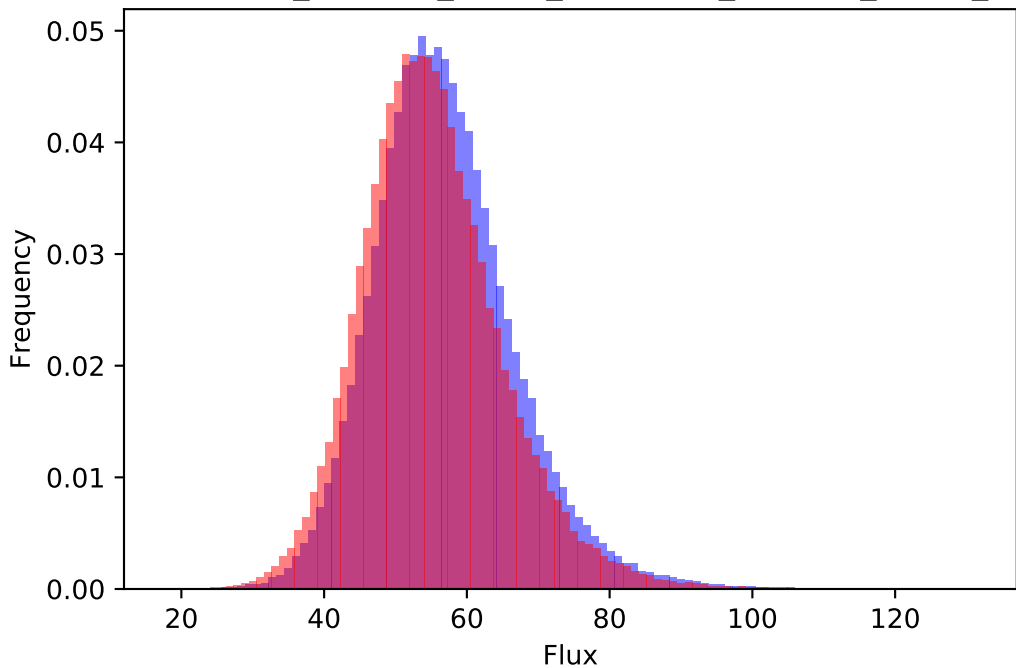
****320 : SO4_c <=> SO4_h****



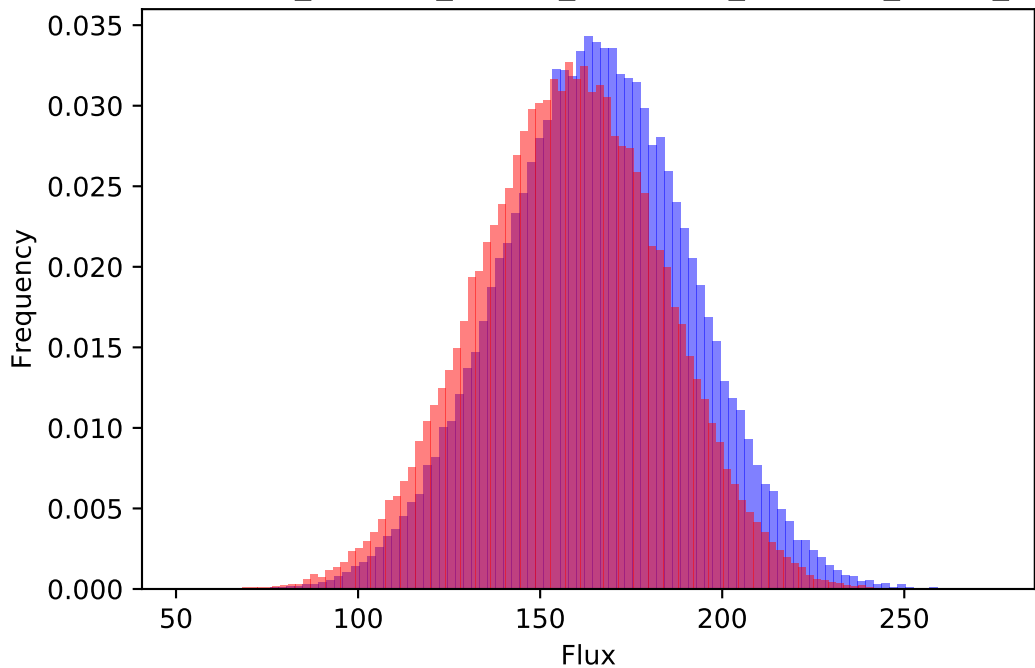
****321 : NO2_c --> NO2_h****



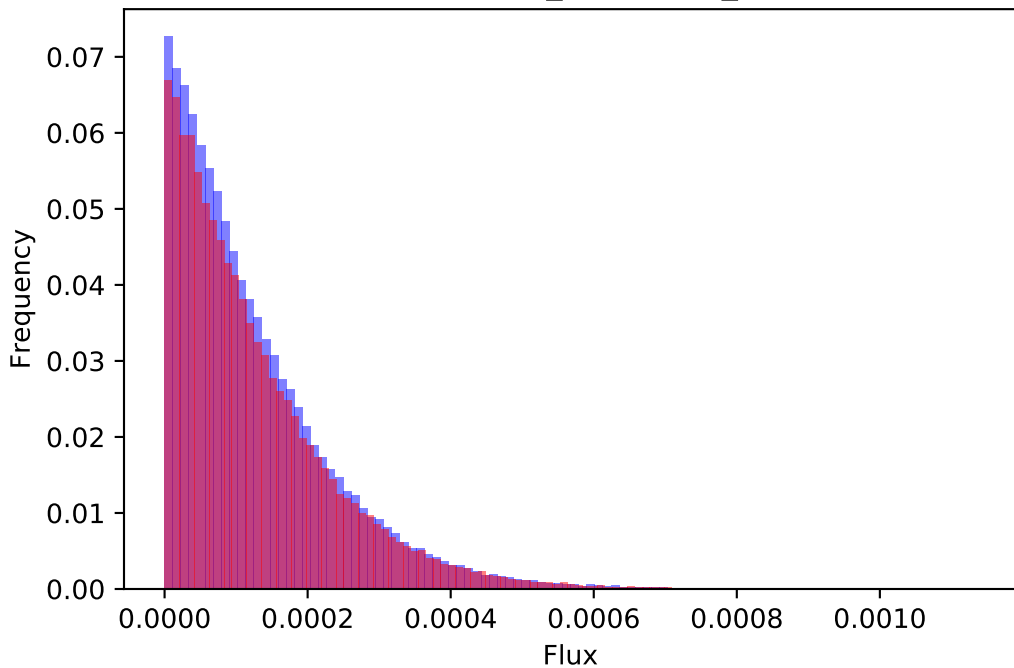
****322 : ADP_h + ATP_c + Pi_h --> ADP_c + ATP_h + Pi_c****



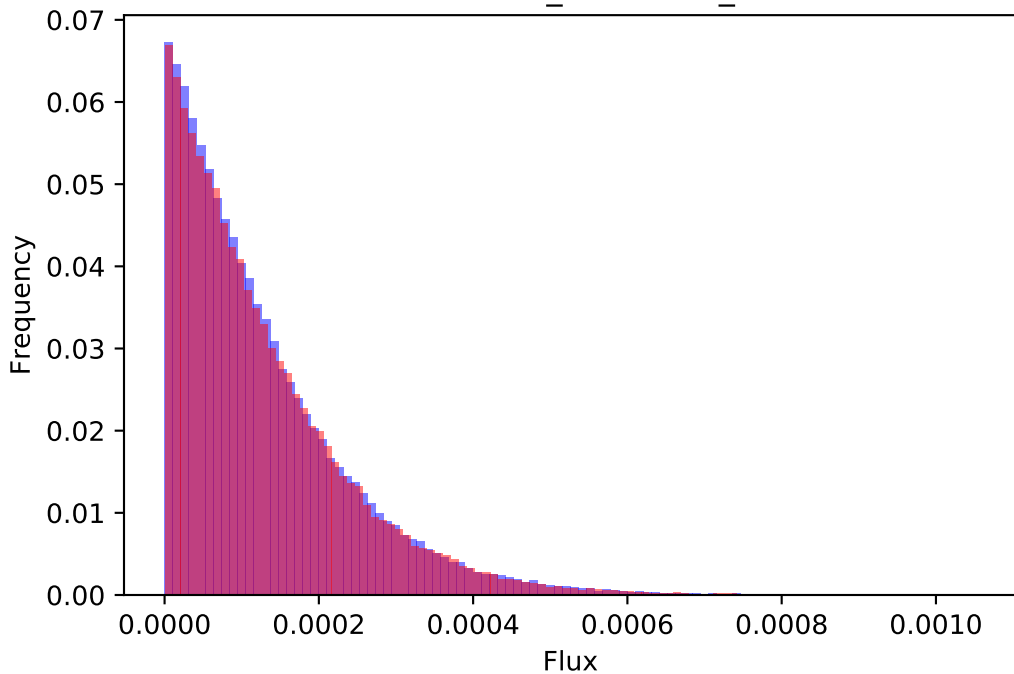
****323 : ADP_c + ATP_m + Pi_c --> ADP_m + ATP_c + Pi_m****



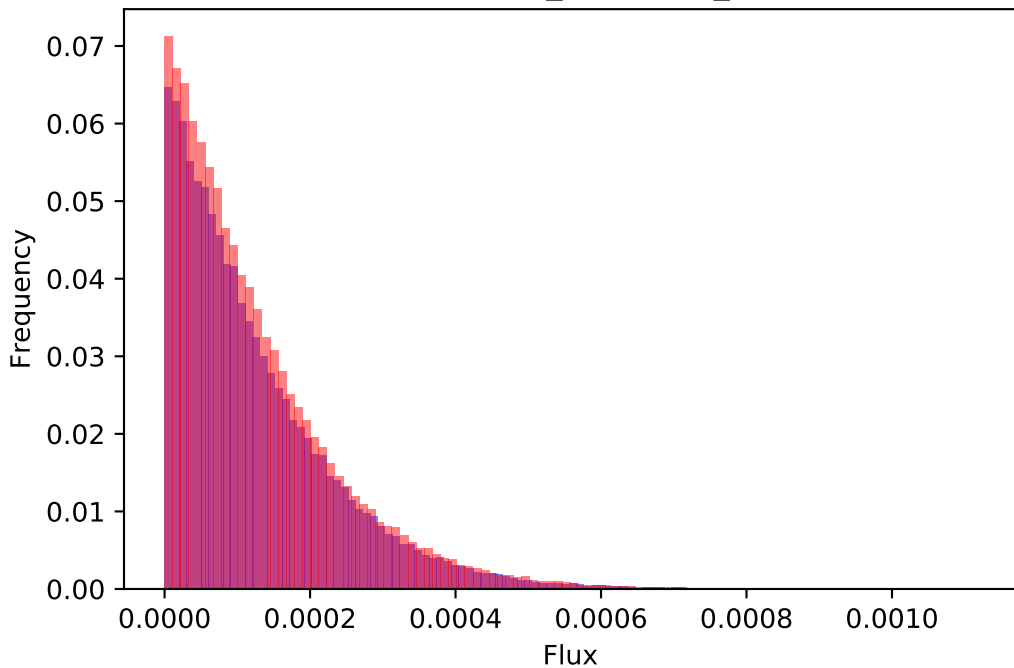
324 : AMP_h --> AMP_c



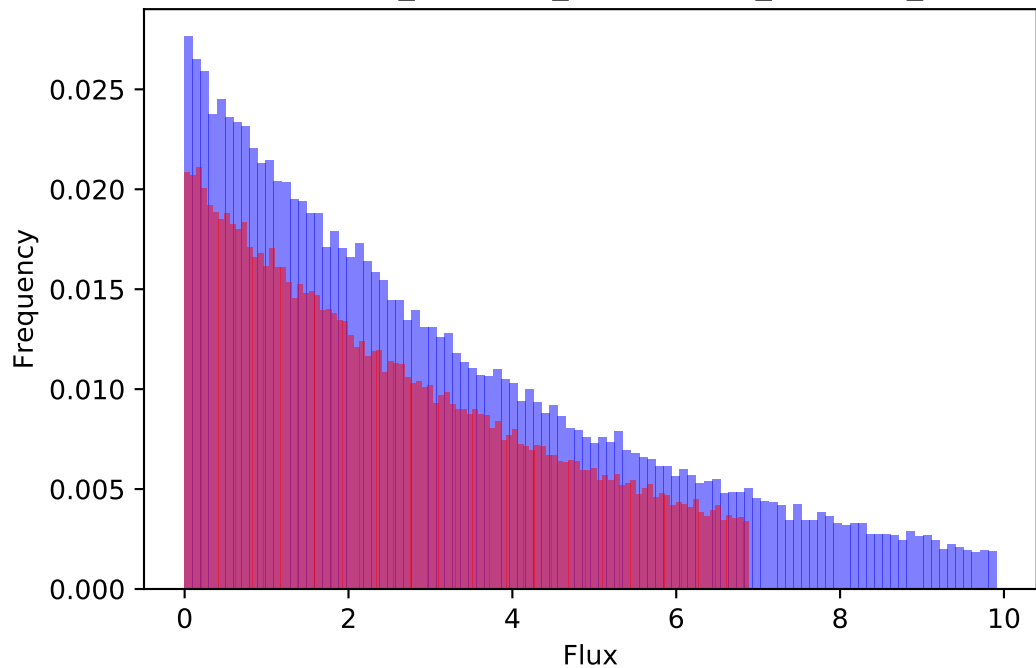
325 : ADP_h --> ADP_c



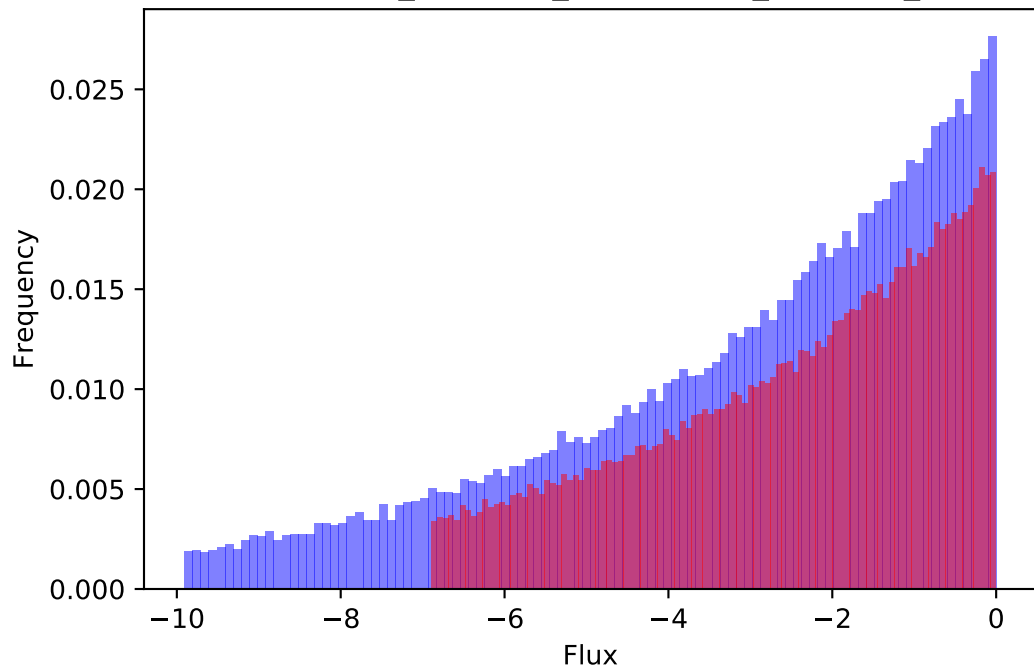
326 : ATP_h --> ATP_c



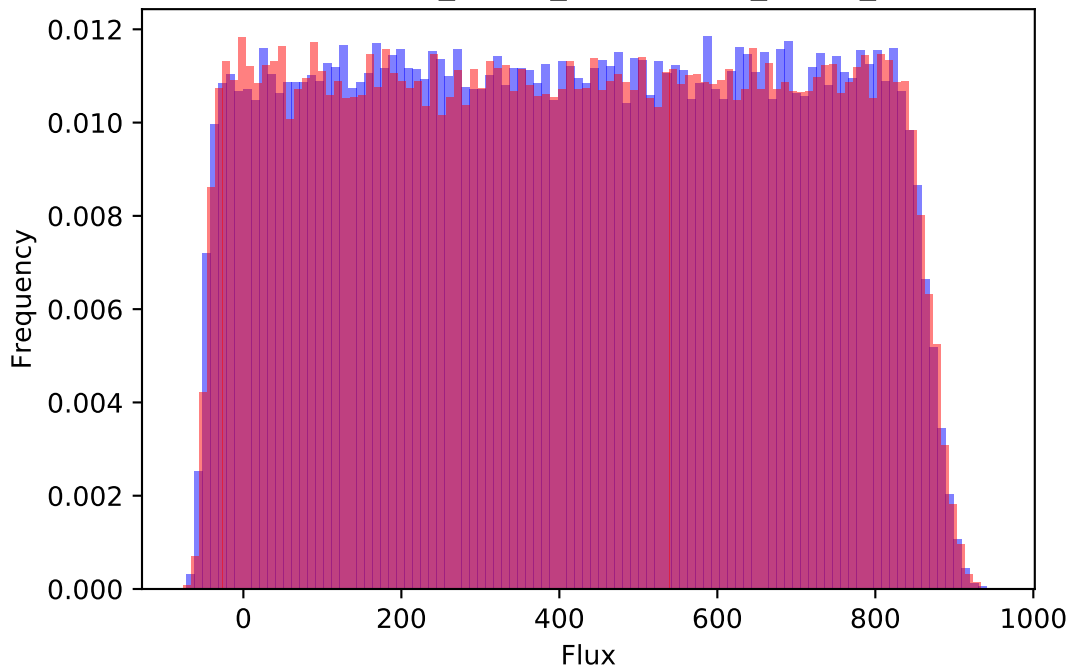
****327 : AMP_h + NAD_c <=> AMP_c + NAD_h****



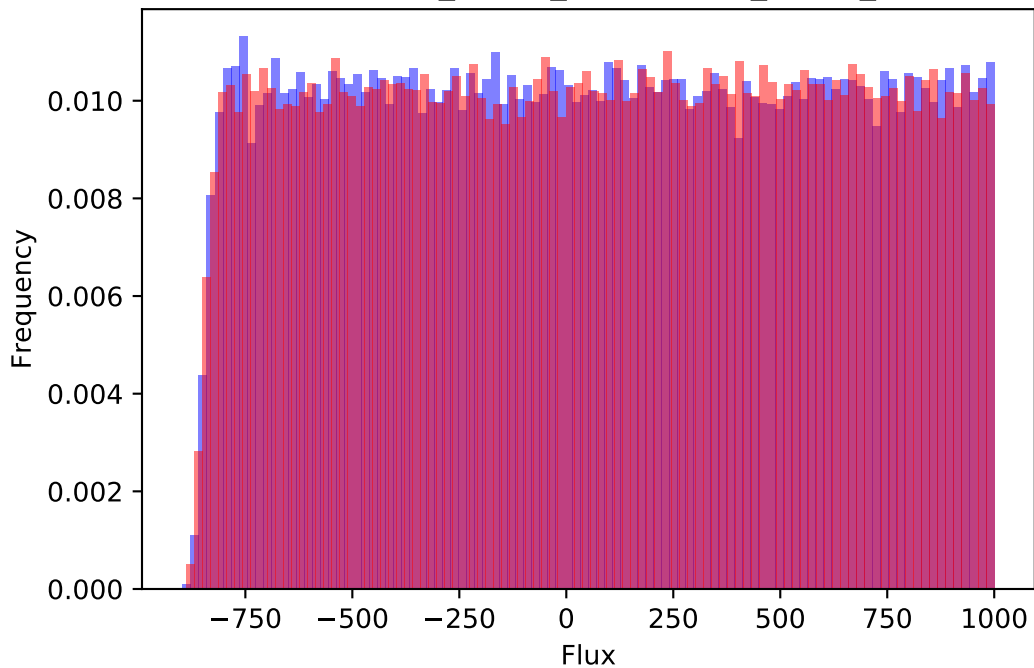
****328 : ADP_h + NAD_c <=> ADP_c + NAD_h****



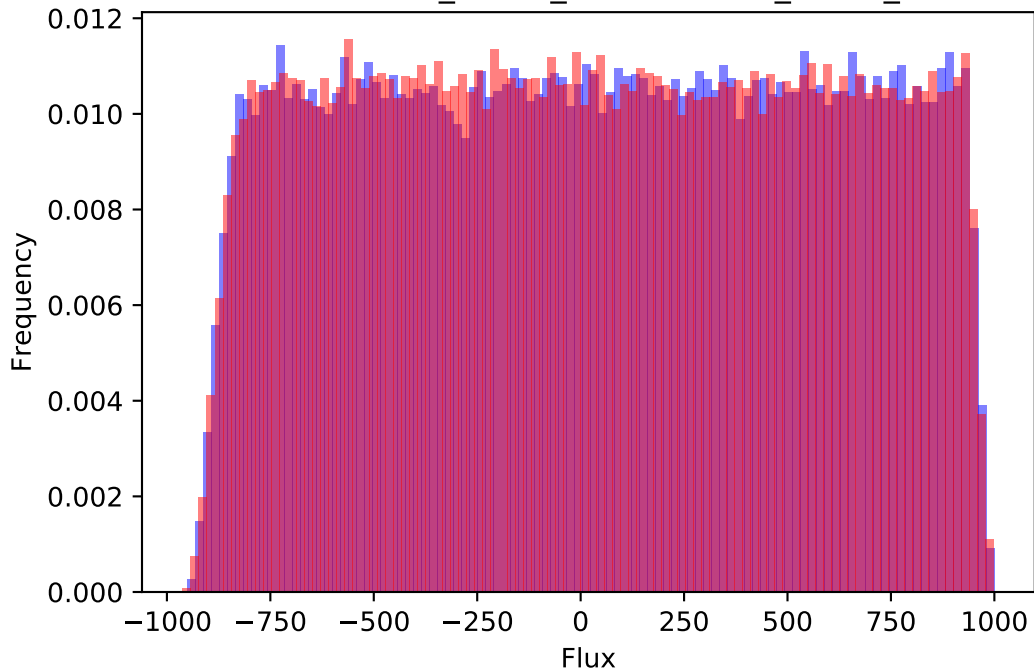
329 : $\text{PGA}_h + \text{Pi}_c \leq \text{PGA}_c + \text{Pi}_h$



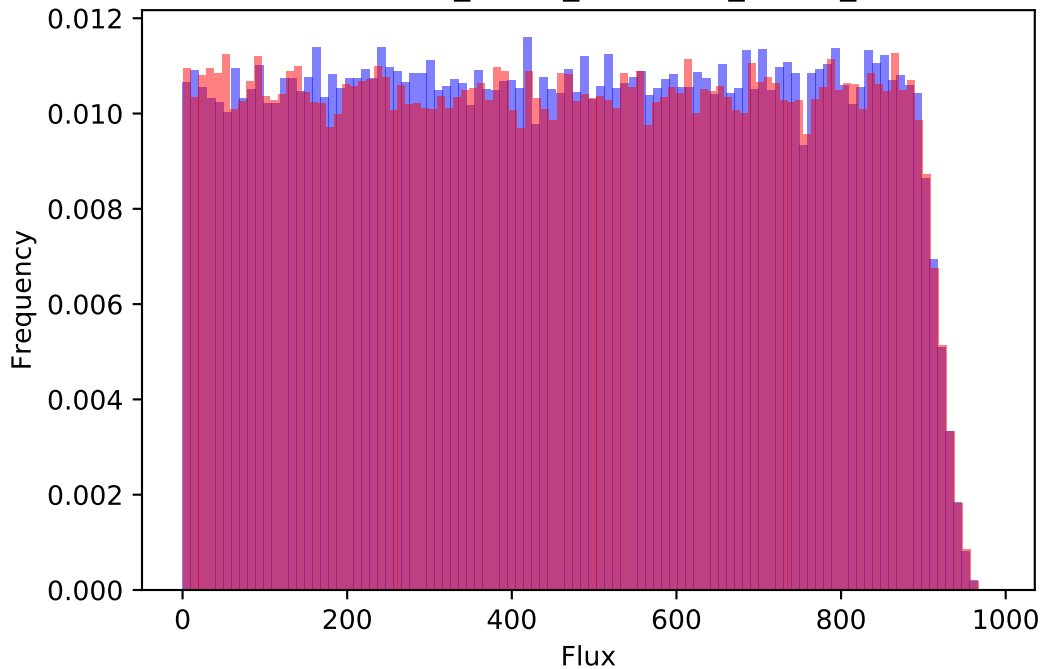
330 : $\text{GAP}_h + \text{Pi}_c \leq \text{GAP}_c + \text{Pi}_h$



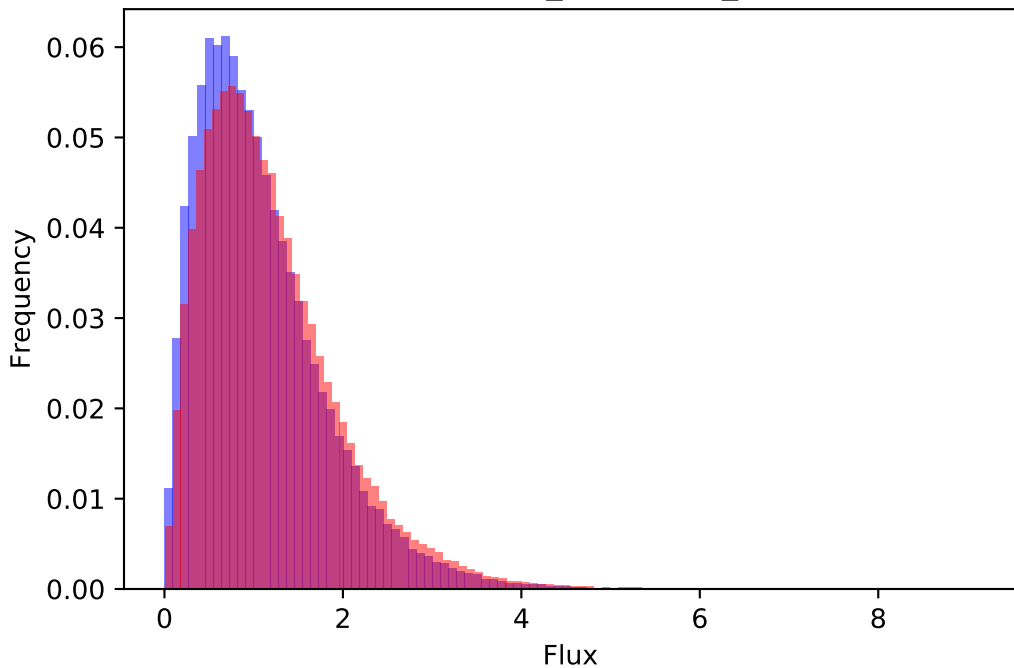
331 : DHAP_h + Pi_c <=> DHAP_c + Pi_h



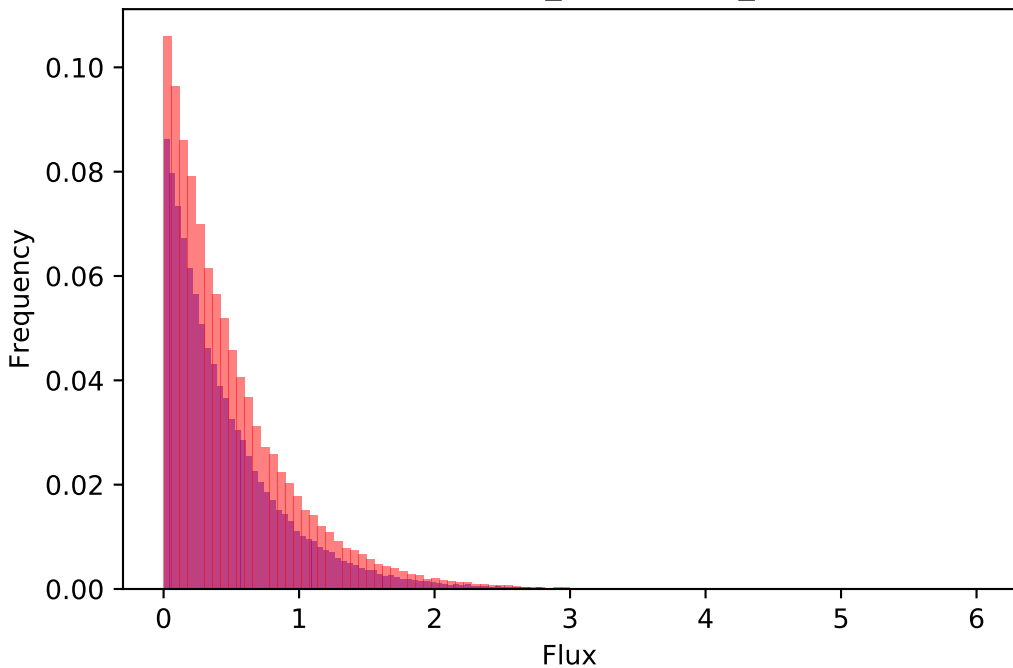
332 : PEP_c + Pi_h --> PEP_h + Pi_c



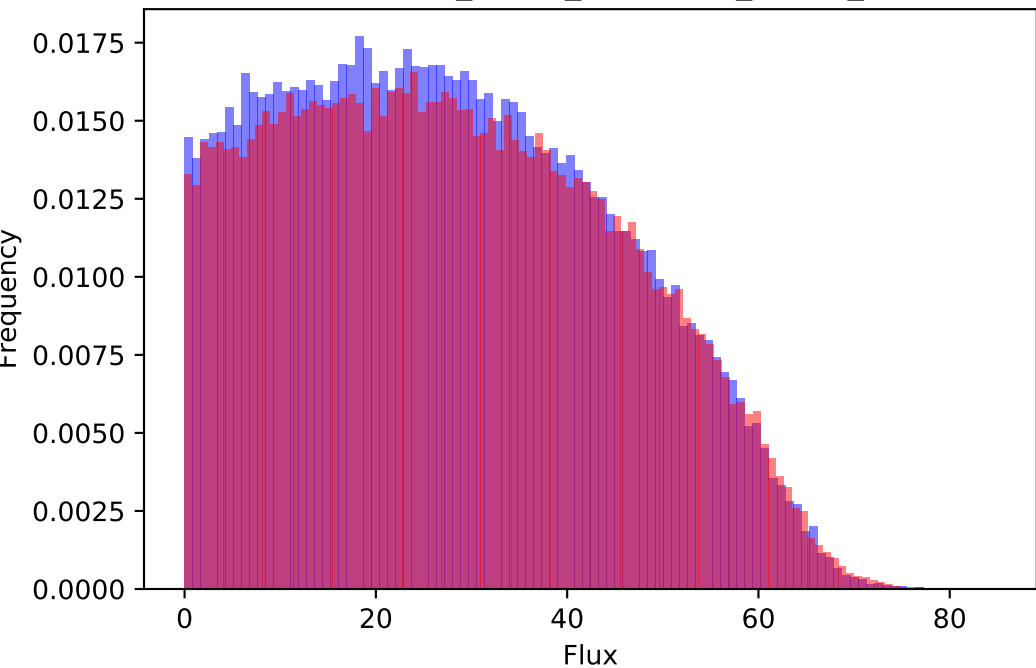
****333 : GCA_h --> GCA_c****



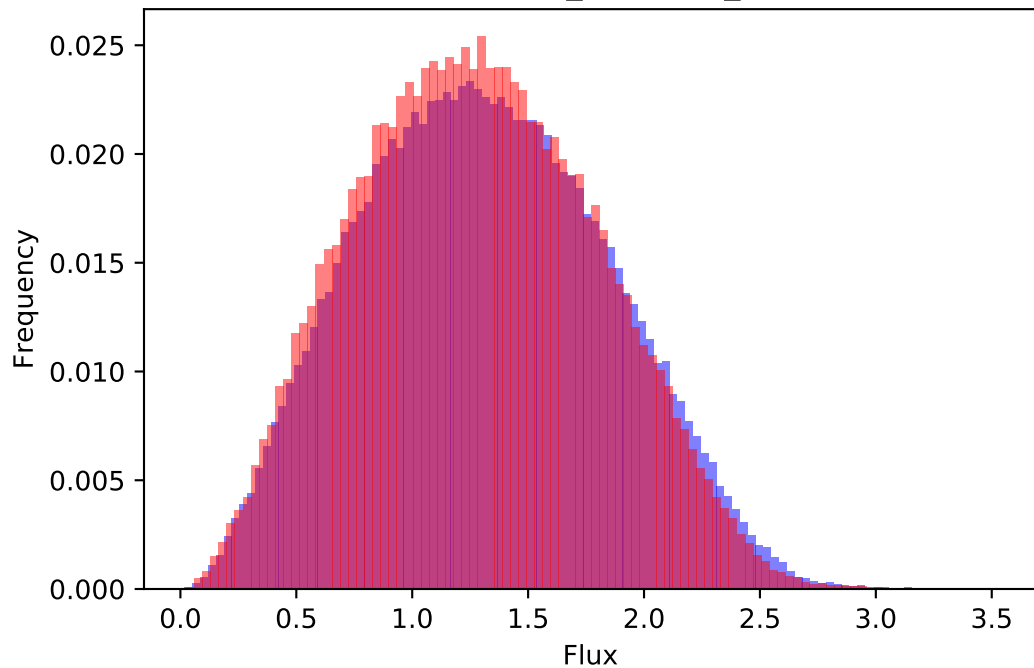
****334 : GCEA_c --> GCEA_h****



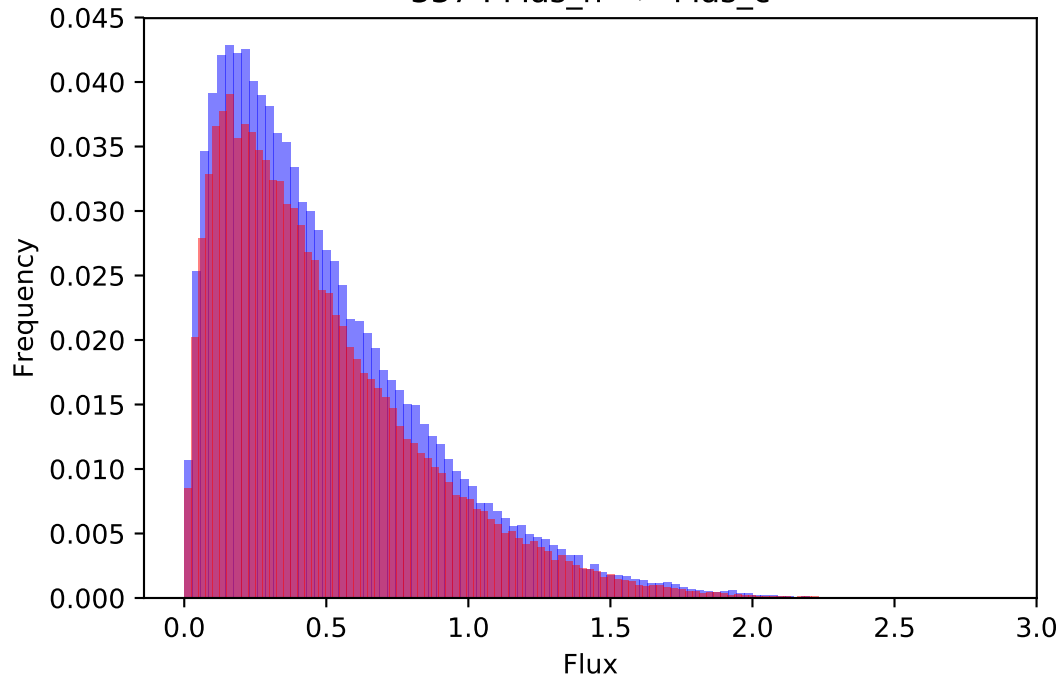
****335 : G6P_c + Pi_h --> G6P_h + Pi_c****



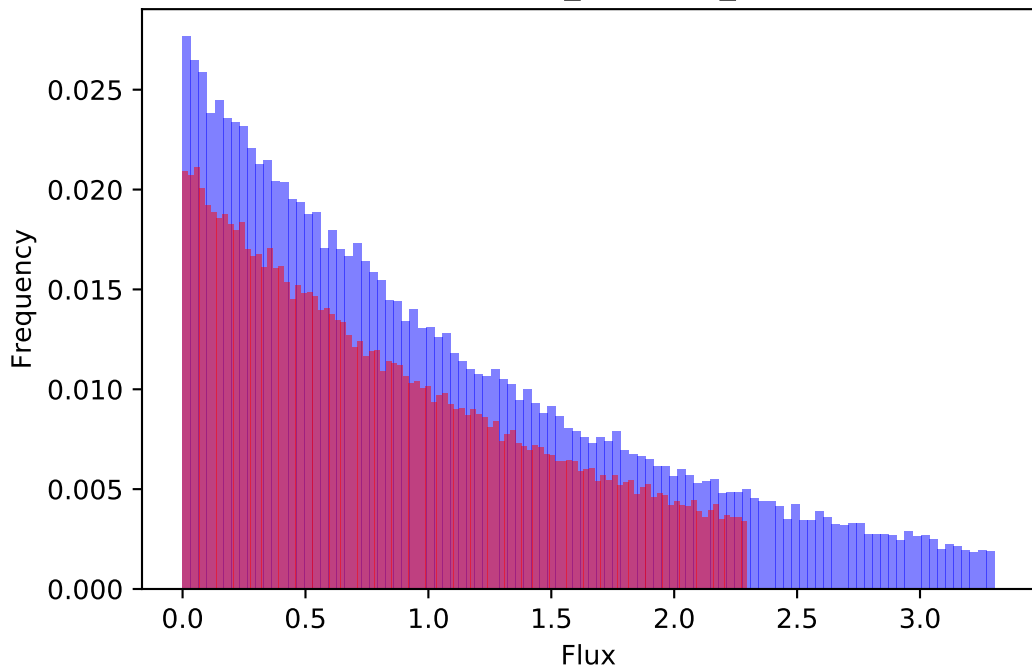
****336 : Glc_h --> Glc_c****



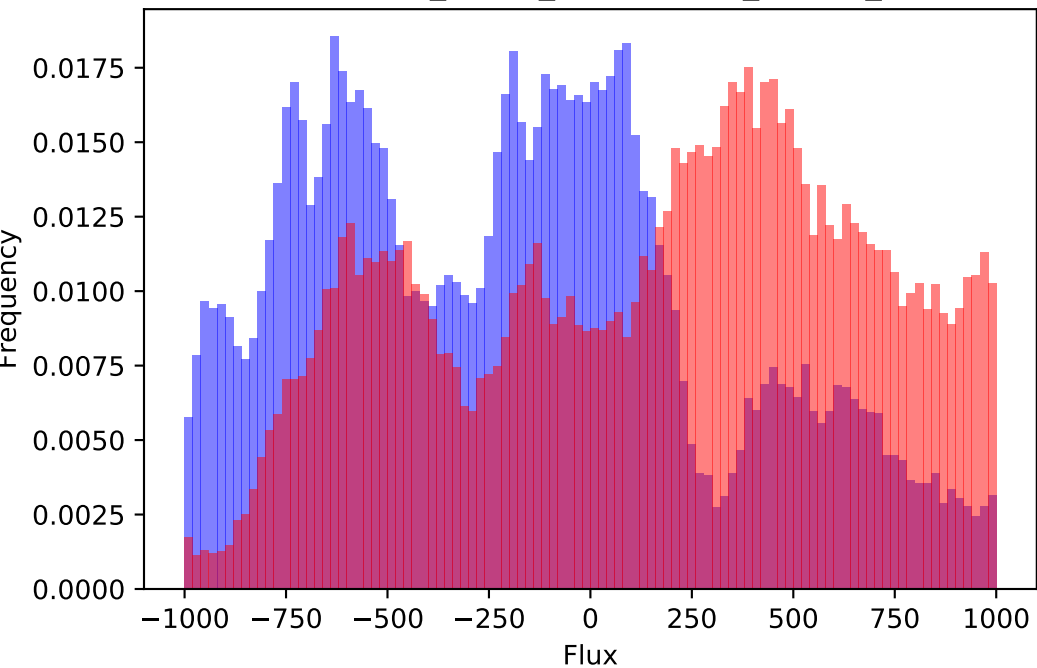
****337 : Mas_h --> Mas_c****



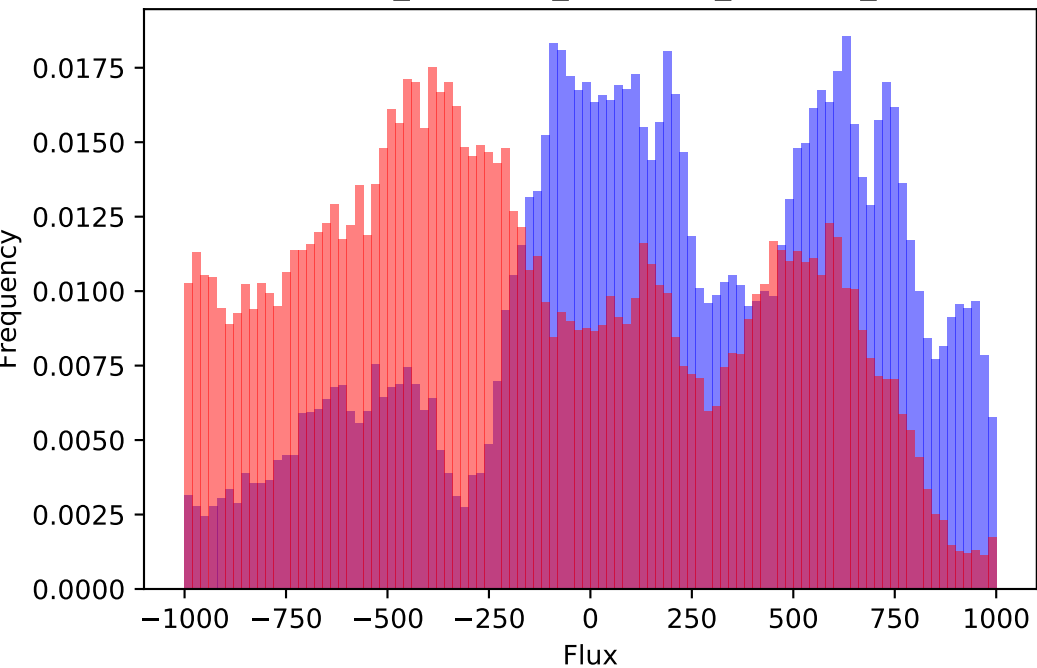
****338 : Rib_c --> Rib_h****



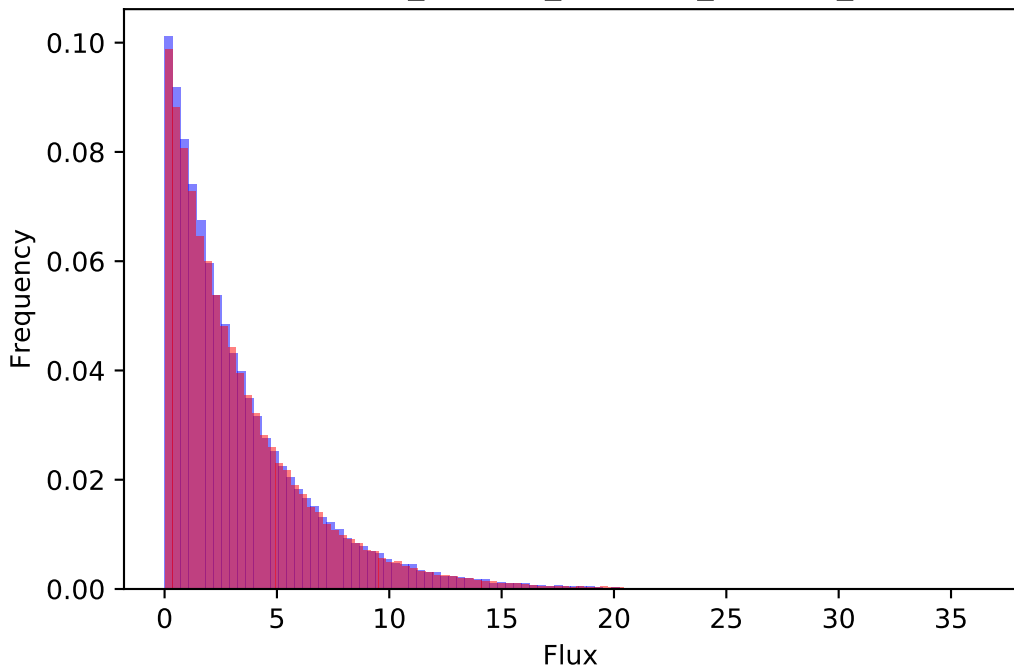
****339 : Mal_c + Pi_m <=> Mal_m + Pi_c****



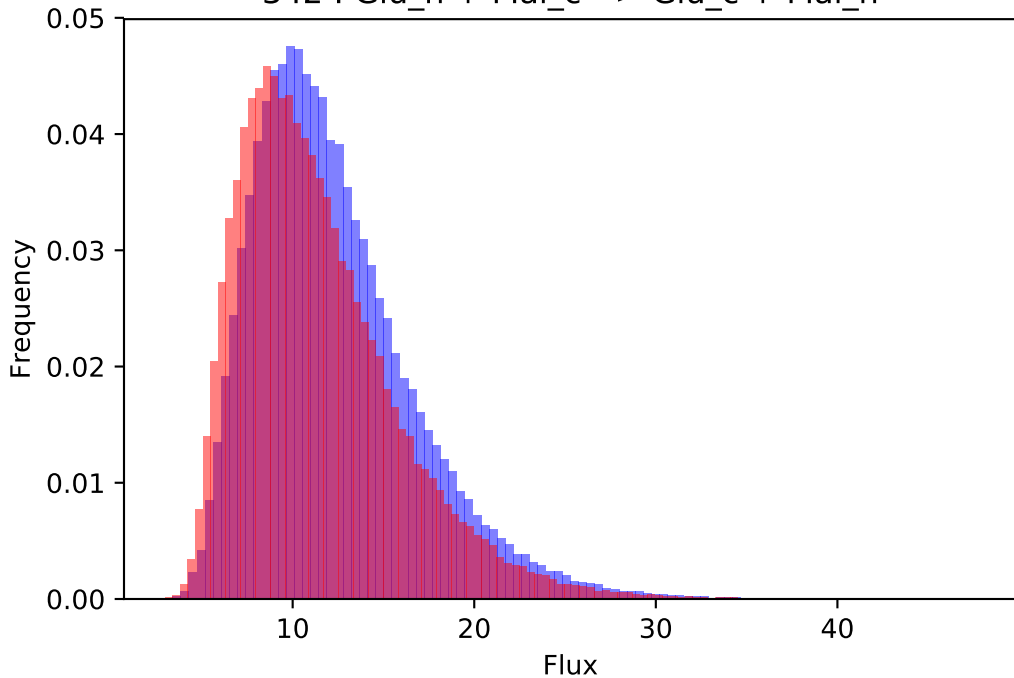
****340 : Pi_m + SCA_c <=> Pi_c + SCA_m****



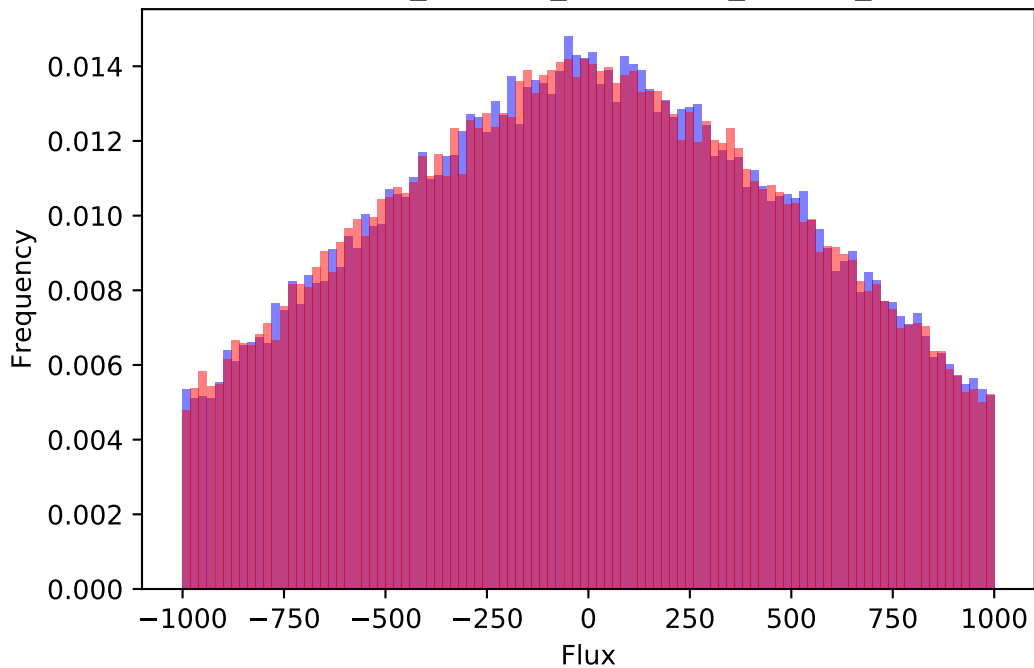
341 : KG_c + Mal_h --> KG_h + Mal_c



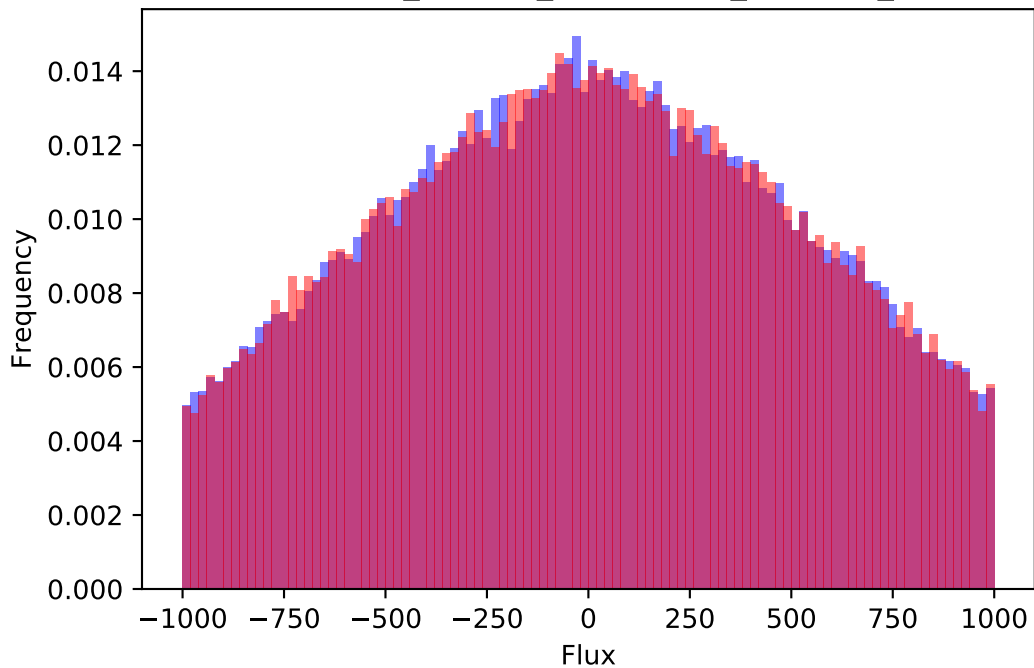
****342 : Glu_h + Mal_c --> Glu_c + Mal_h****



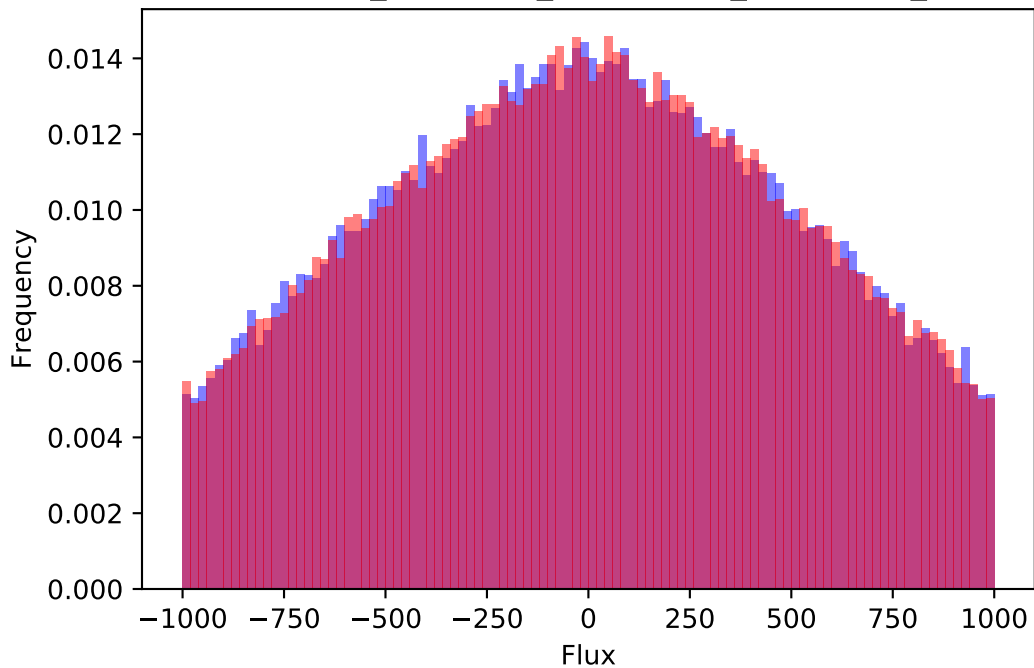
343 : Cit_m + KG_c <=> Cit_c + KG_m



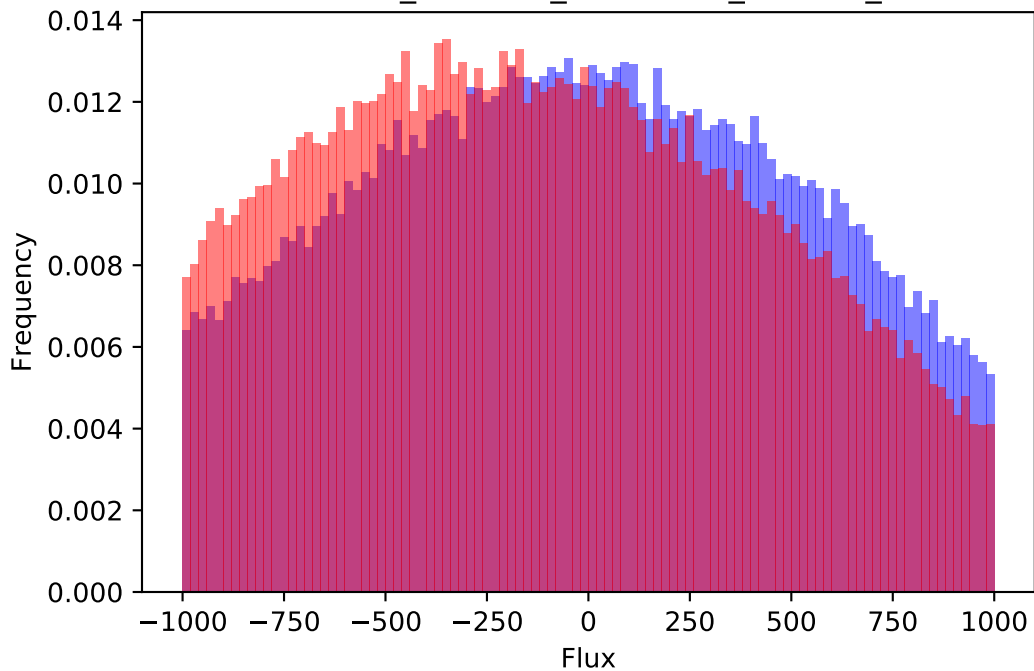
344 : KG_c + iCit_m <=> KG_m + iCit_c



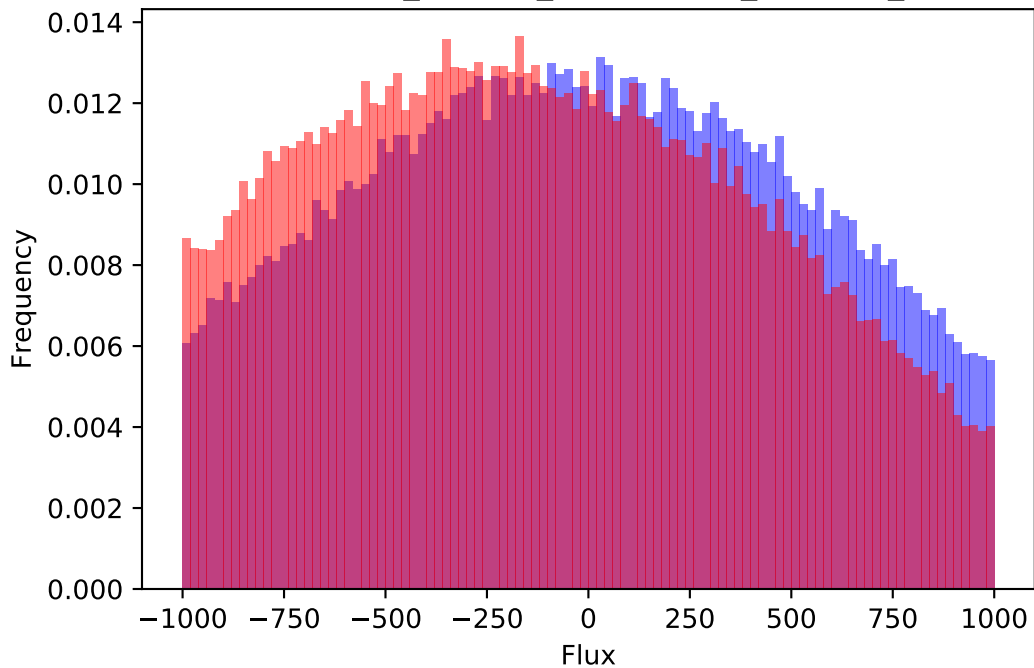
345 : KG_c + cACN_m <=> KG_m + cACN_c



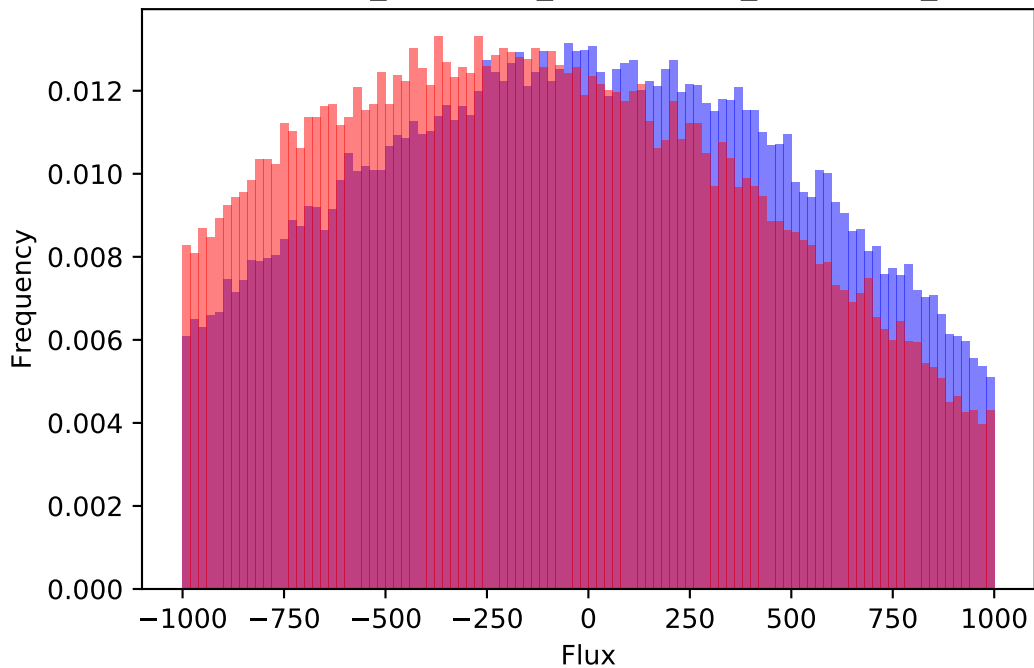
****346 : Cit_m + Mal_c <=> Cit_c + Mal_m****



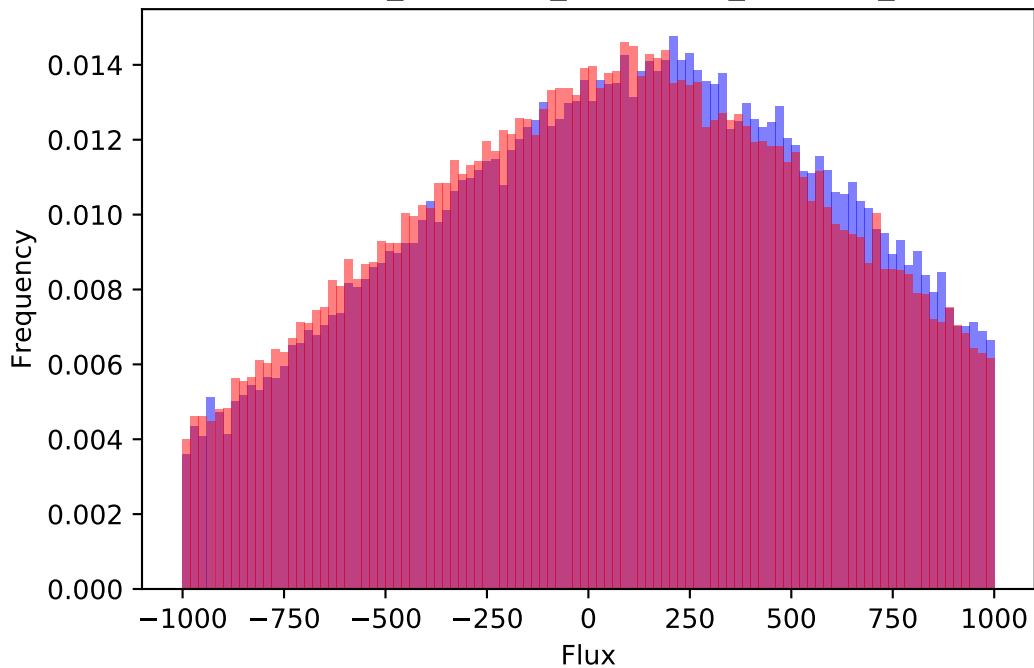
****347 : Mal_c + iCit_m <=> Mal_m + iCit_c****



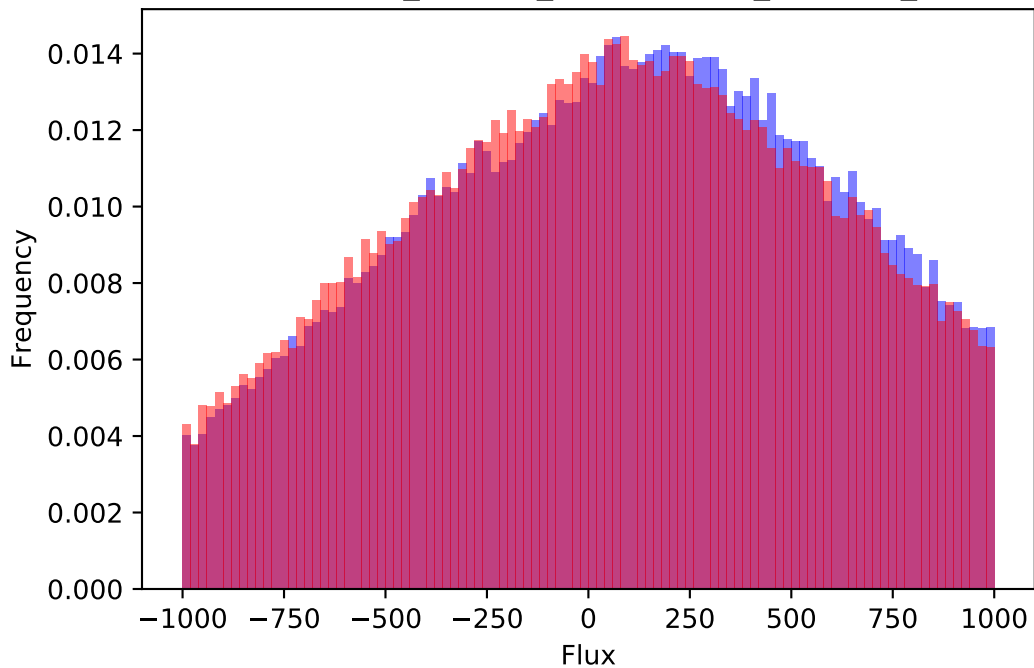
****348 : Mal_c + cACN_m <=> Mal_m + cACN_c****



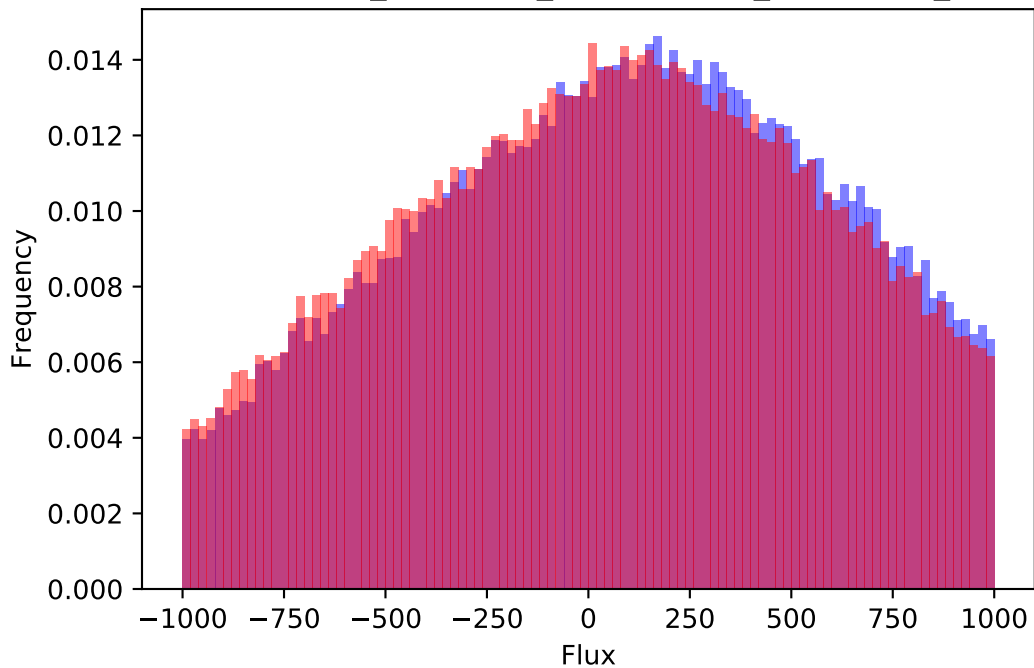
****349 : Cit_m + OAA_c <=> Cit_c + OAA_m****



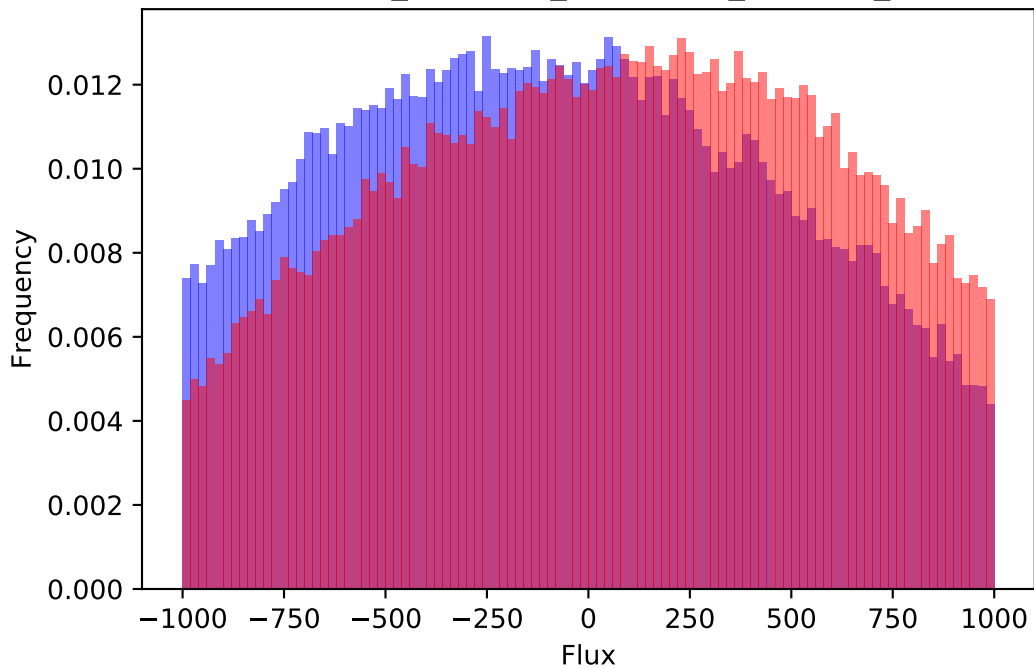
****350 : OAA_c + iCit_m <=> OAA_m + iCit_c****



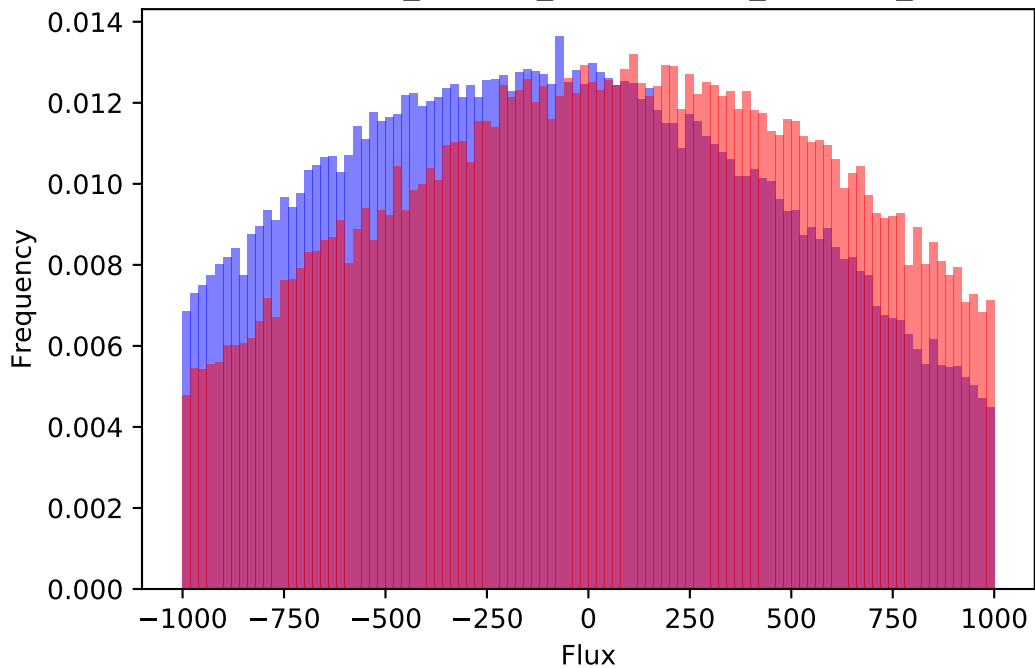
****351 : OAA_c + cACN_m <=> OAA_m + cACN_c****



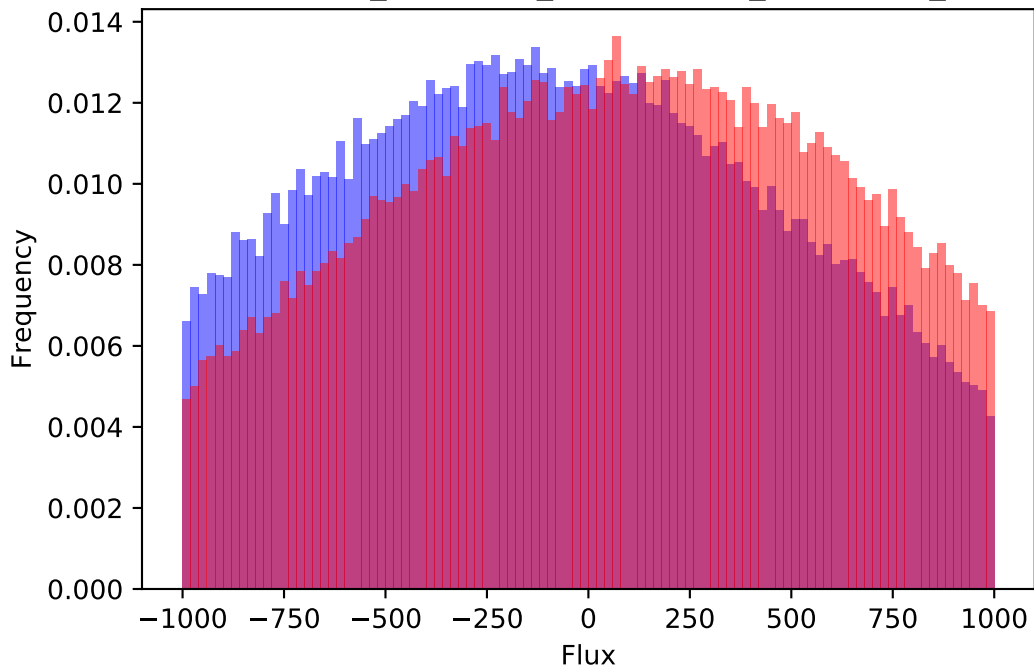
****352 : Cit_m + SCA_c <=> Cit_c + SCA_m****



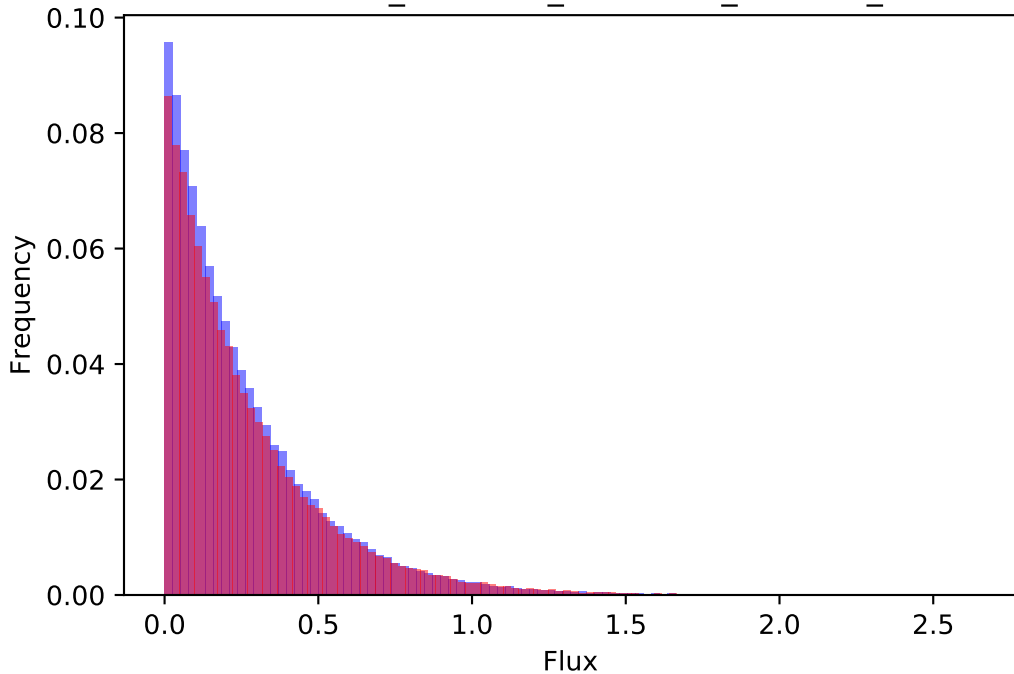
****353 : SCA_c + iCit_m <=> SCA_m + iCit_c****



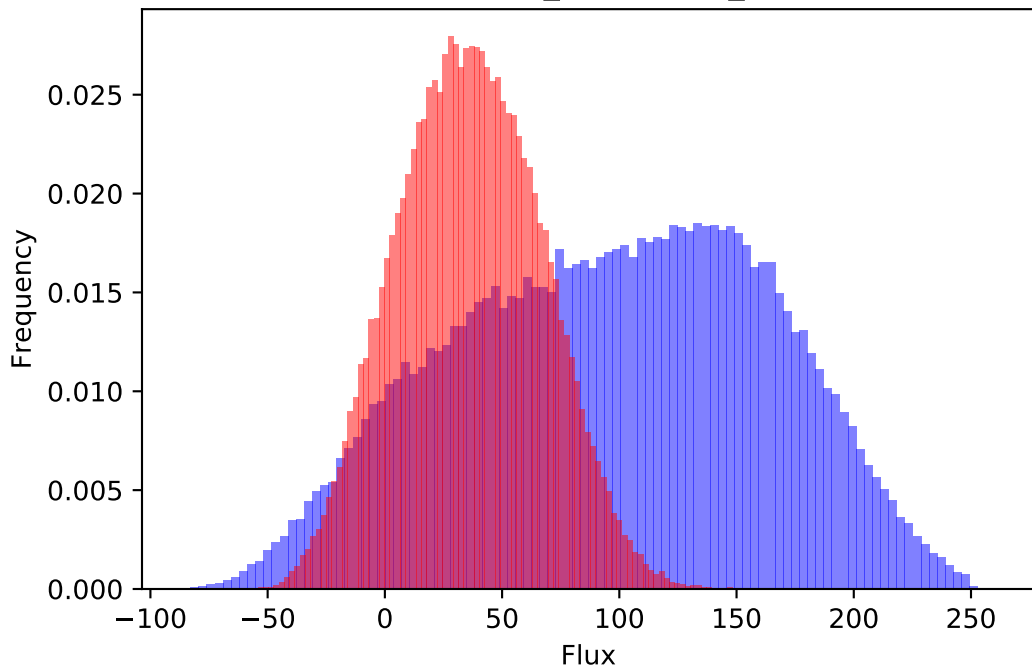
****354 : SCA_c + cACN_m <=> SCA_m + cACN_c****



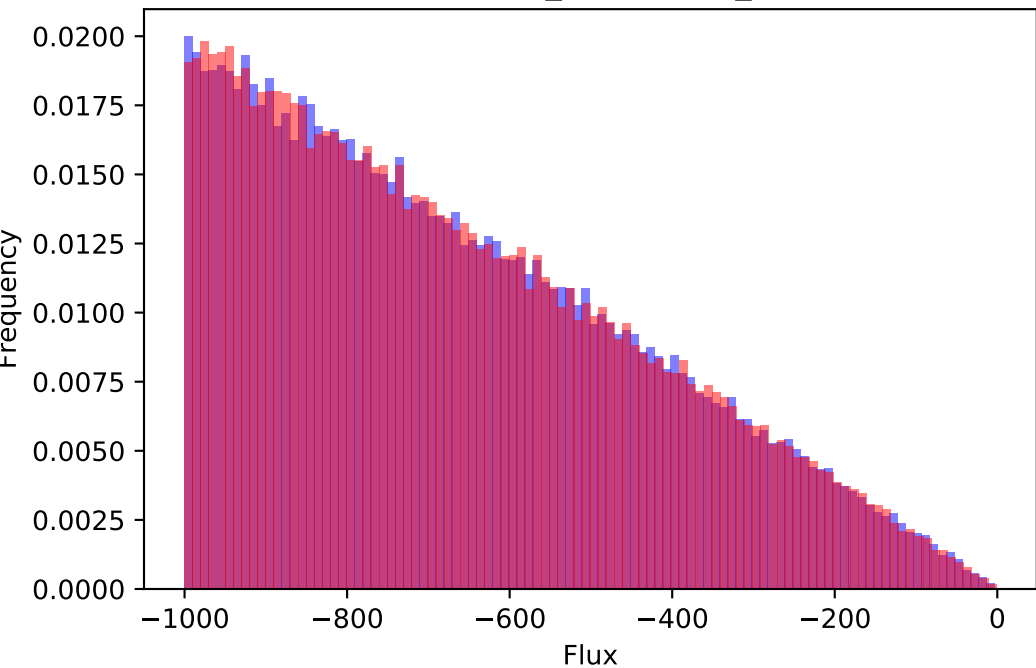
****355 : Fum_m + SCA_c --> Fum_c + SCA_m****



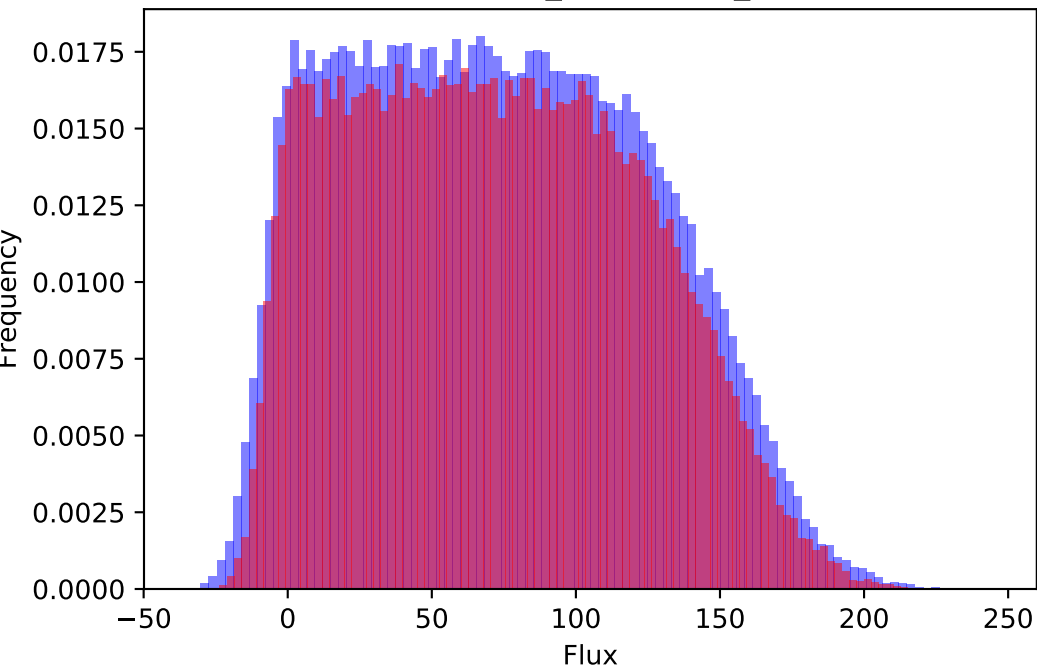
****356 : Ala_c <=> Ala_m****



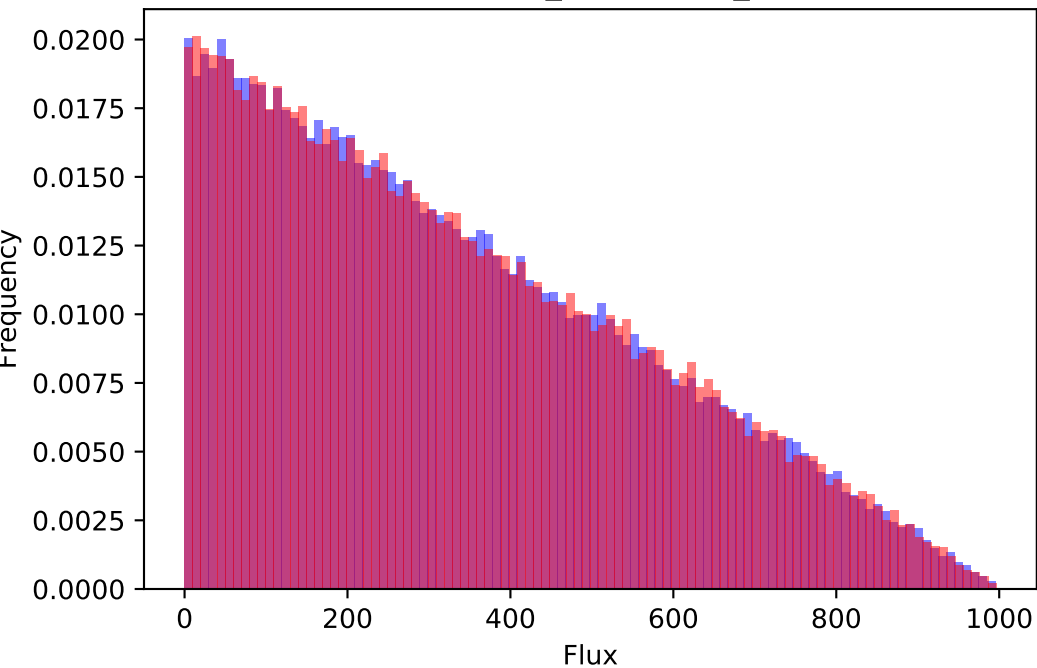
357 : Arg_c <=> Arg_m



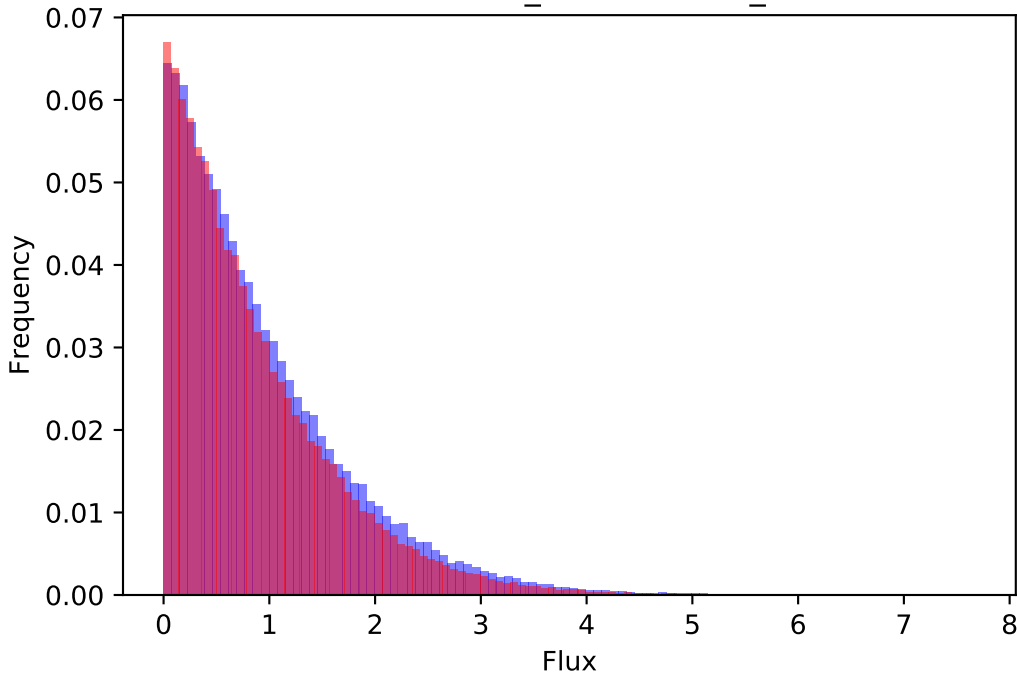
358 : Glu_c <=> Glu_m



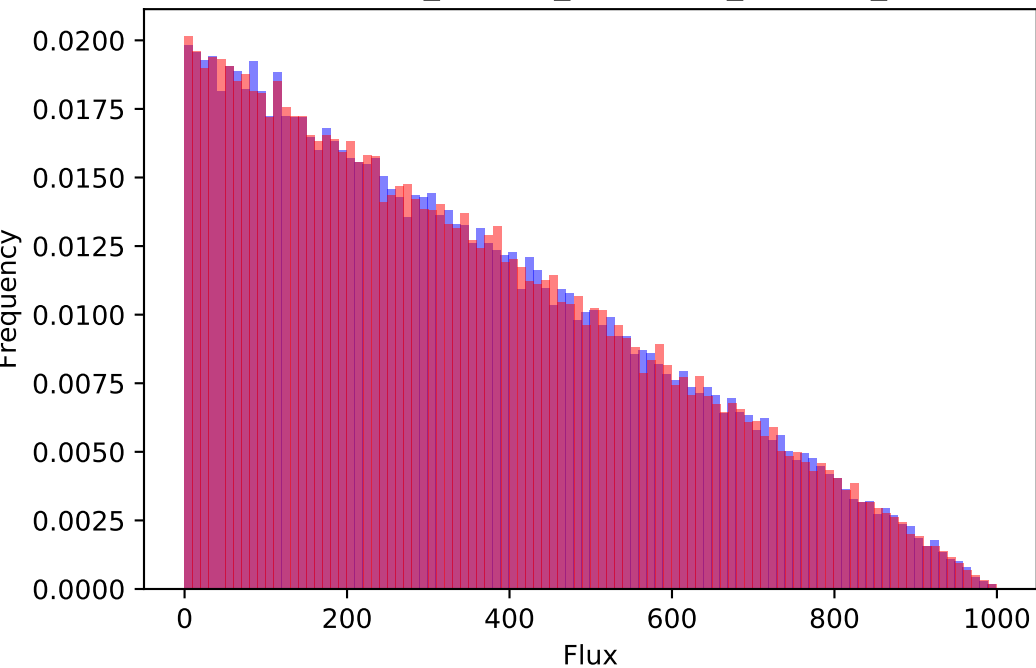
359 : Lys_c <=> Lys_m



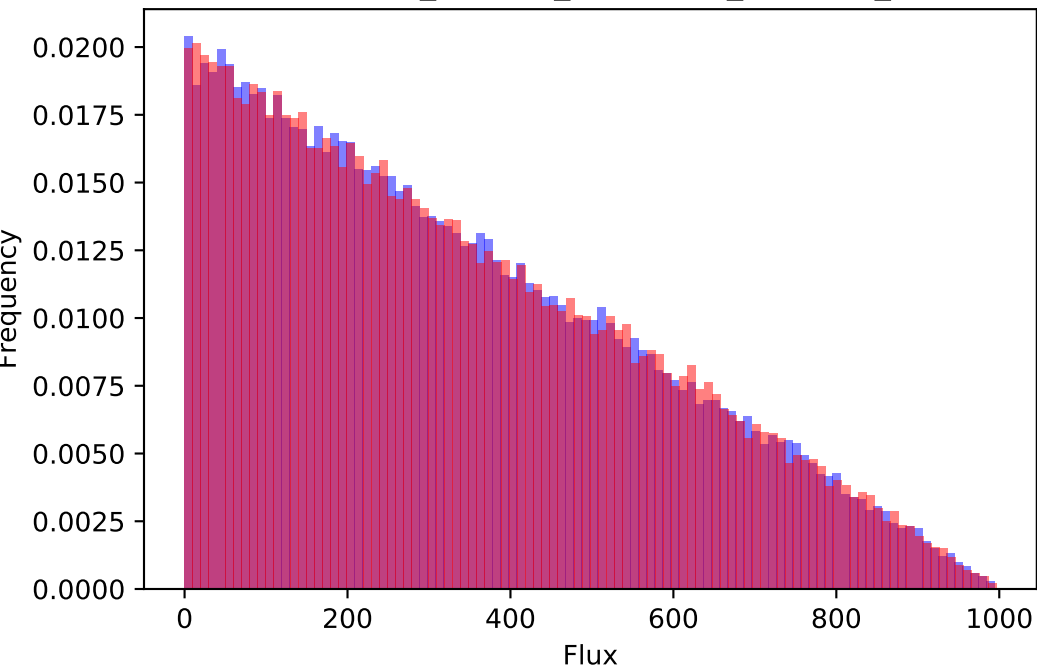
****360 : GABA_c <=> GABA_m****



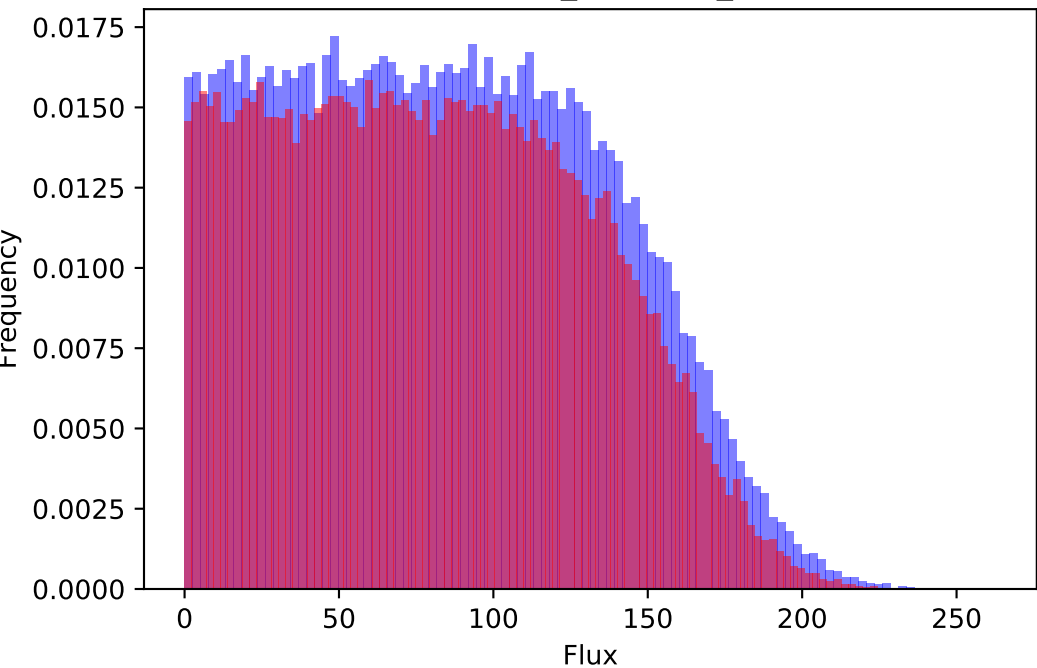
361 : Arg_c + His_m --> Arg_m + His_c



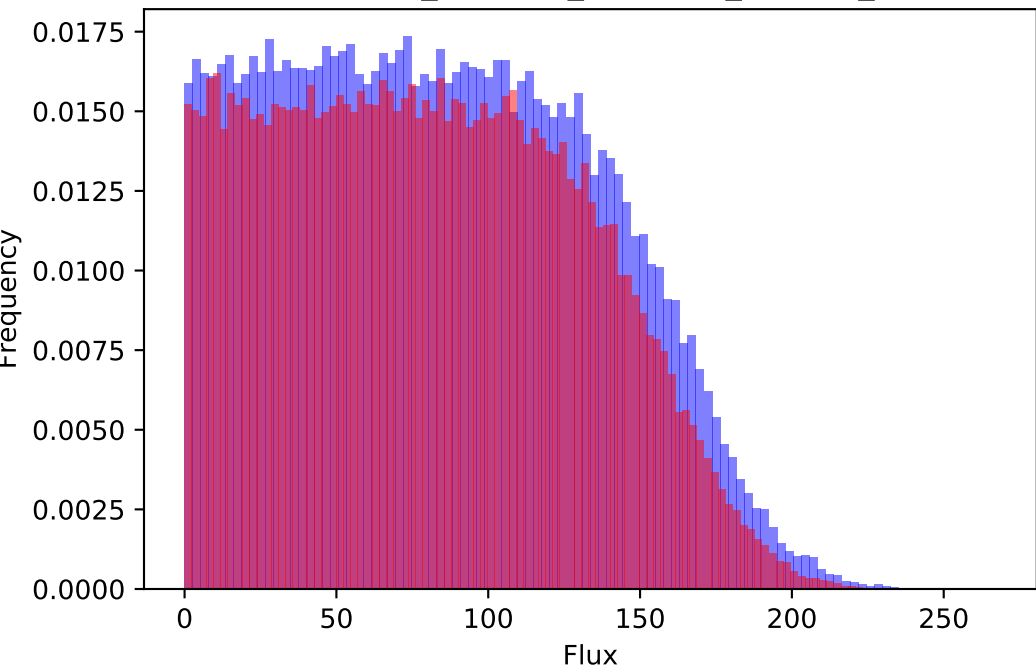
362 : Arg_c + Lys_m --> Arg_m + Lys_c



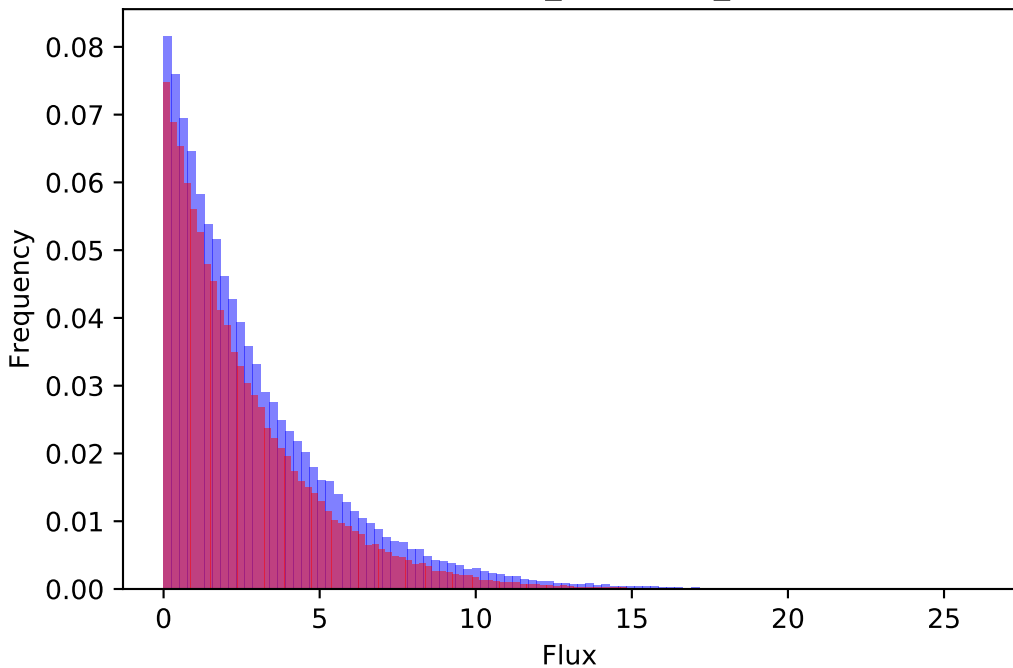
****363 : Pro_c --> Pro_m****



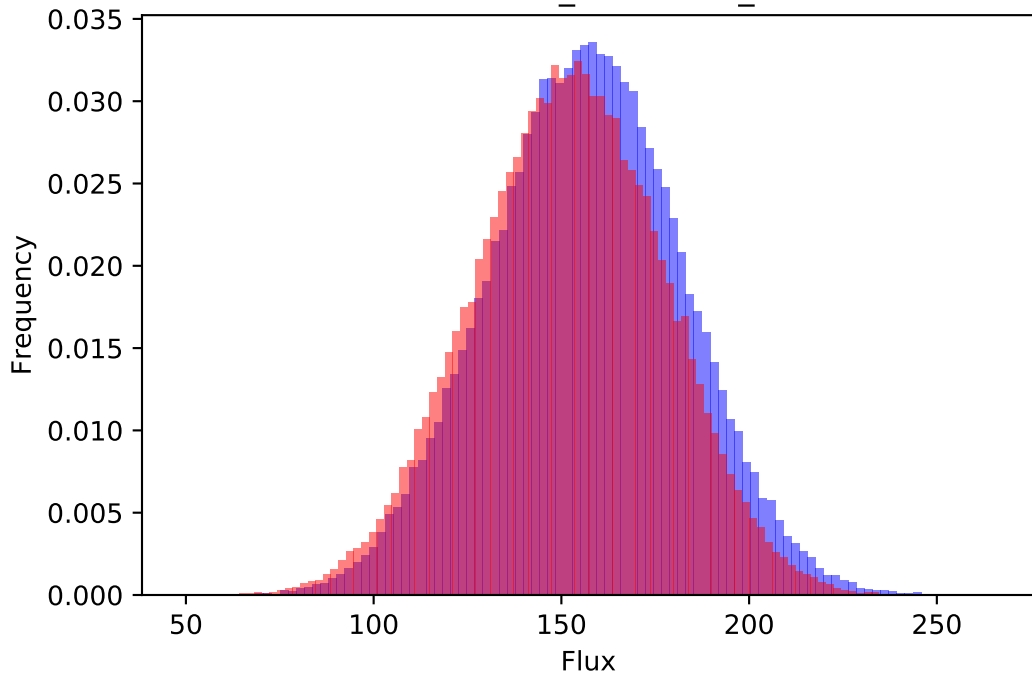
****364 : Glu_m + Pro_c --> Glu_c + Pro_m****



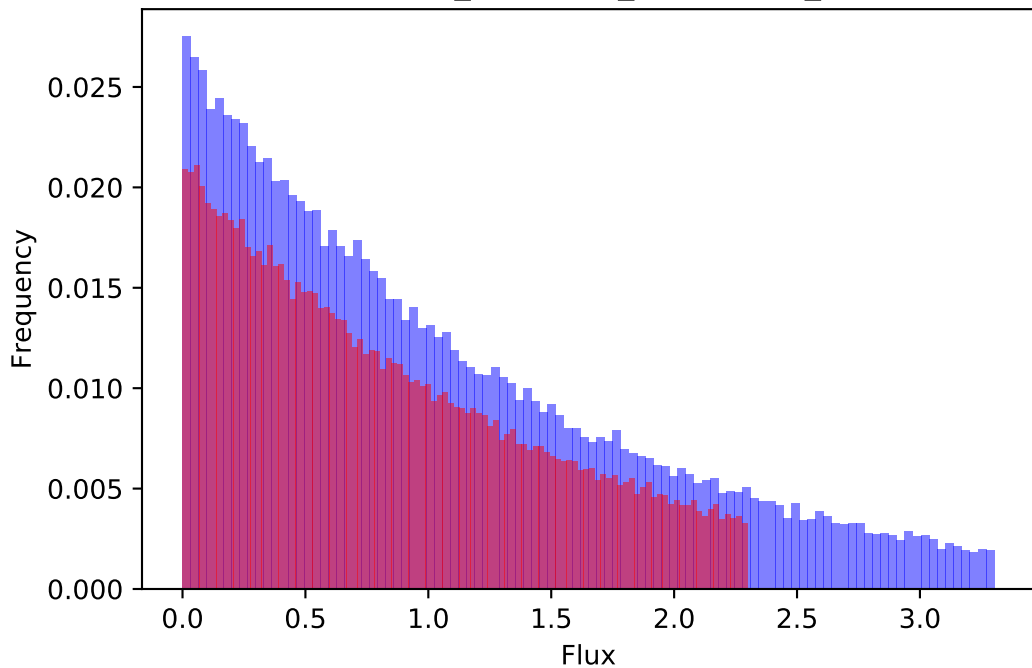
****365 : P5C_h --> P5C_c****



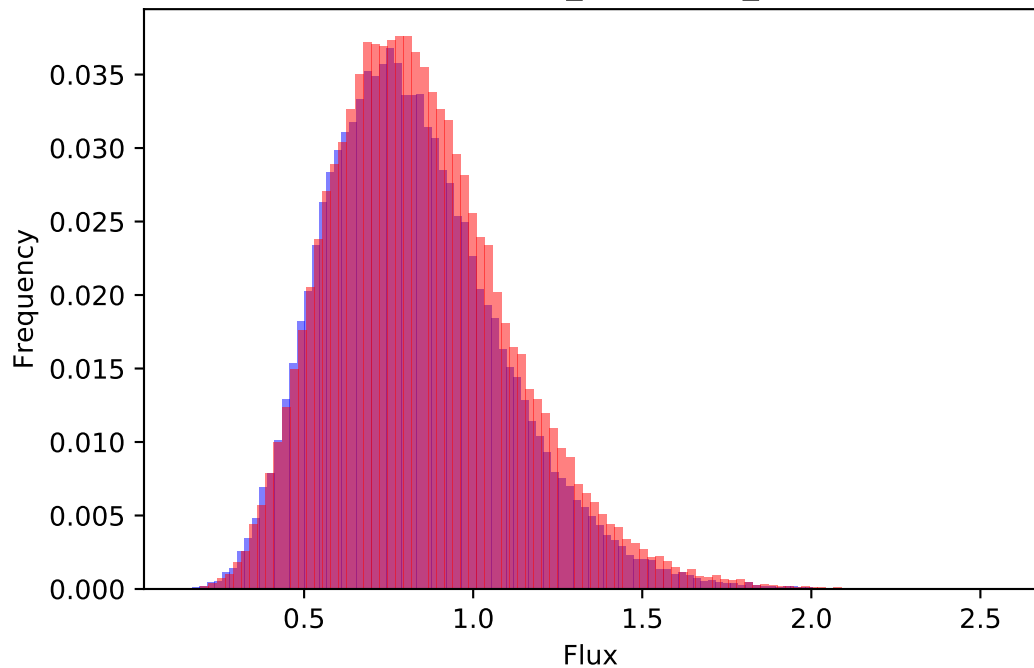
****366 : P5C_m --> P5C_c****



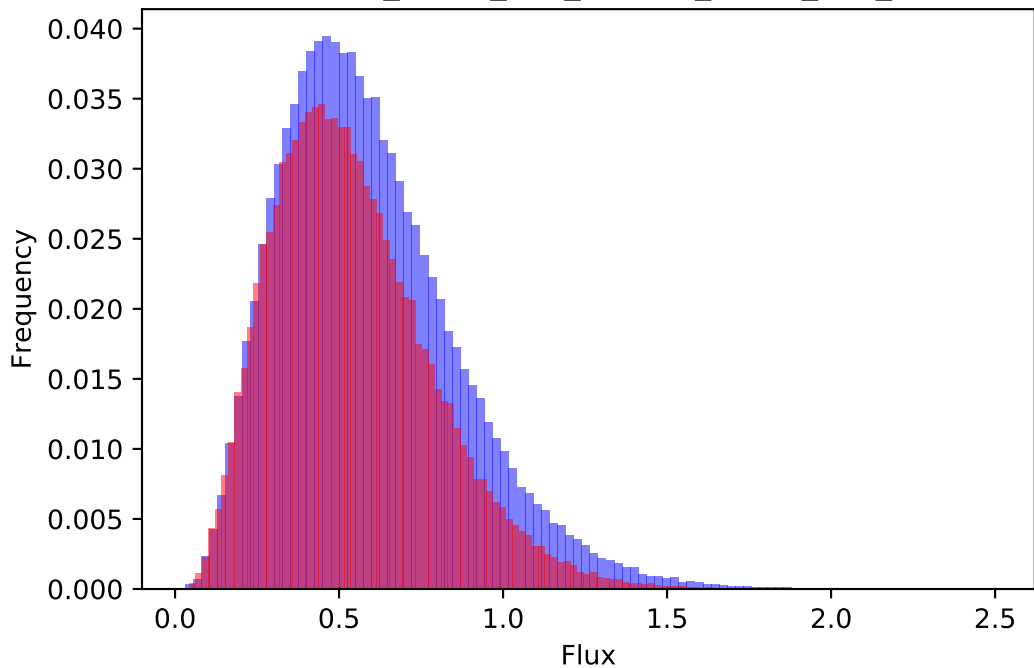
****367 : H_h + PRPP_h --> PRPP_c****



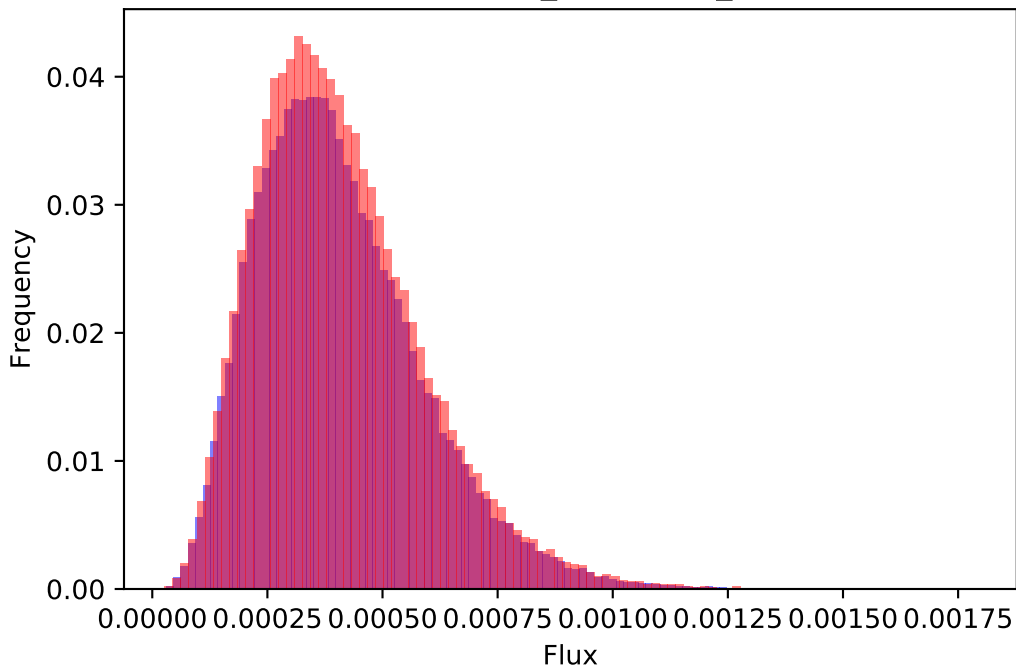
****368 : Fum_h --> Fum_c****



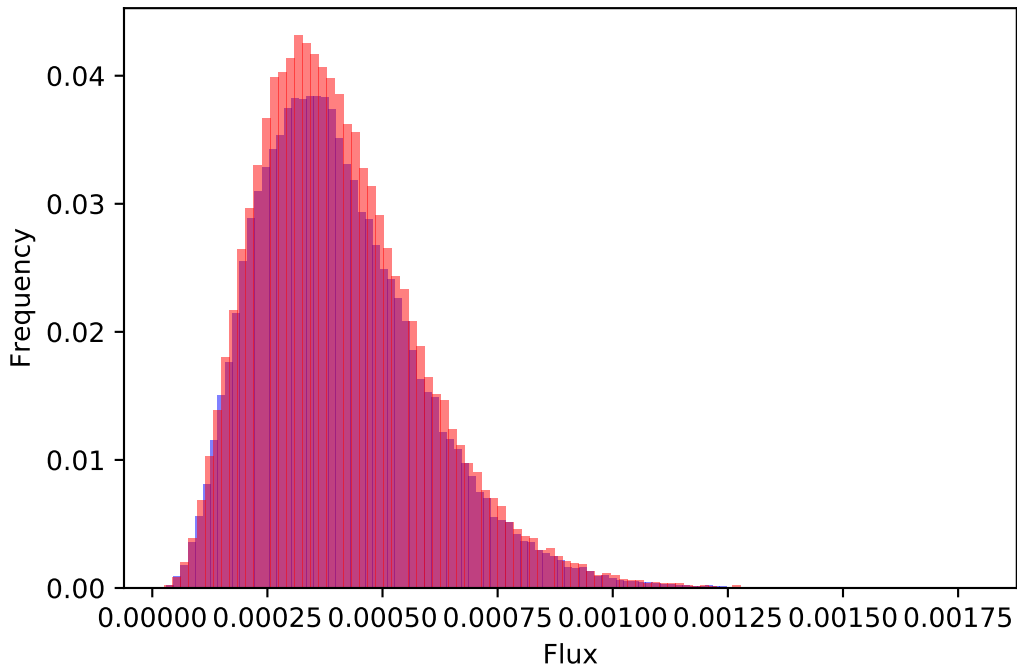
****369 : H_DASH_Cys_h --> H_DASH_Cys_c****



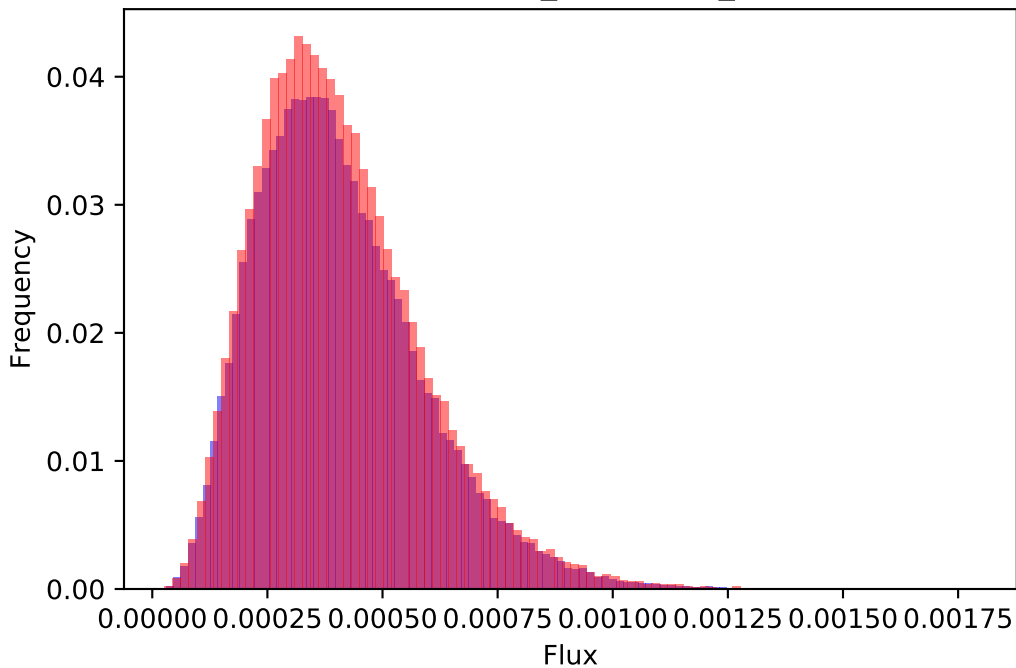
370 : orO_m --> orO_c



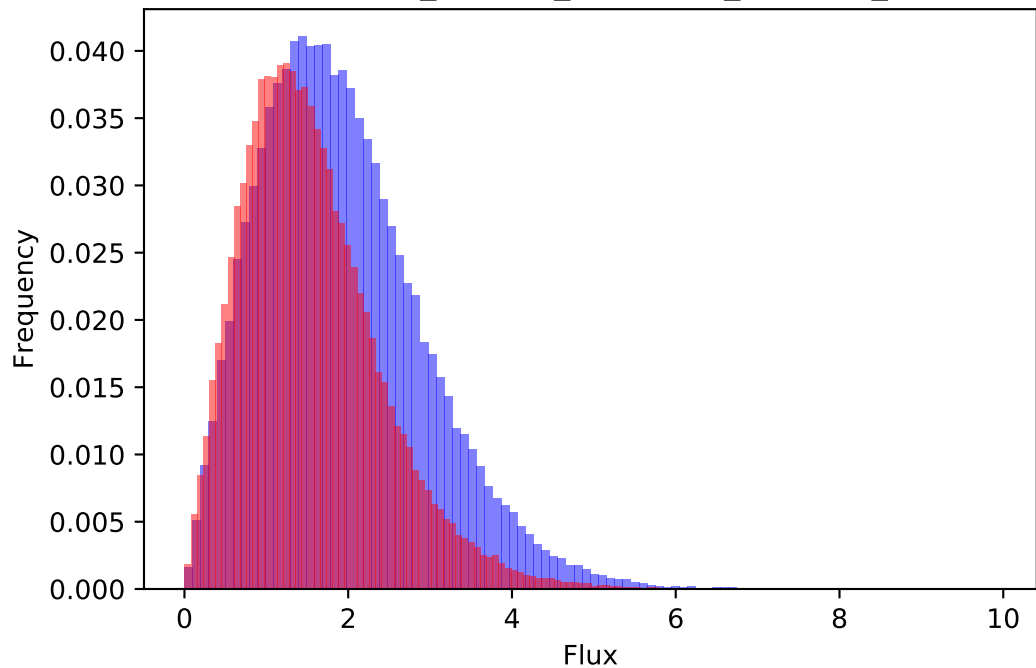
371 : DHO_h --> DHO_c



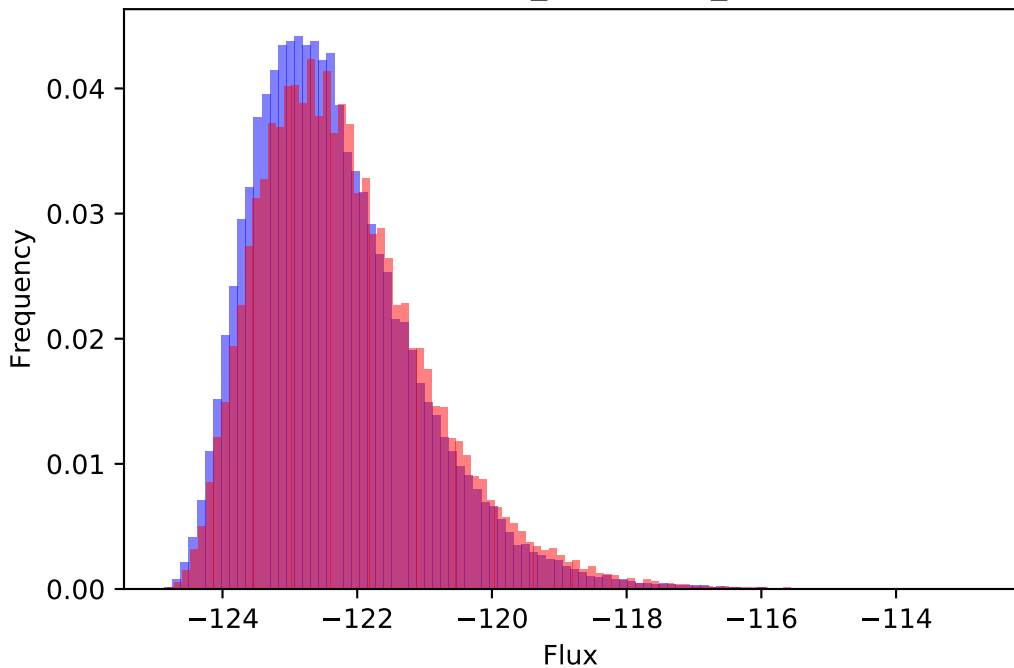
372 : DHO_c --> DHO_m



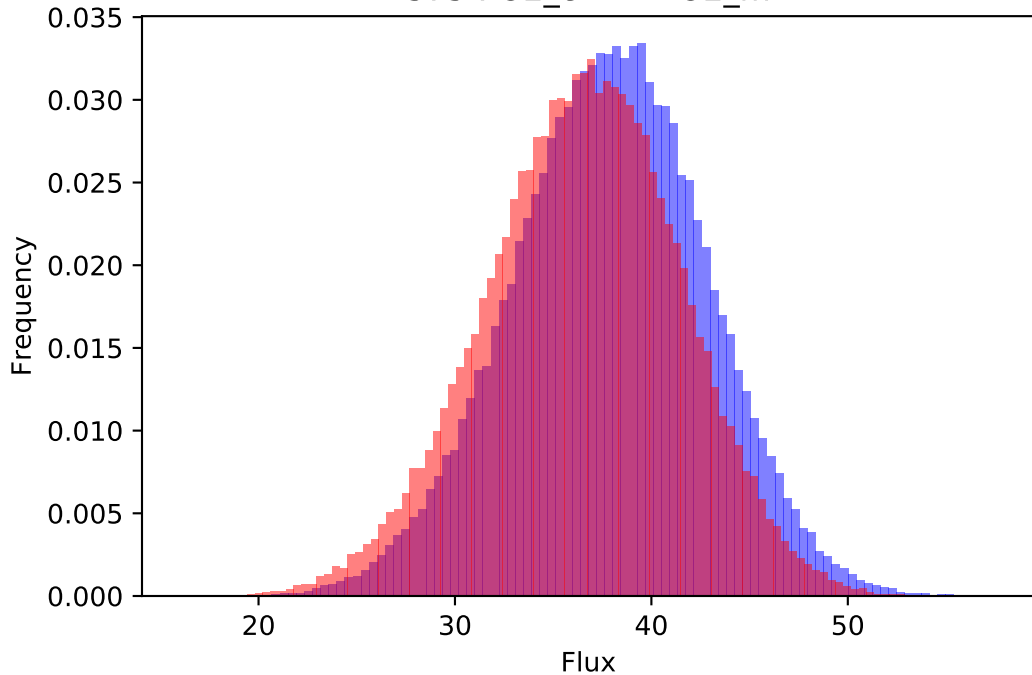
****373 : Gly_c + Ser_m --> Gly_m + Ser_c****



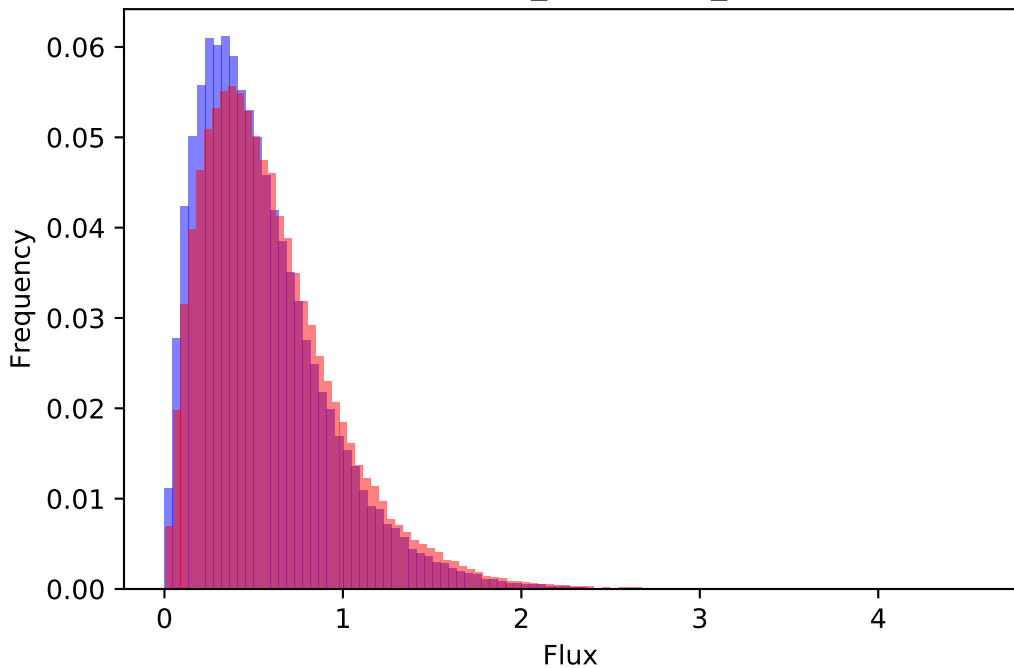
****374 : O2_c <=> O2_h****



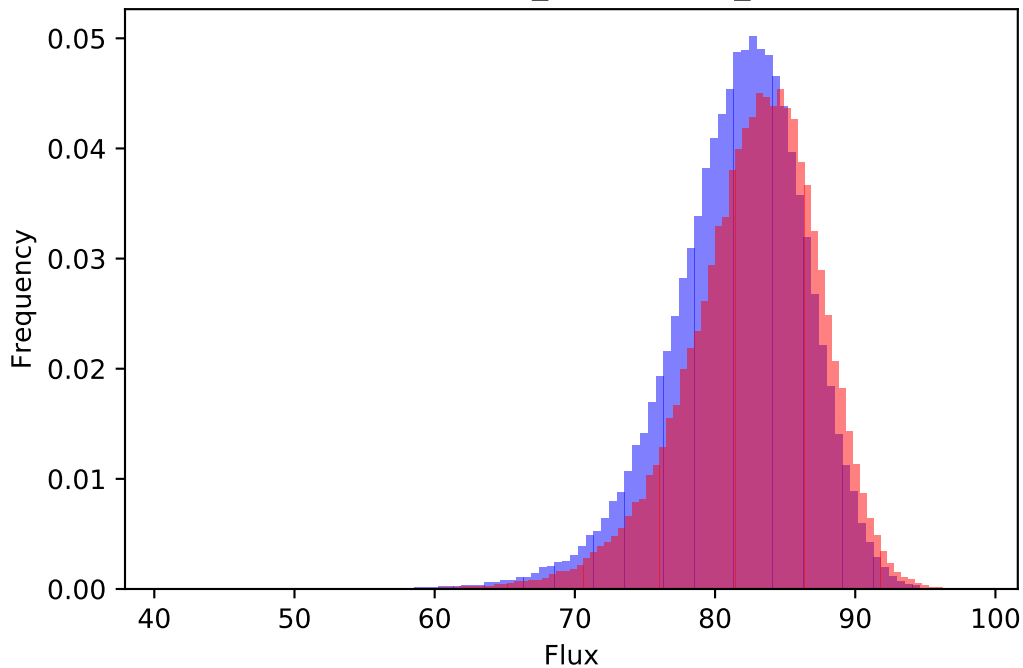
****375 : O2_c <=> O2_m****



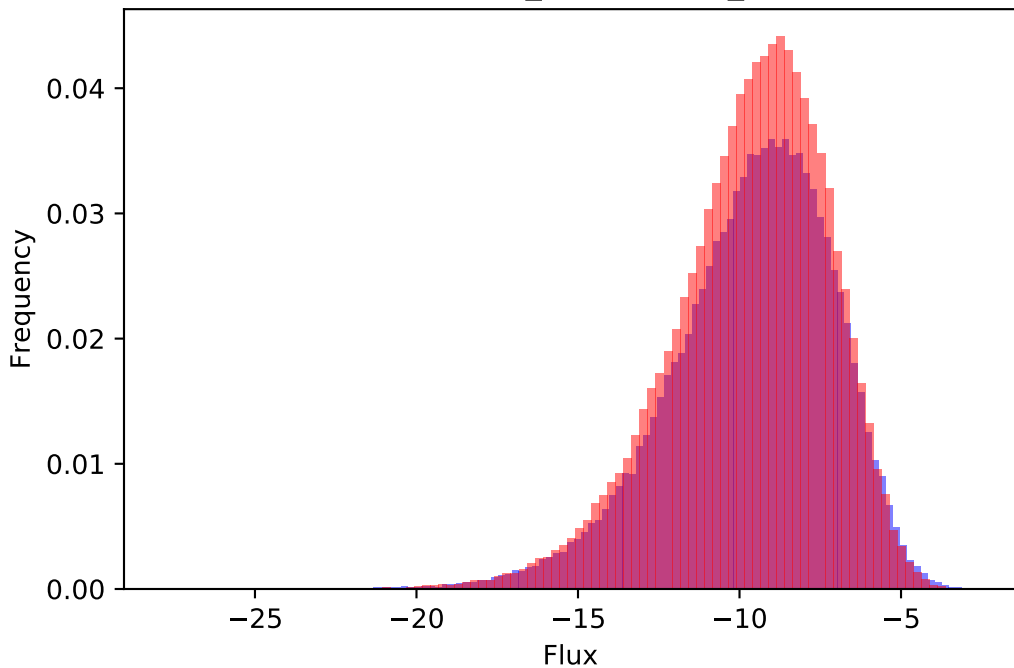
****376 : O2_c <=> O2_p****



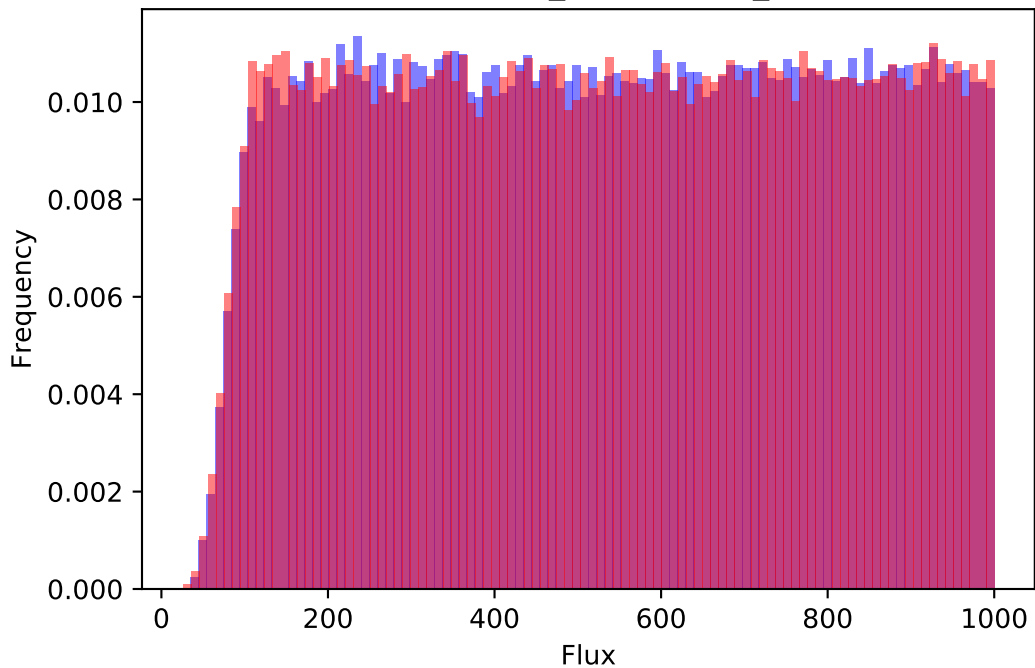
****377 : CO2_c <=> CO2_h****



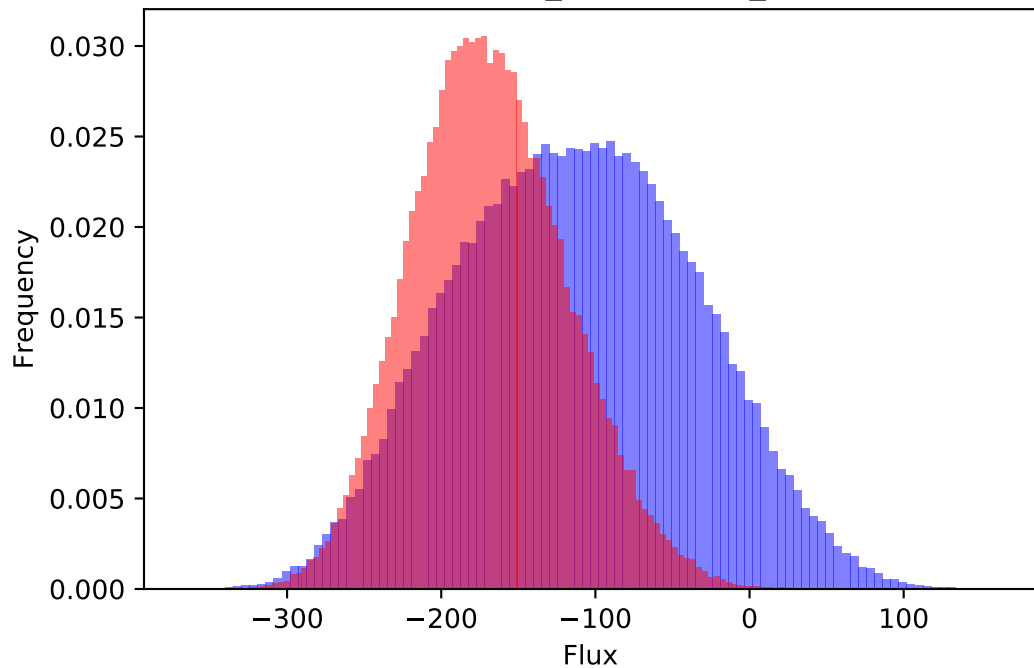
****378 : CO2_c <=> CO2_m****



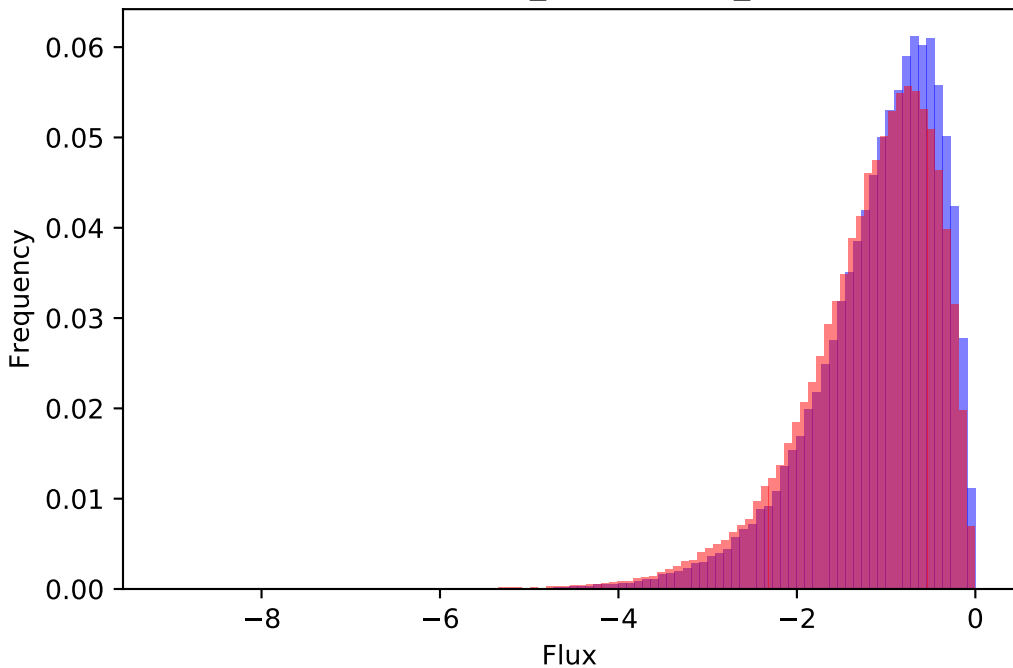
379 : H2O_c <=> H2O_h



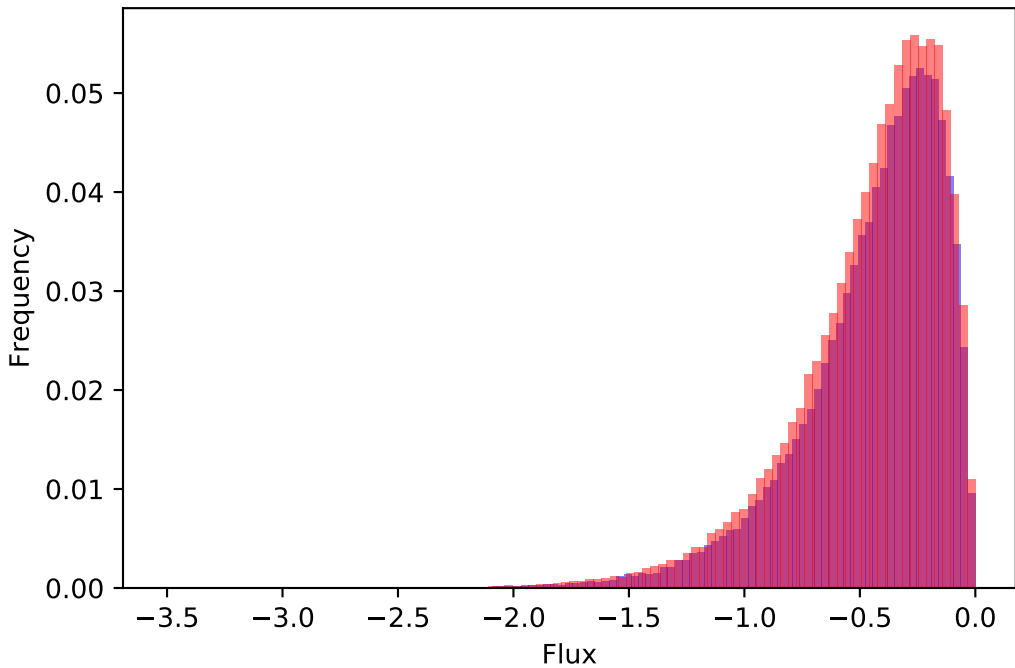
****380 : H2O_c <=> H2O_m****



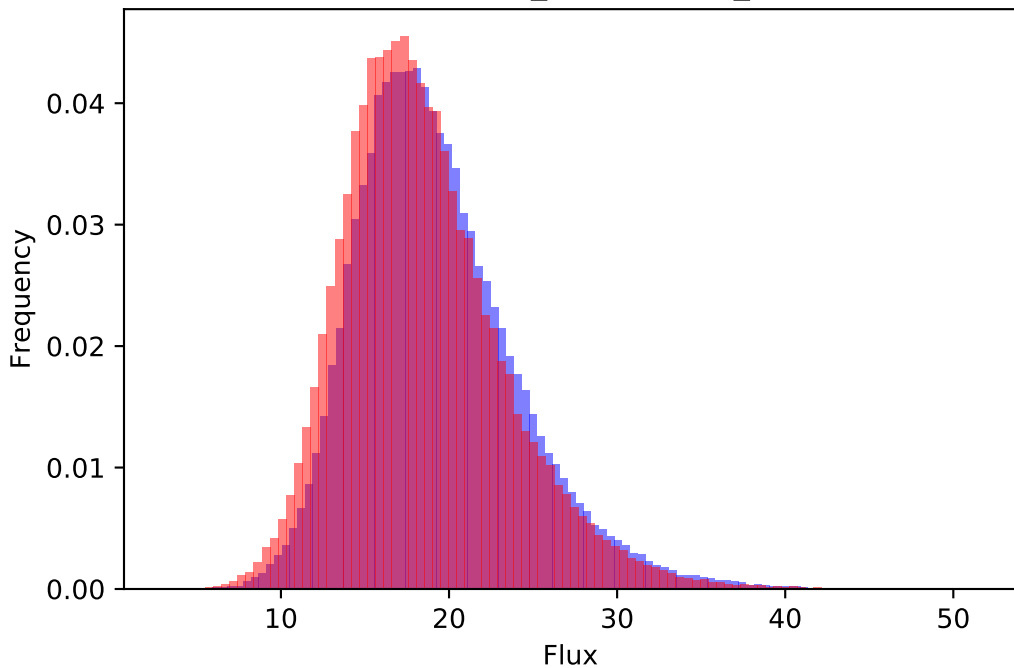
****381 : H2O_c <=> H2O_p****



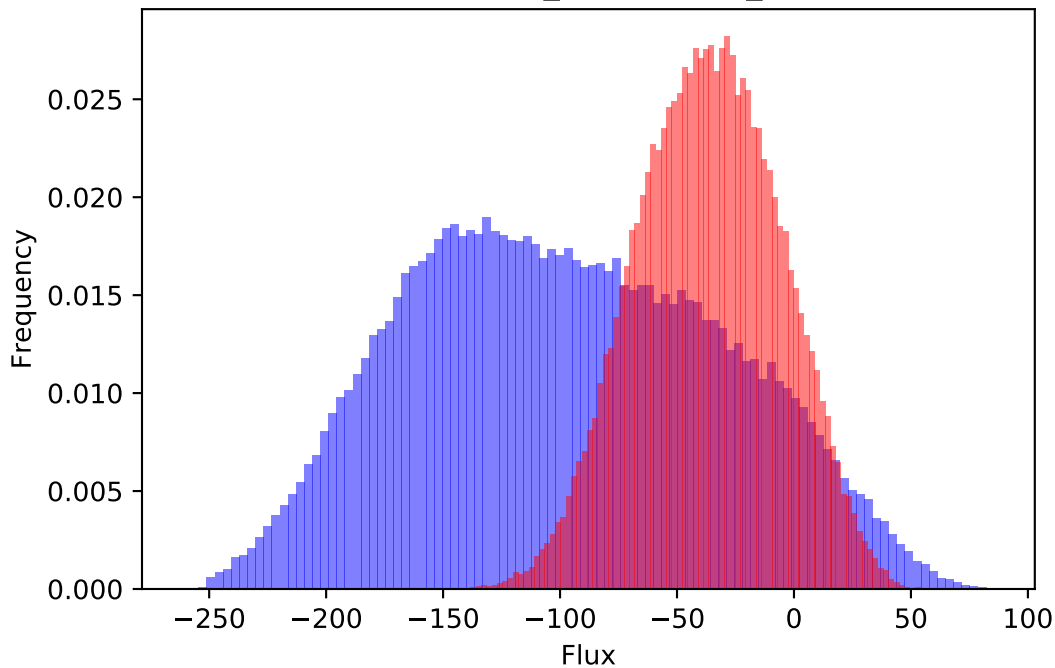
****382 : H_c <=> H_p****



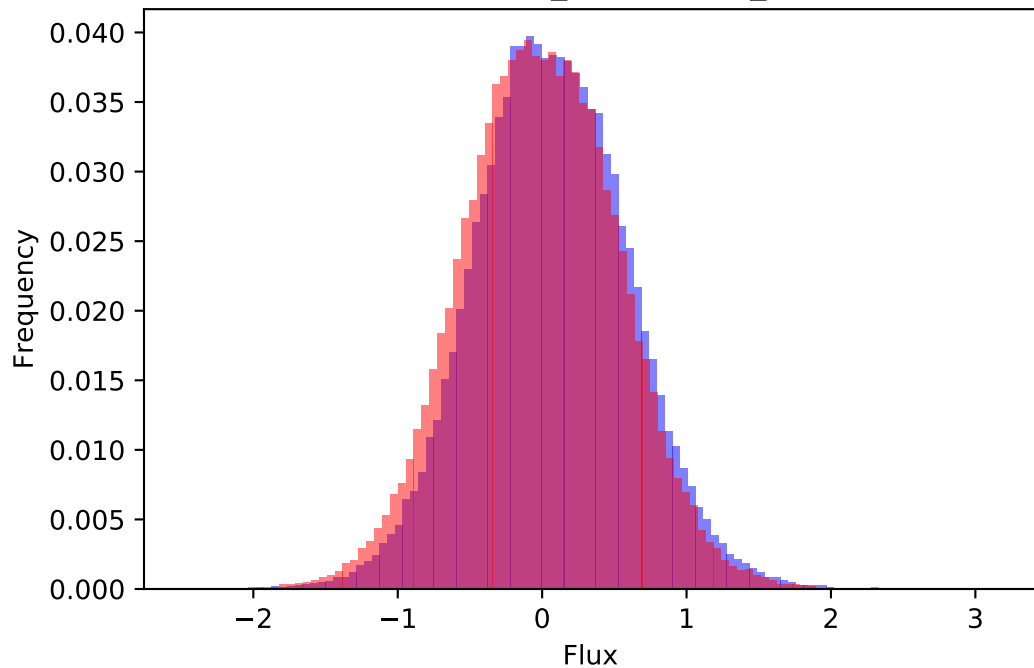
****383 : NH4_c <=> NH4_h****



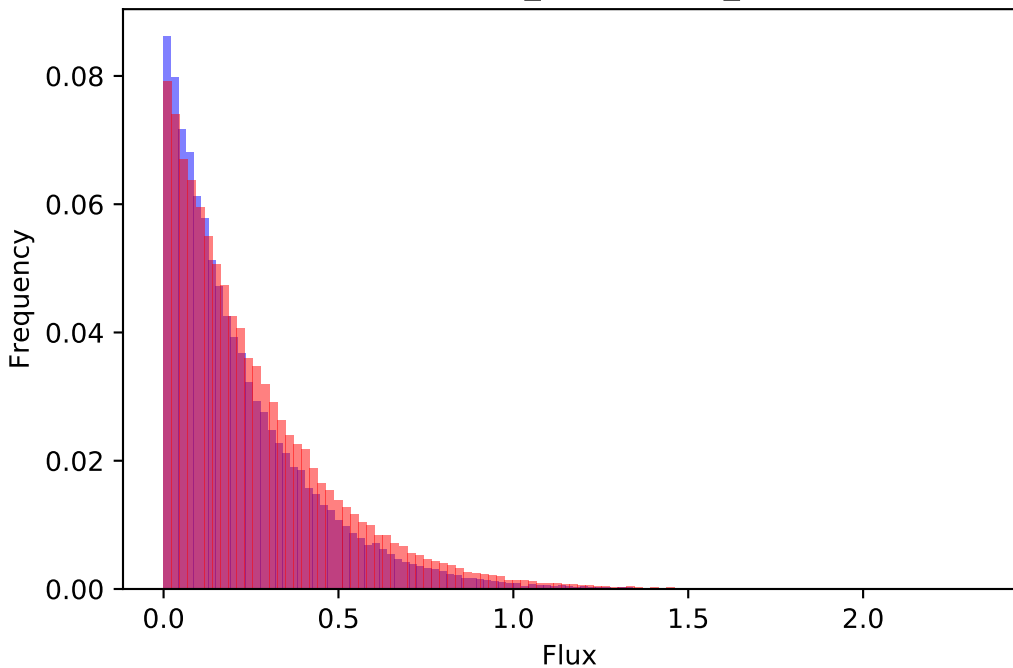
****384 : NH4_c <=> NH4_m****



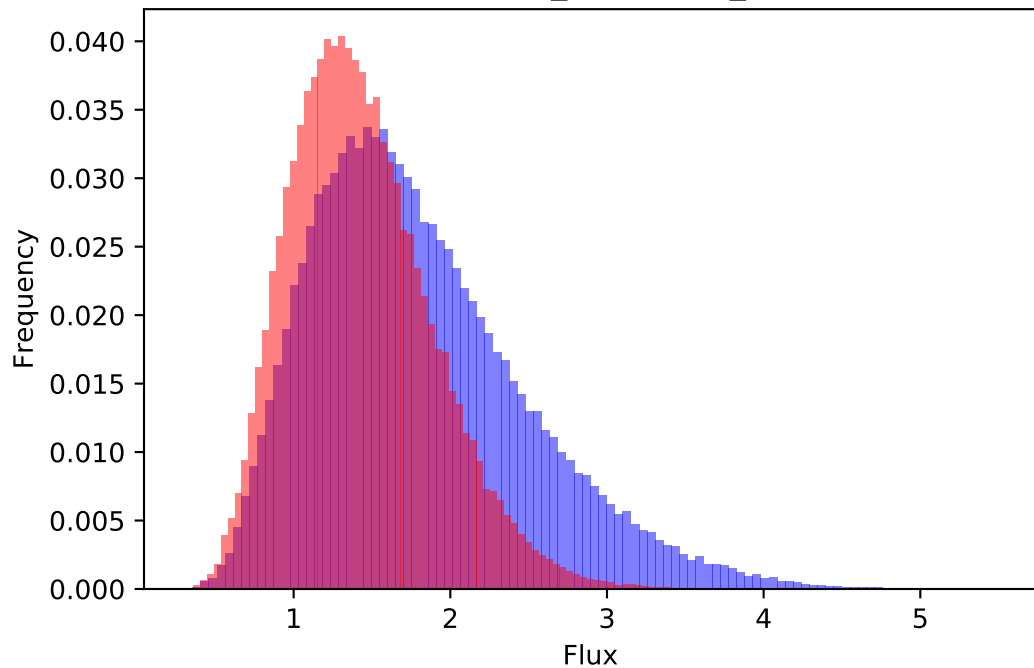
****385 : H2S_c <=> H2S_h****



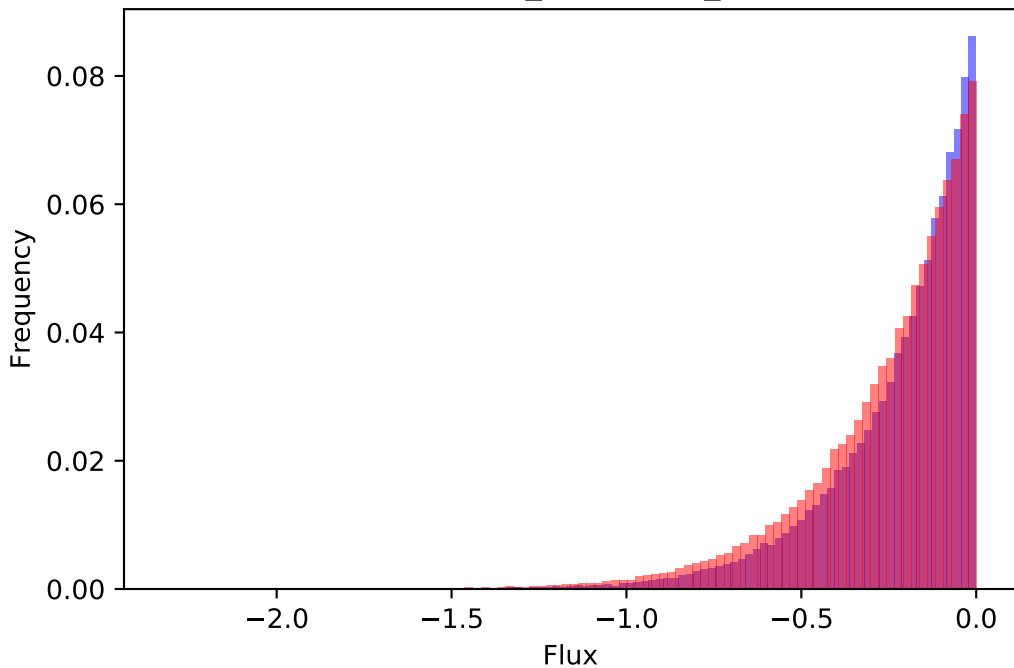
****386 : H2S_c <=> H2S_m****



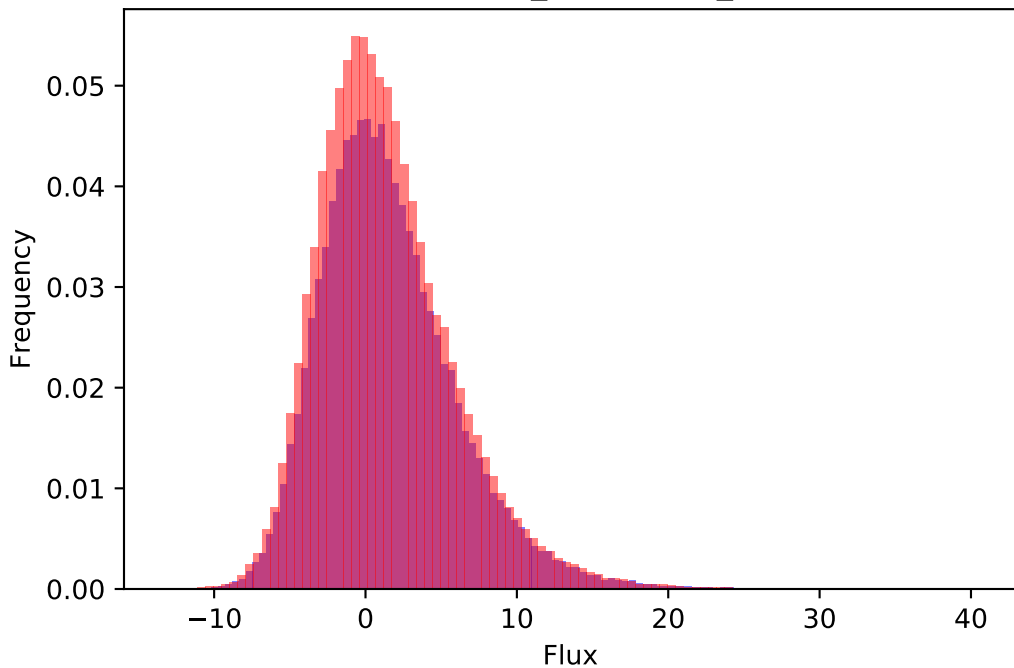
****387 : AC_c <=> AC_h****



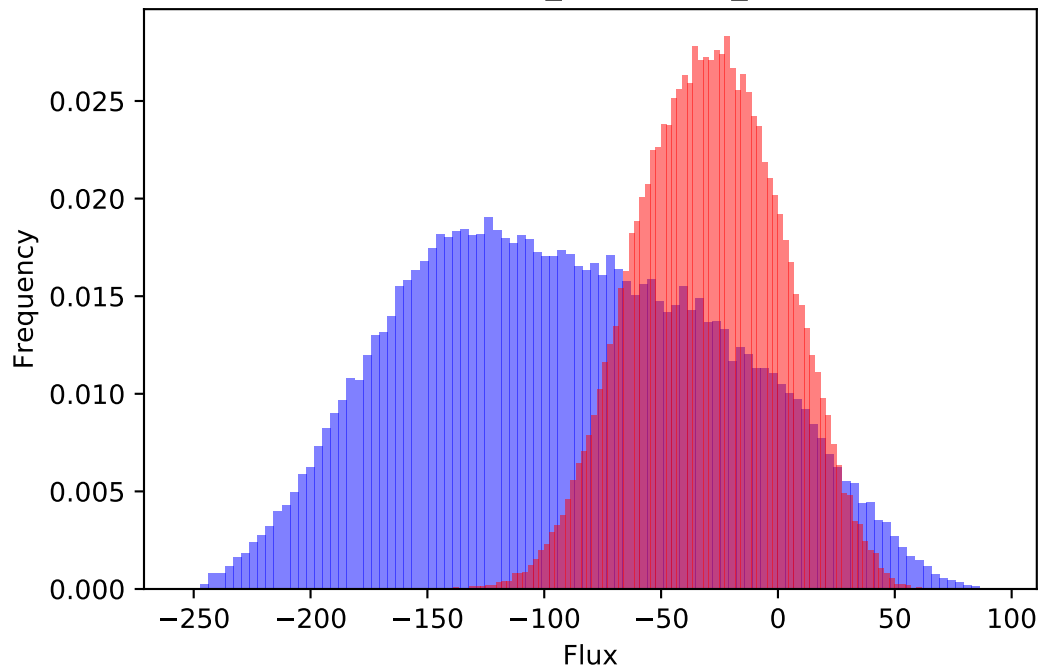
****388 : AC_c <=> AC_m****



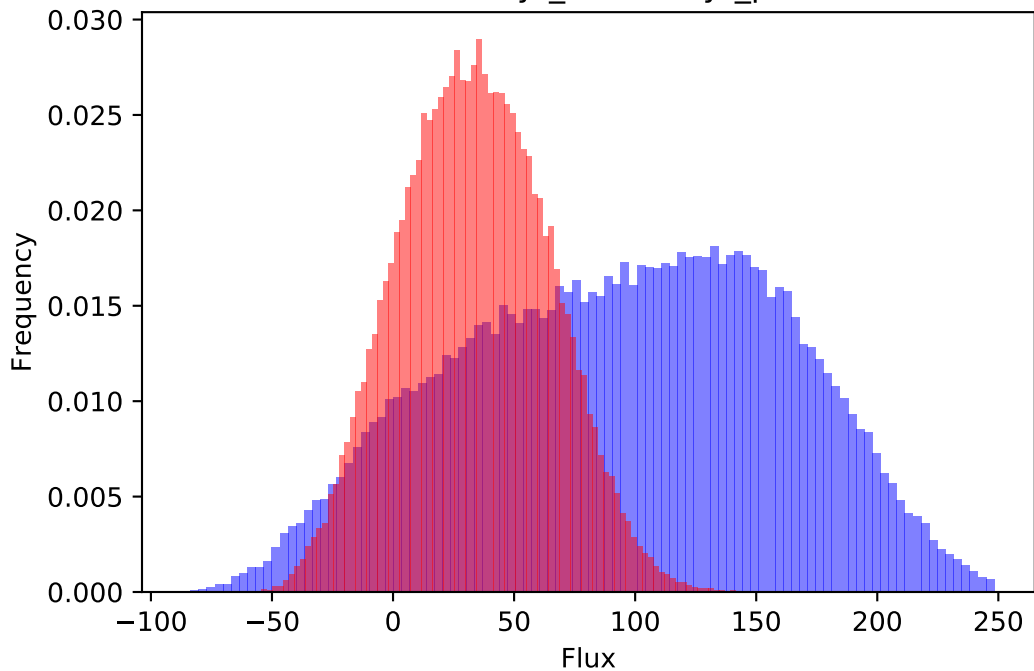
****389 : Pyr_c <=> Pyr_h****



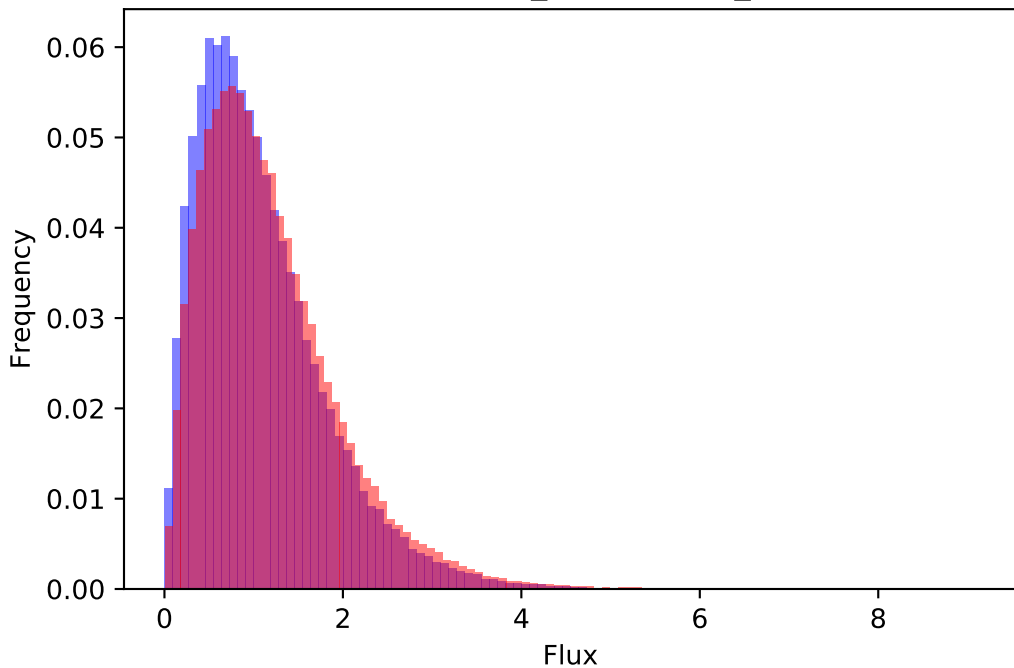
****390 : Pyr_c <=> Pyr_m****



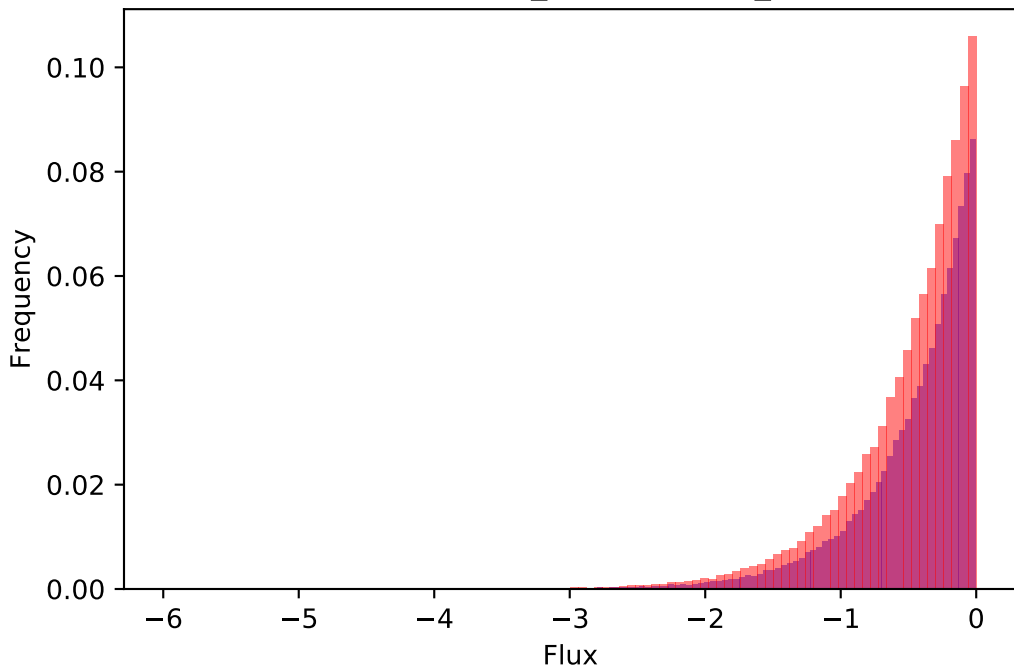
****391 : Pyr_c <=> Pyr_p****



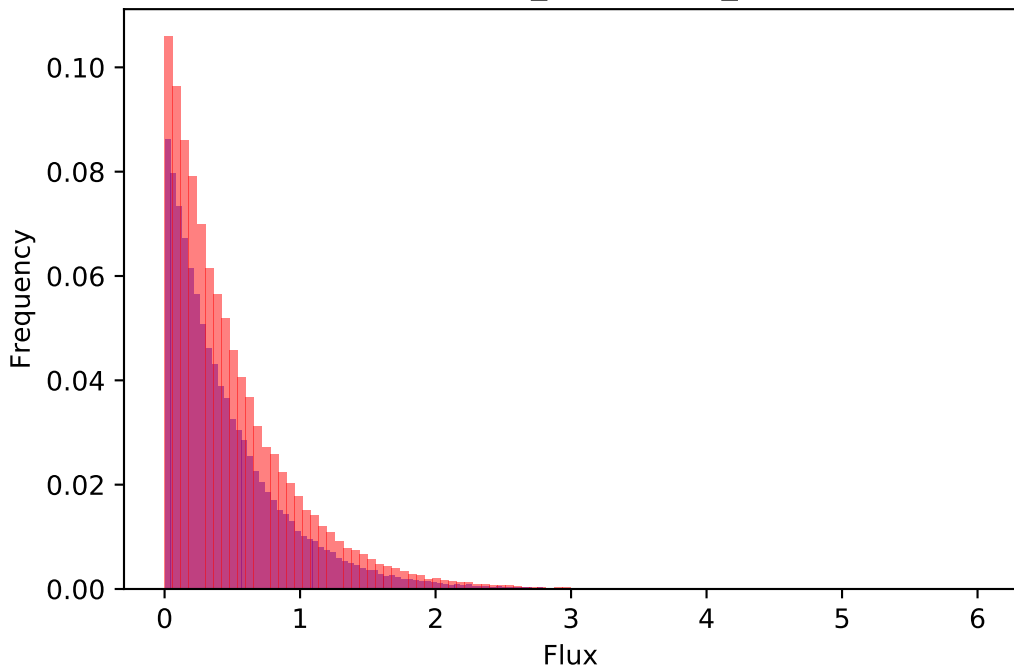
****392 : GCA_c <=> GCA_p****



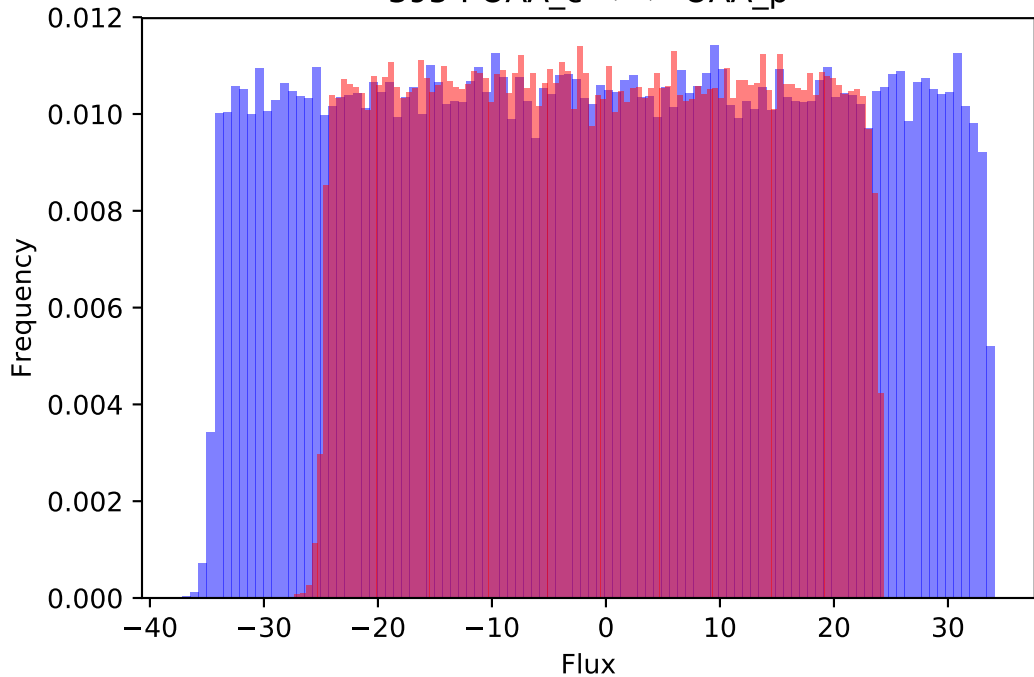
****393 : GCEA_c <=> GCEA_p****



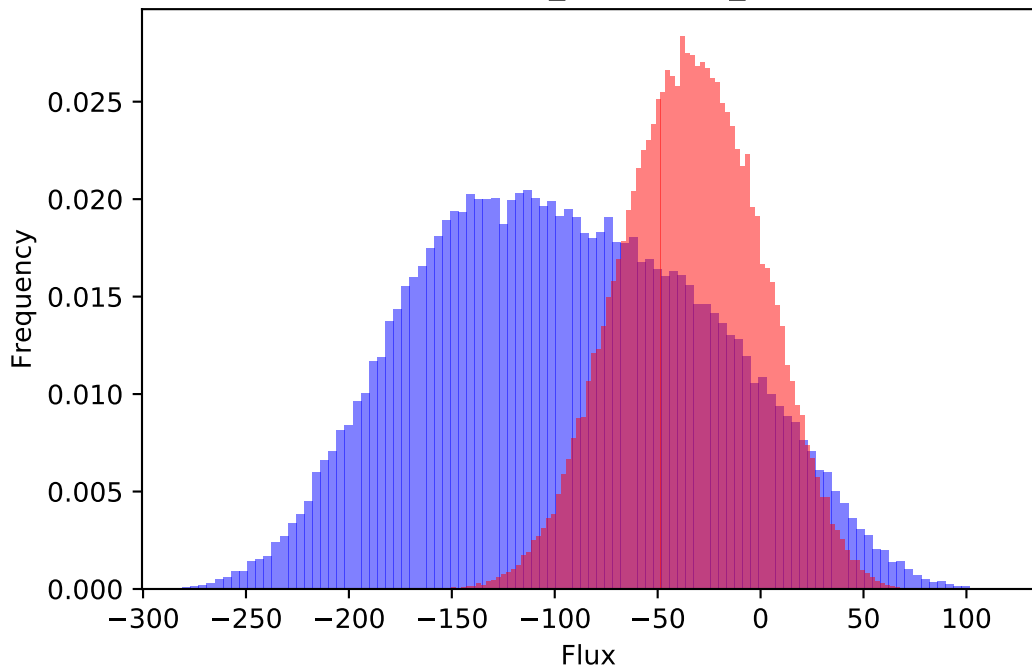
****394 : Mal_c <=> Mal_p****



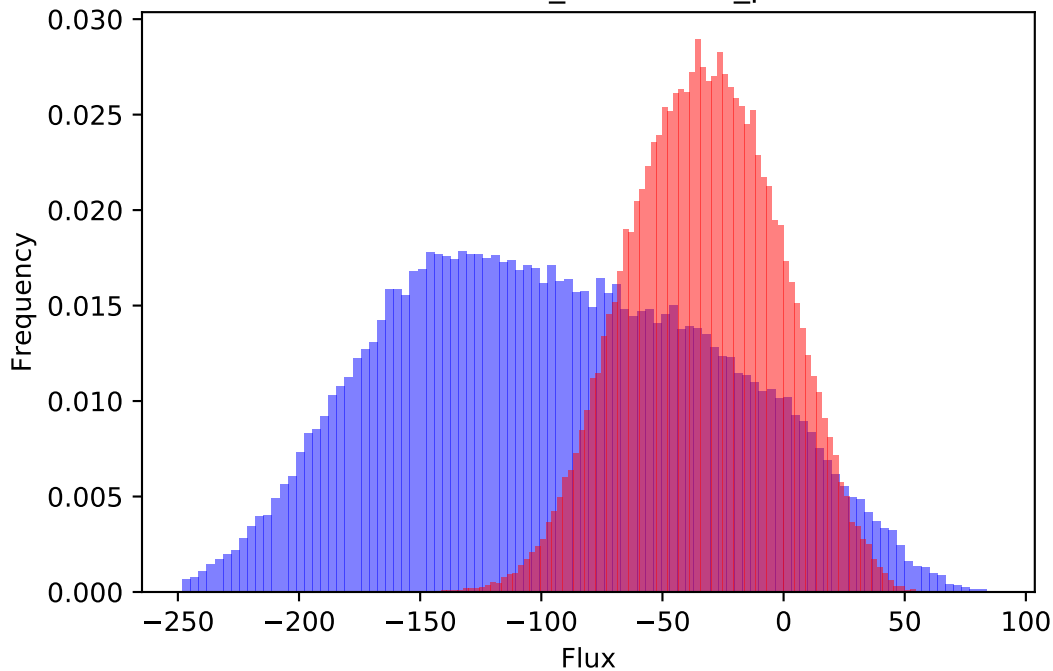
395 : OAA_c <=> OAA_p



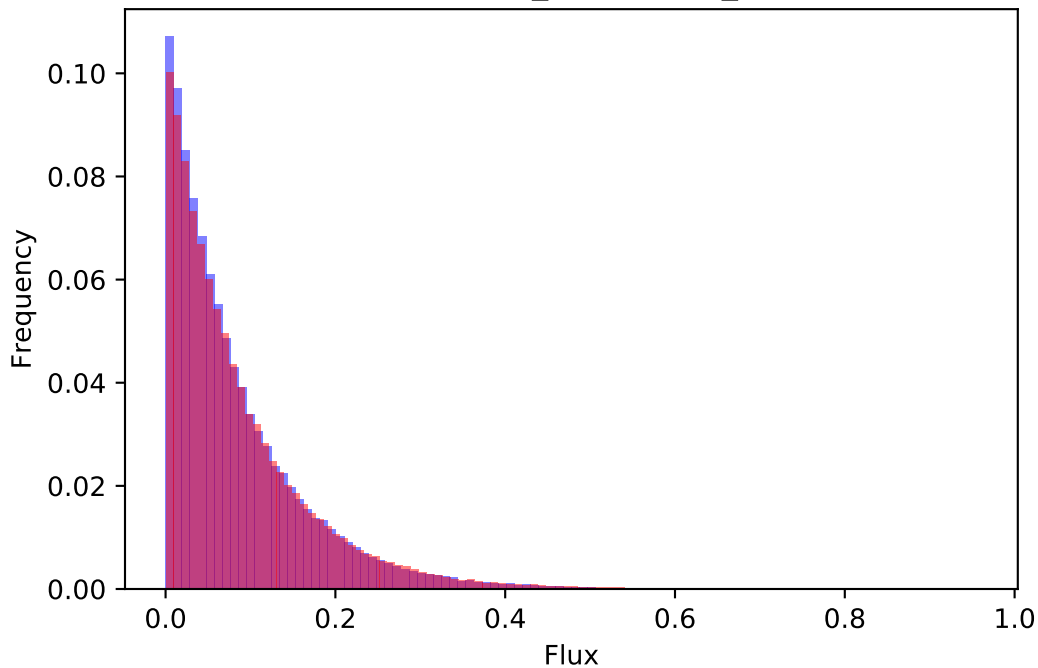
****396 : KG_c <=> KG_p****



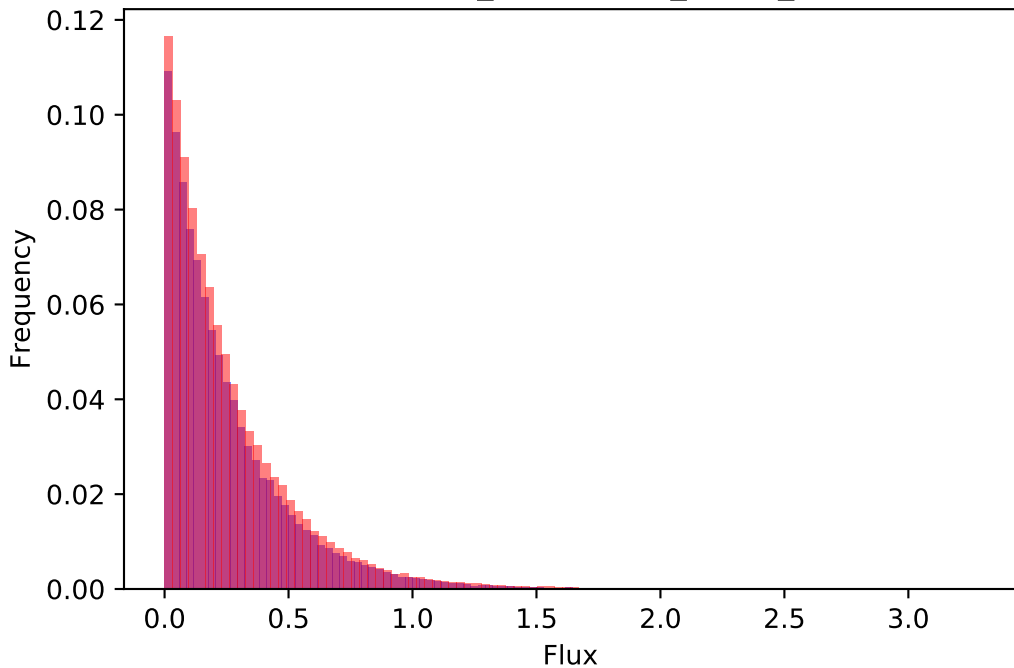
****397 : Ala_c <=> Ala_p****



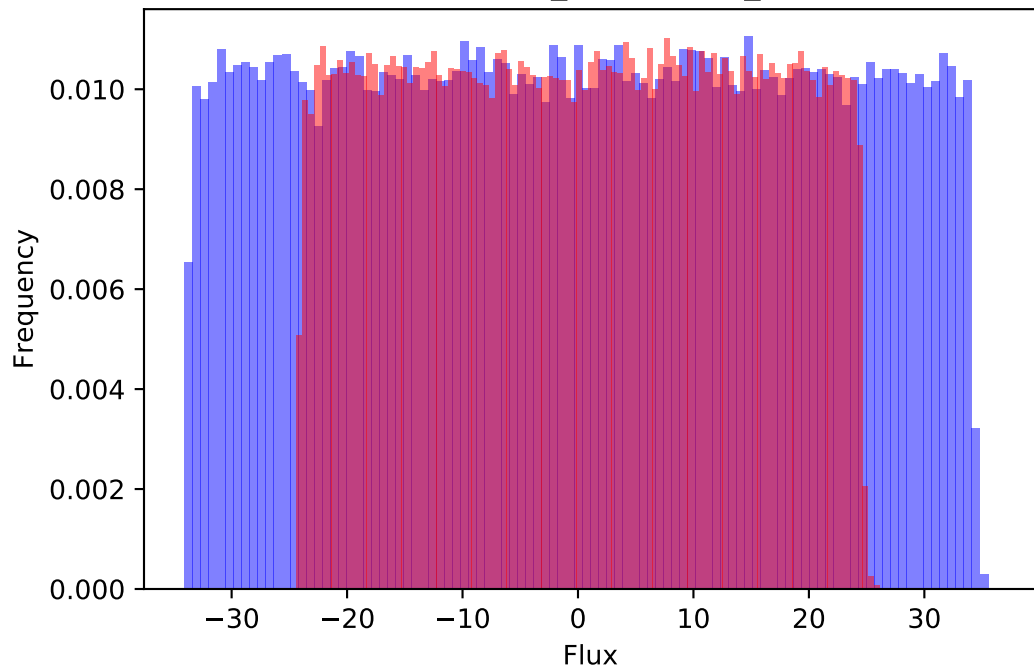
****398 : Arg_c <=> Arg_p****



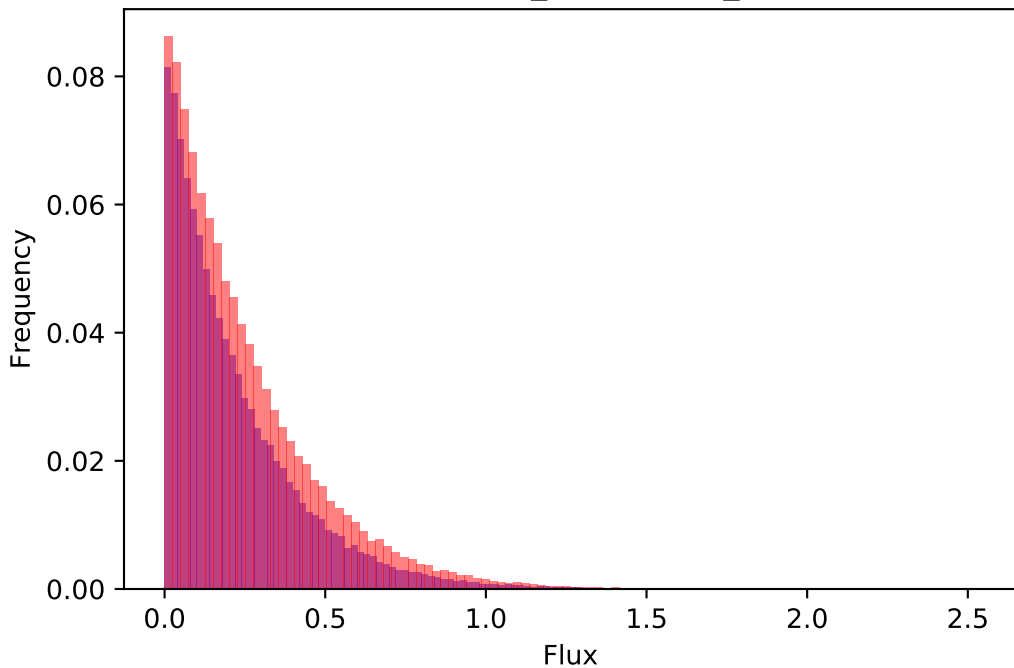
****399 : Asn_c <=> Asn_p + H_p****



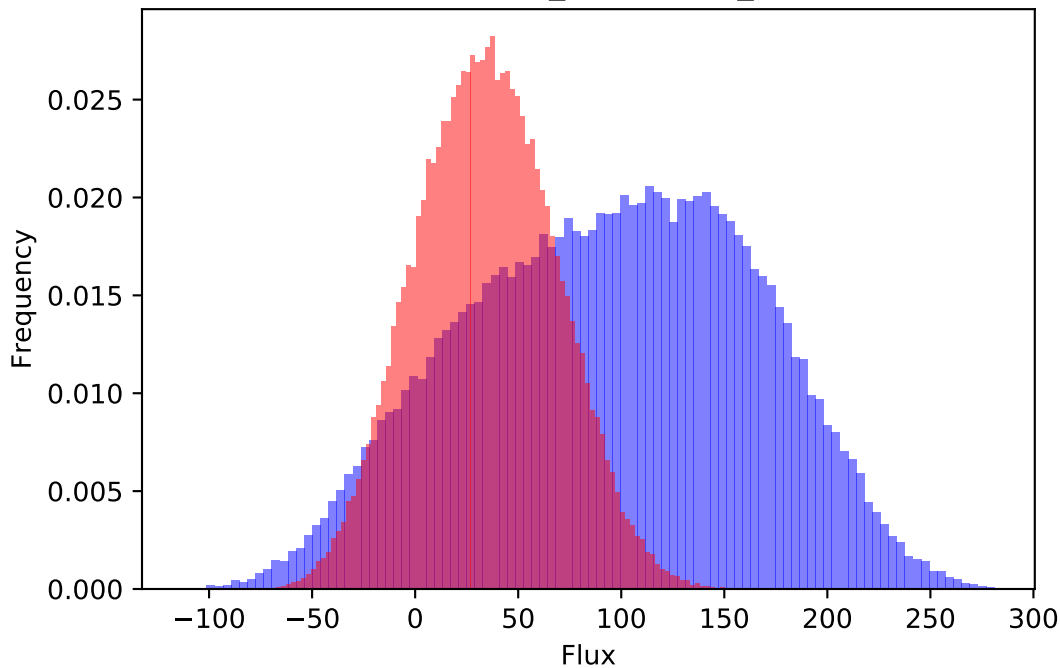
400 : Asp_c <=> Asp_p



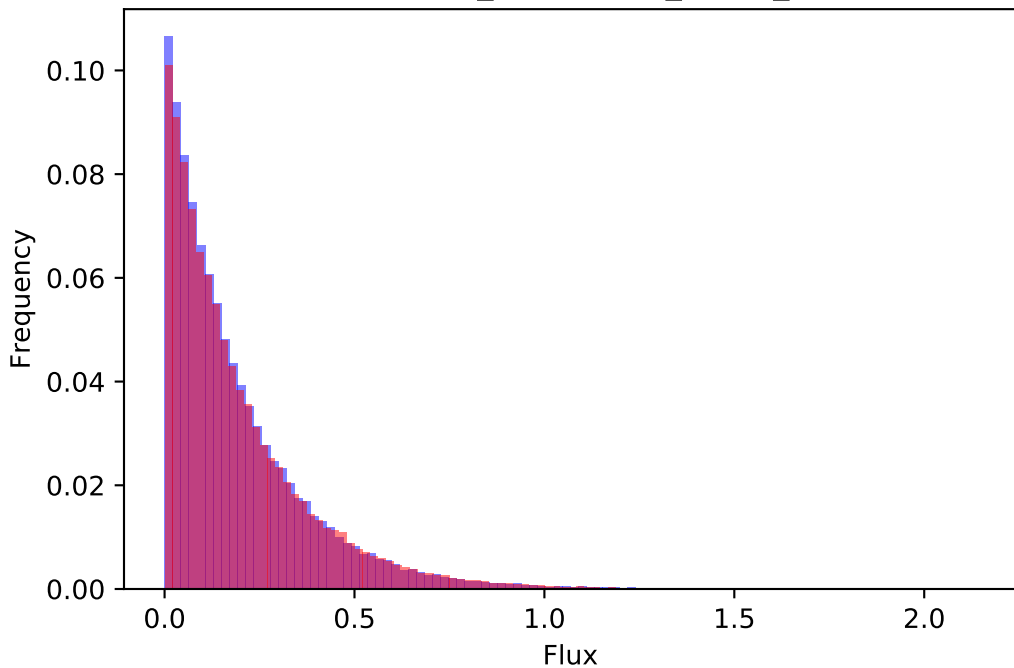
****401 : Cys_c <=> Cys_p****



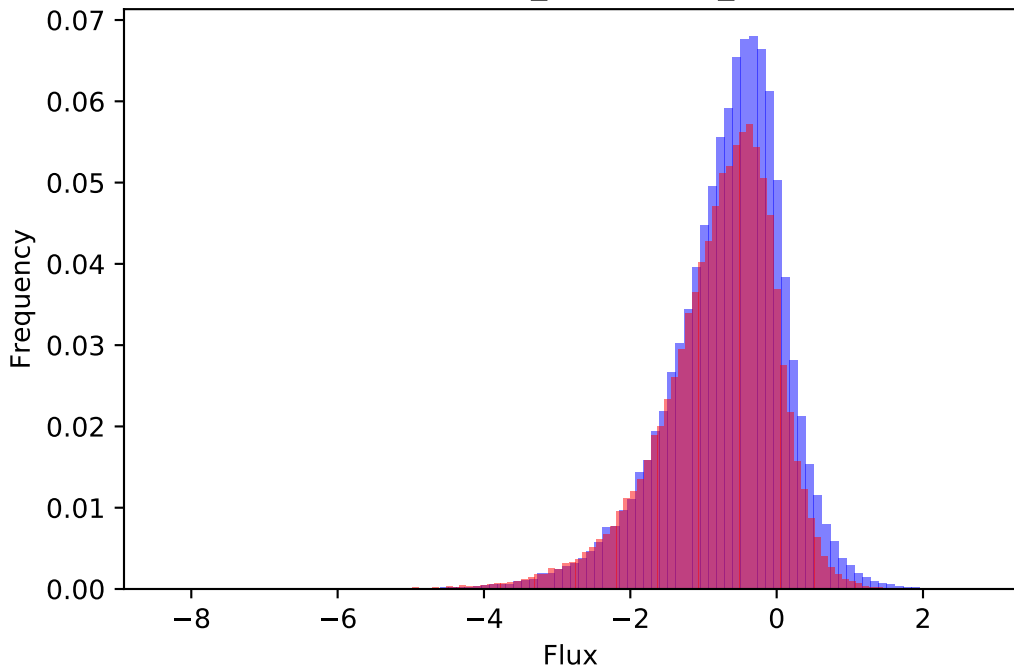
****402 : Glu_c <=> Glu_p****



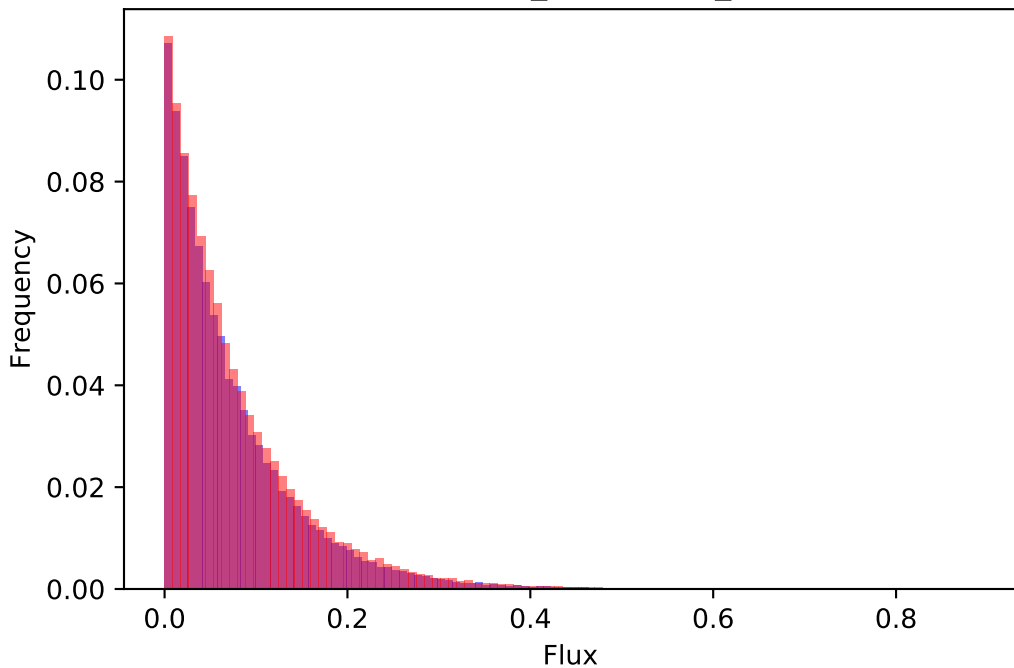
403 : $\text{Gln_c} \rightleftharpoons \text{Gln_p} + \text{H_p}$



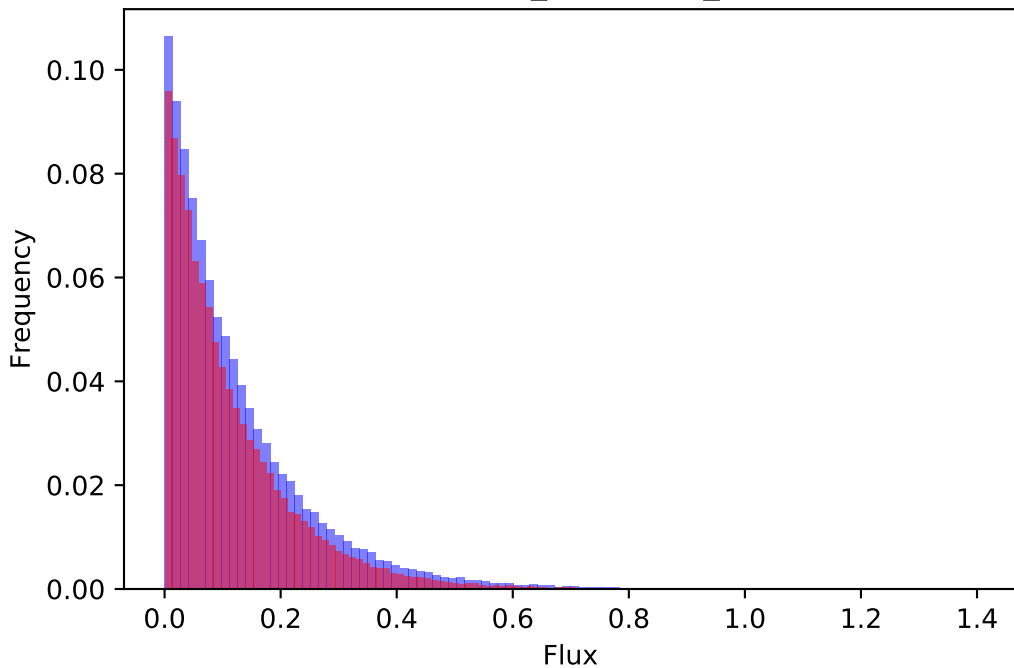
****404 : Gly_c <=> Gly_p****



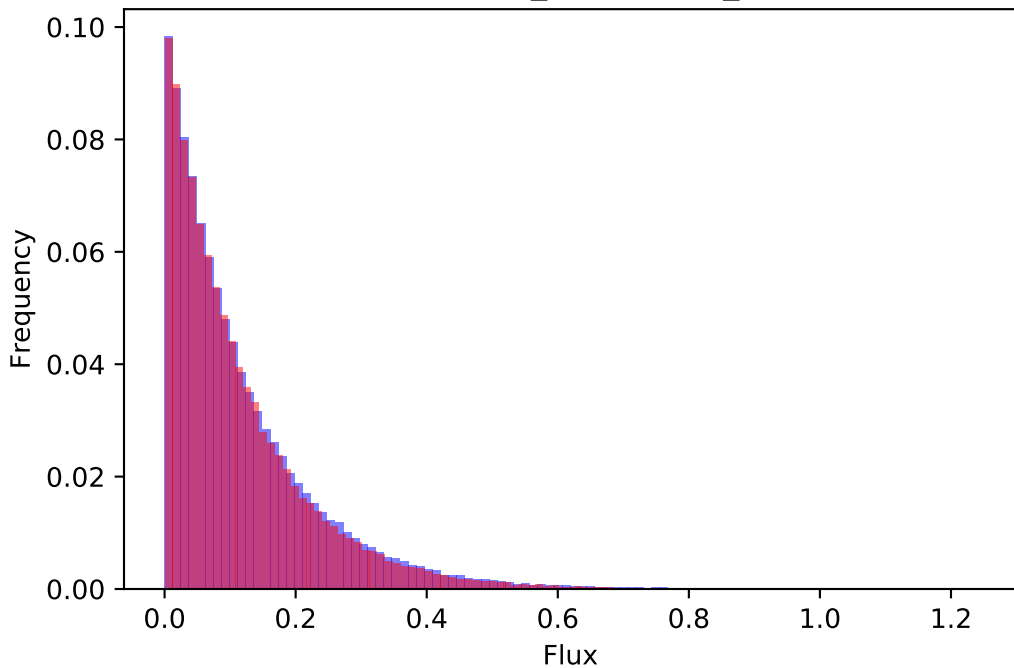
****405 : His_c <=> His_p****



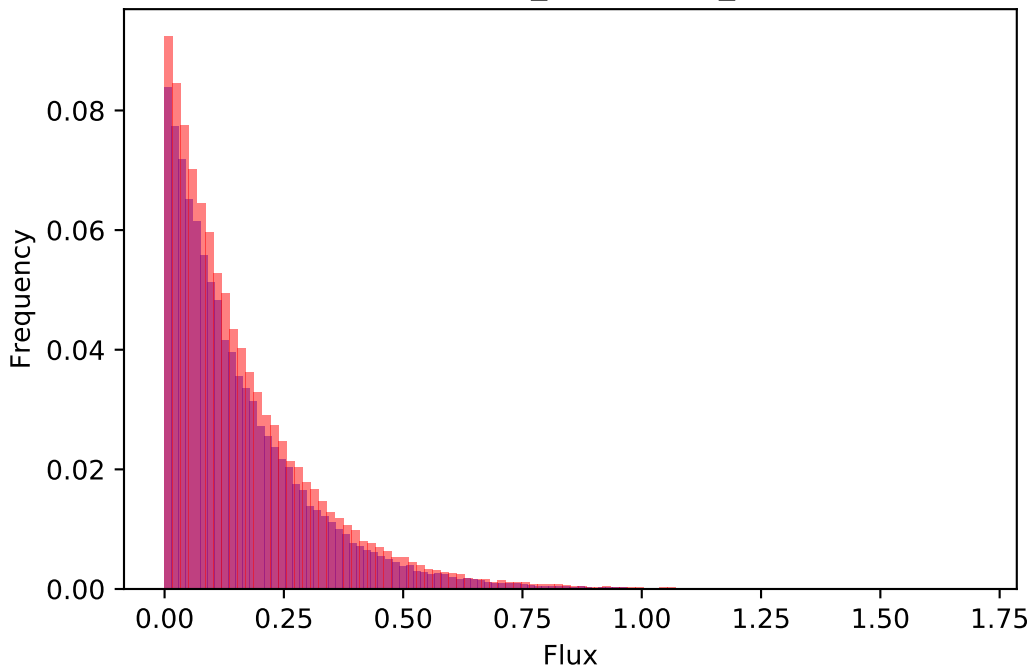
****406 : lle_c <=> lle_p****



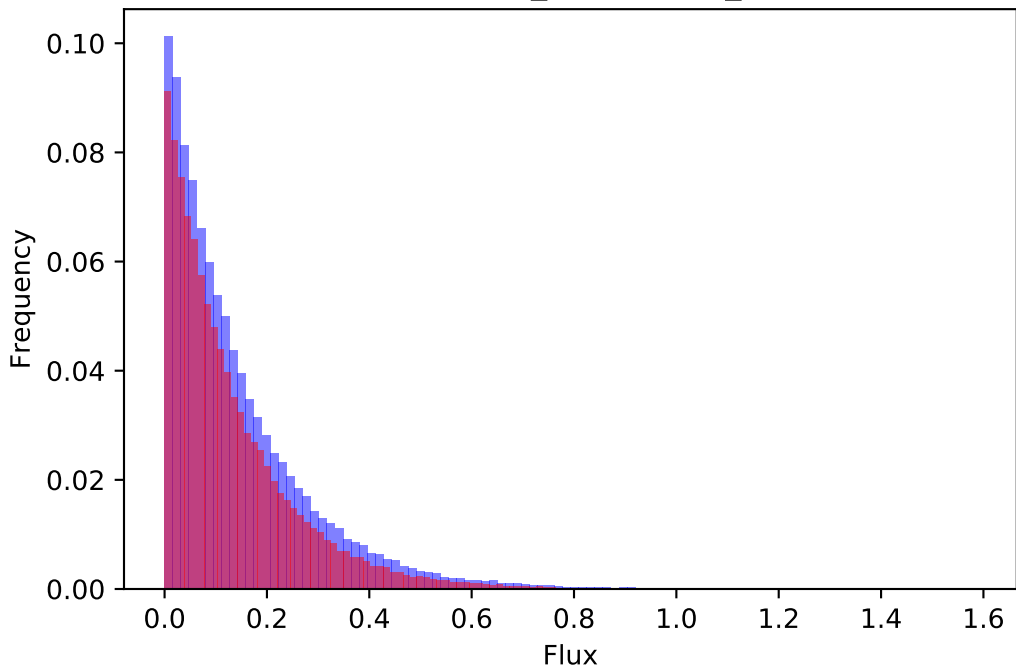
****407 : Leu_c <=> Leu_p****



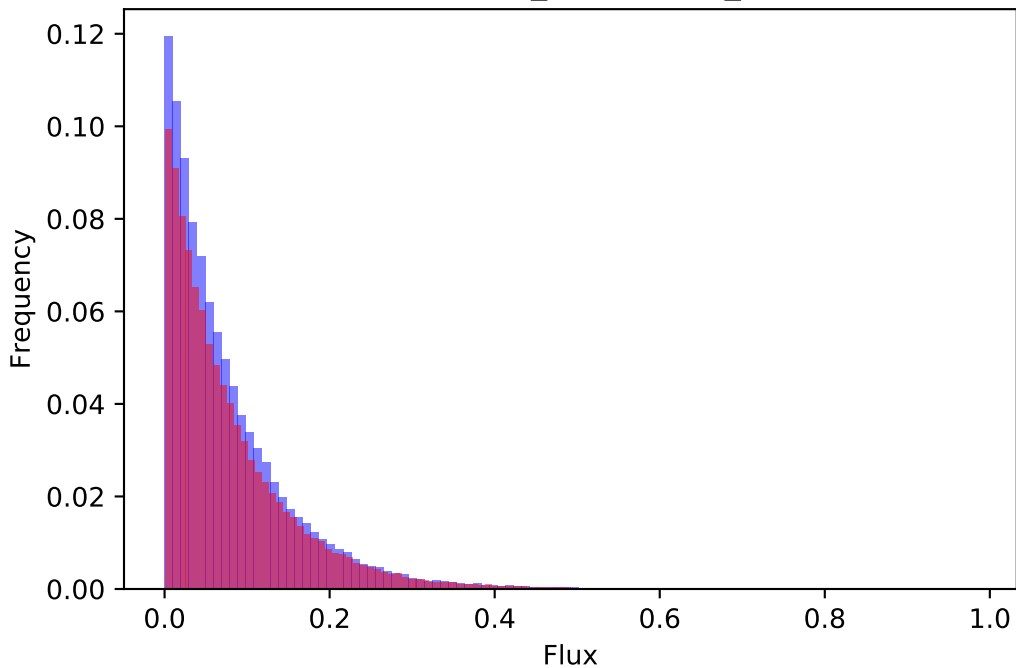
****408 : Lys_c <=> Lys_p****



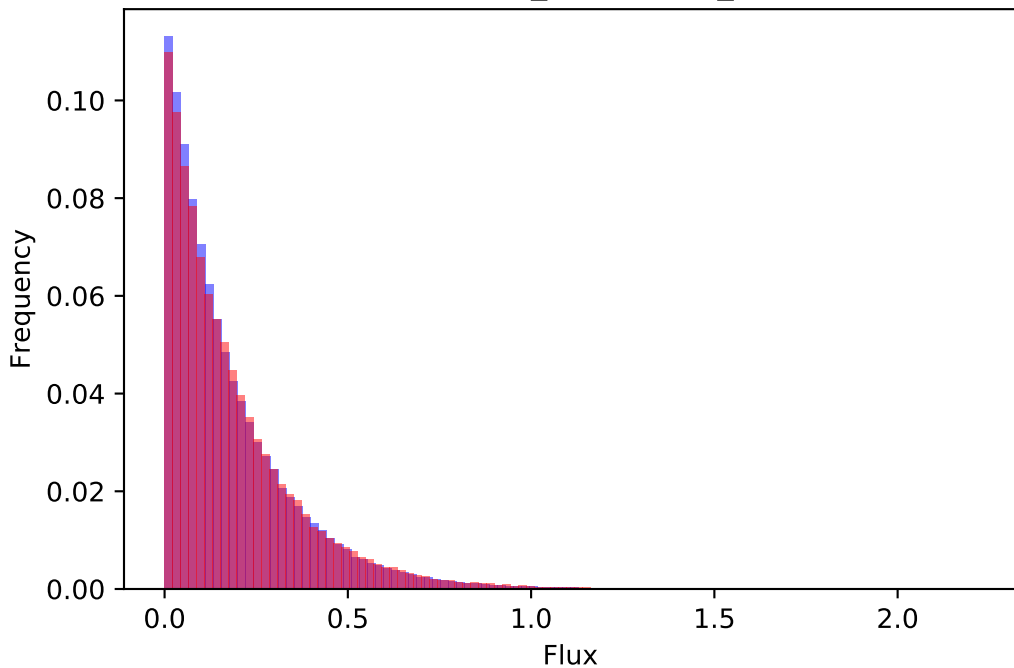
****409 : Met_c <=> Met_p****



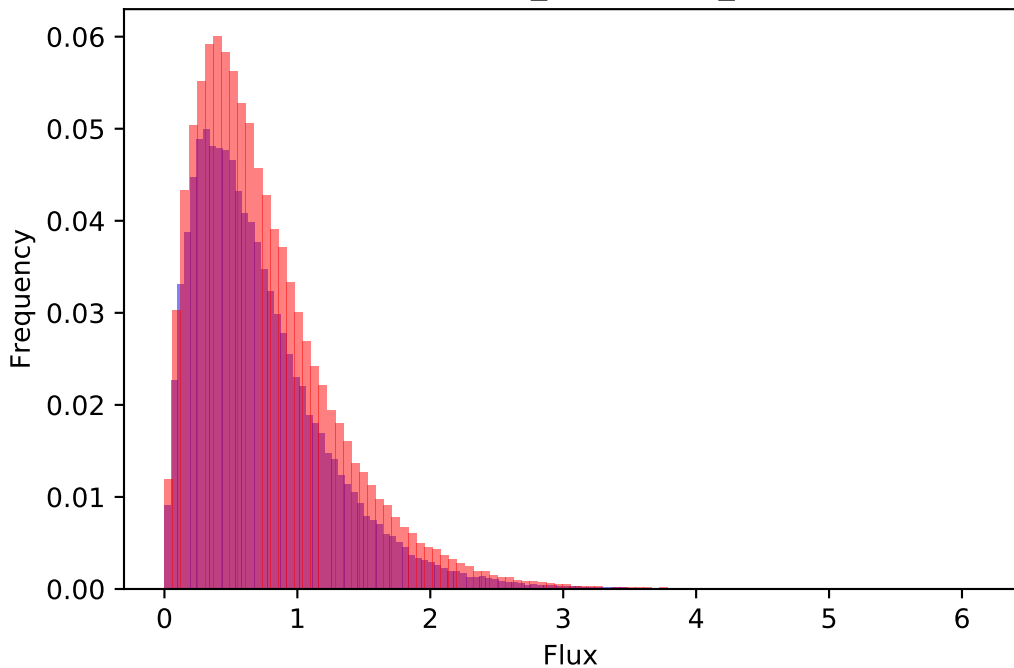
****410 : Phe_c <=> Phe_p****



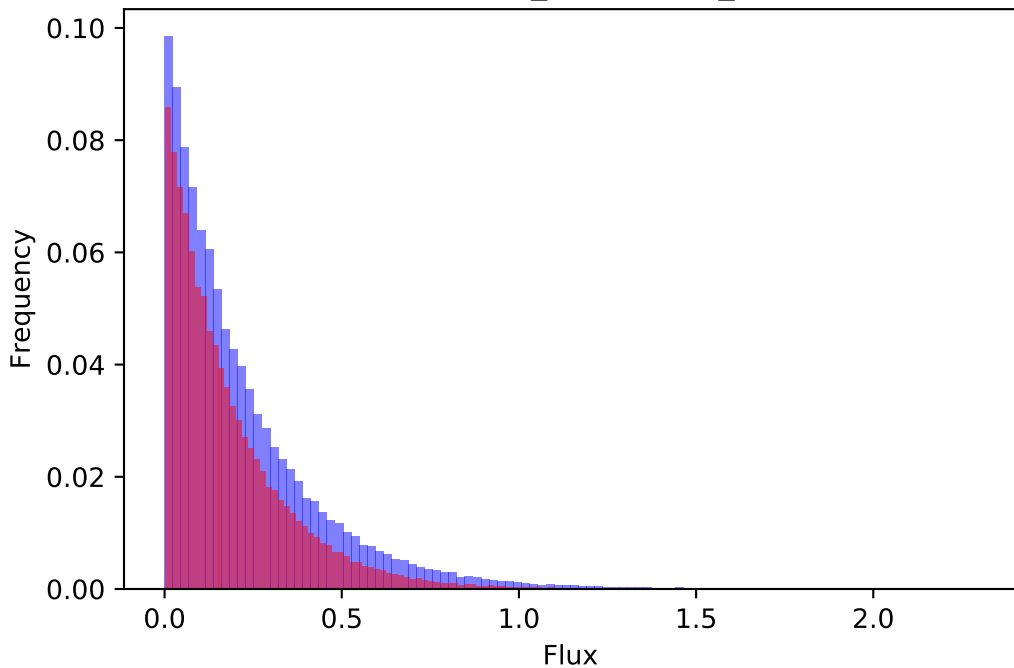
****411 : Pro_c <=> Pro_p****



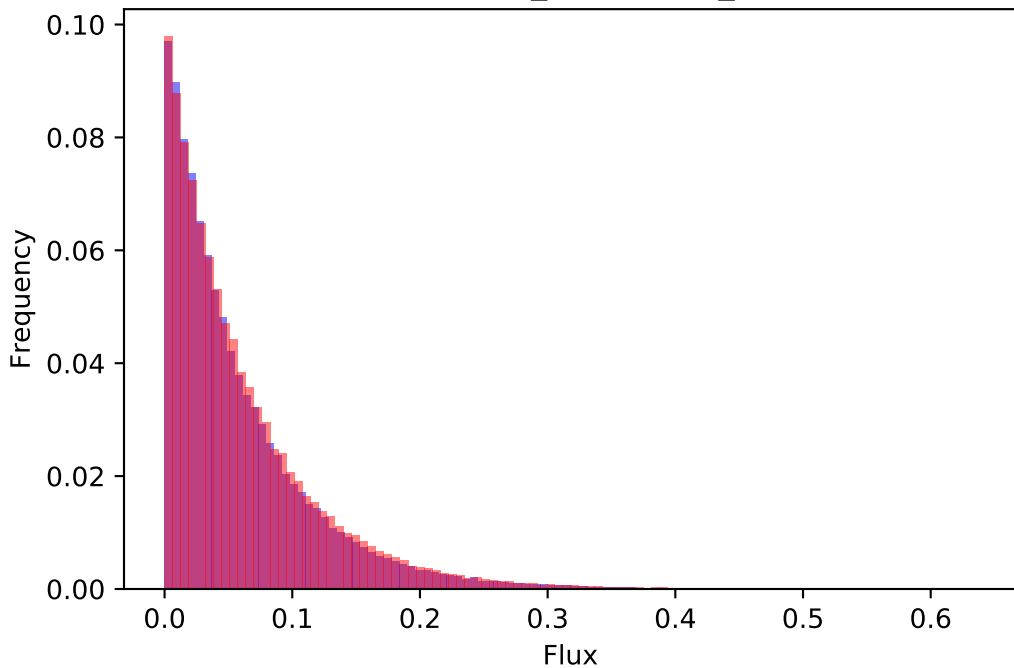
****412 : Ser_c <=> Ser_p****



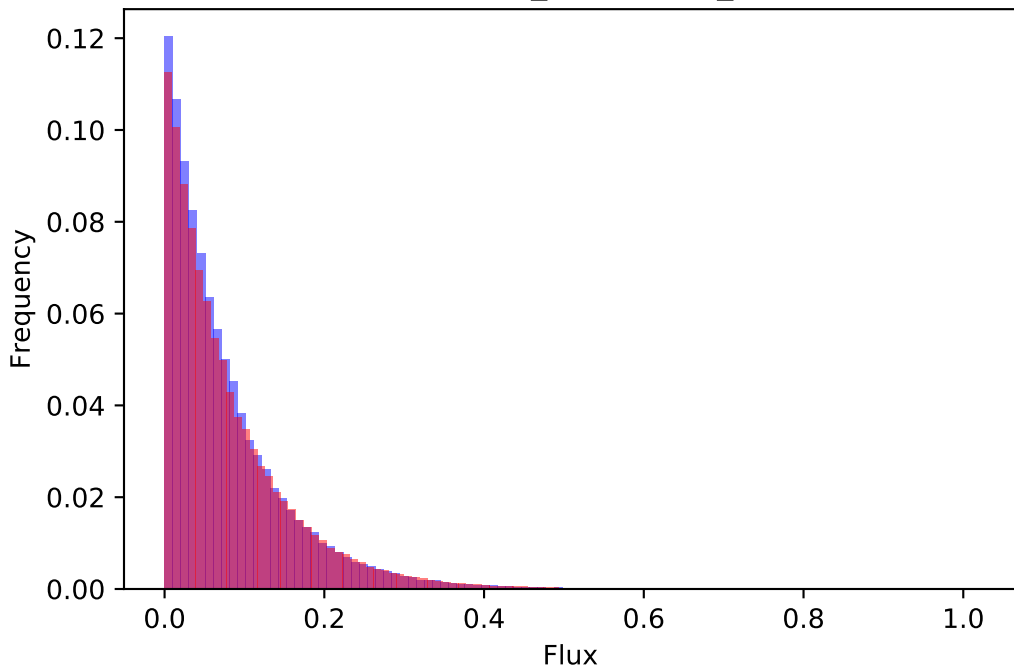
****413 : Thr_c <=> Thr_p****



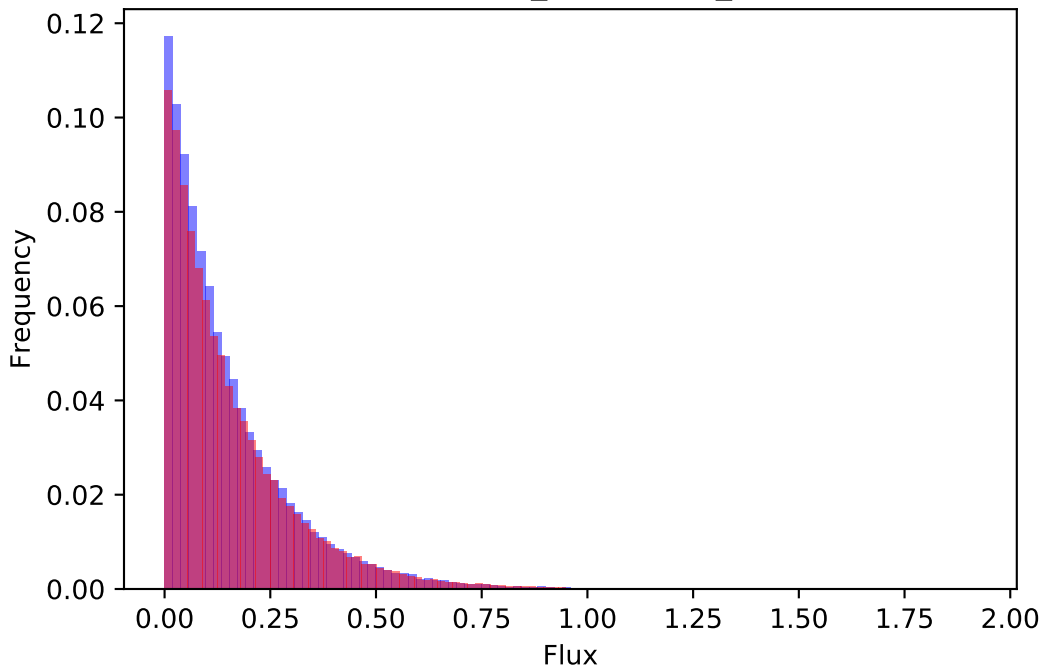
****414 : Trp_c <=> Trp_p****



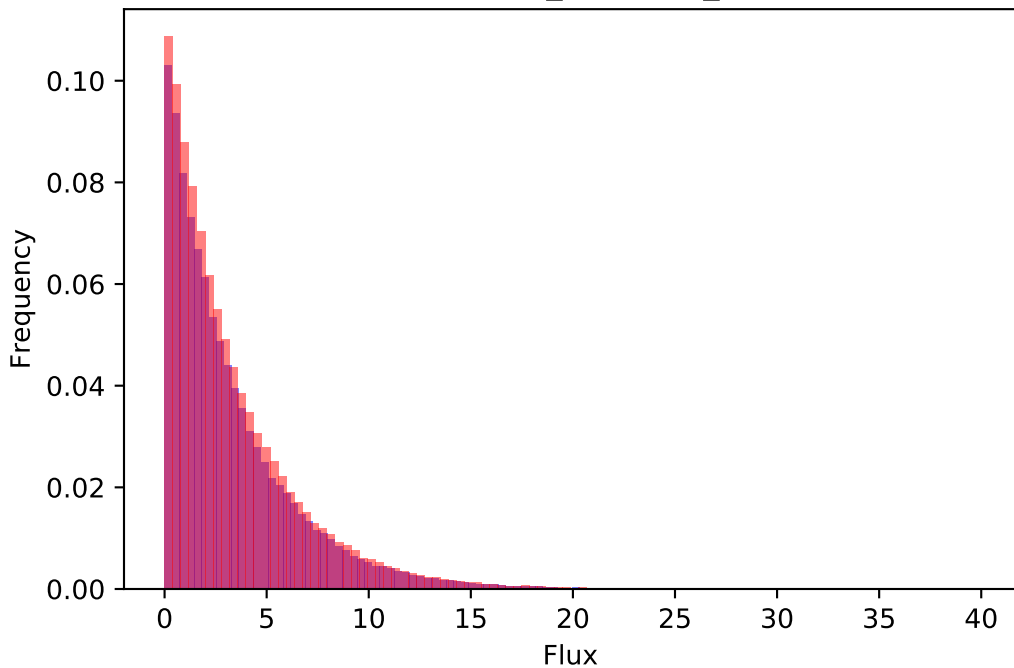
****415 : Tyr_c <=> Tyr_p****



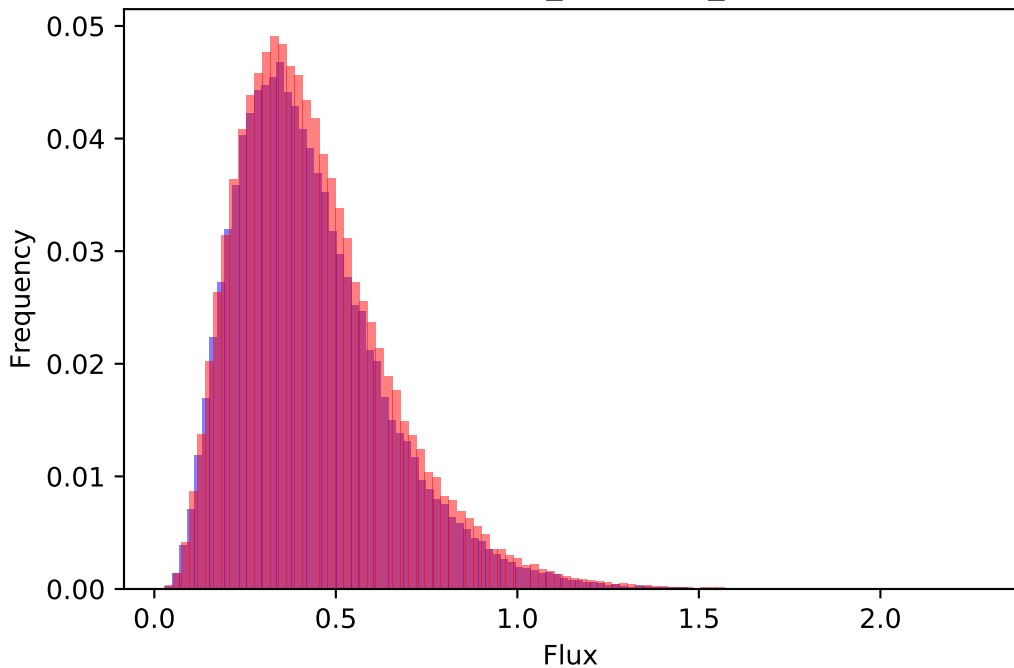
****416 : Val_c <=> Val_p****



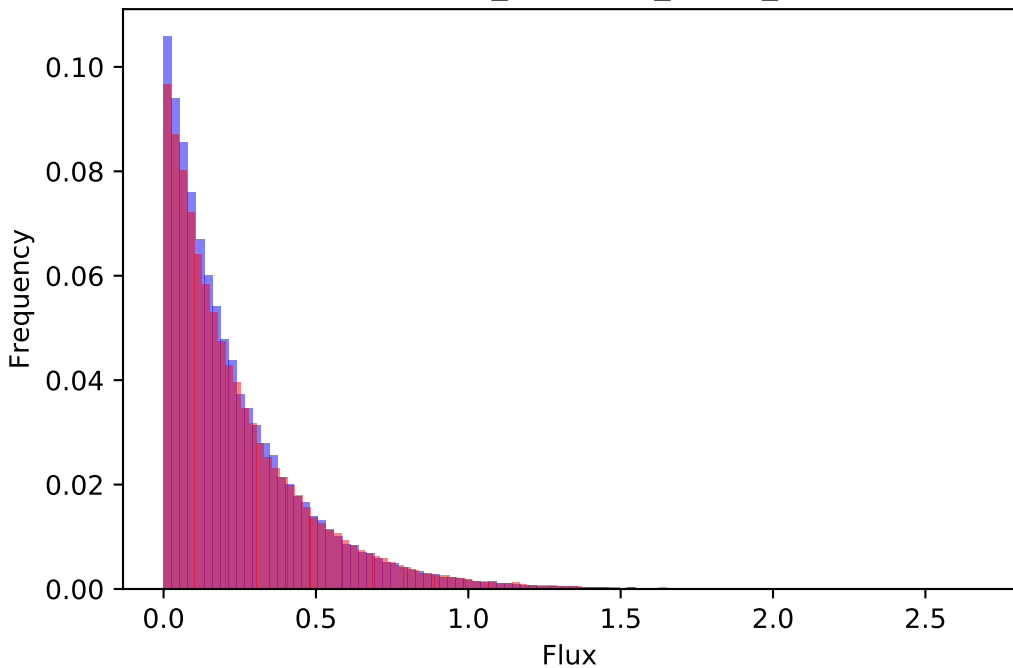
417 : Ala_h --> Ala_c



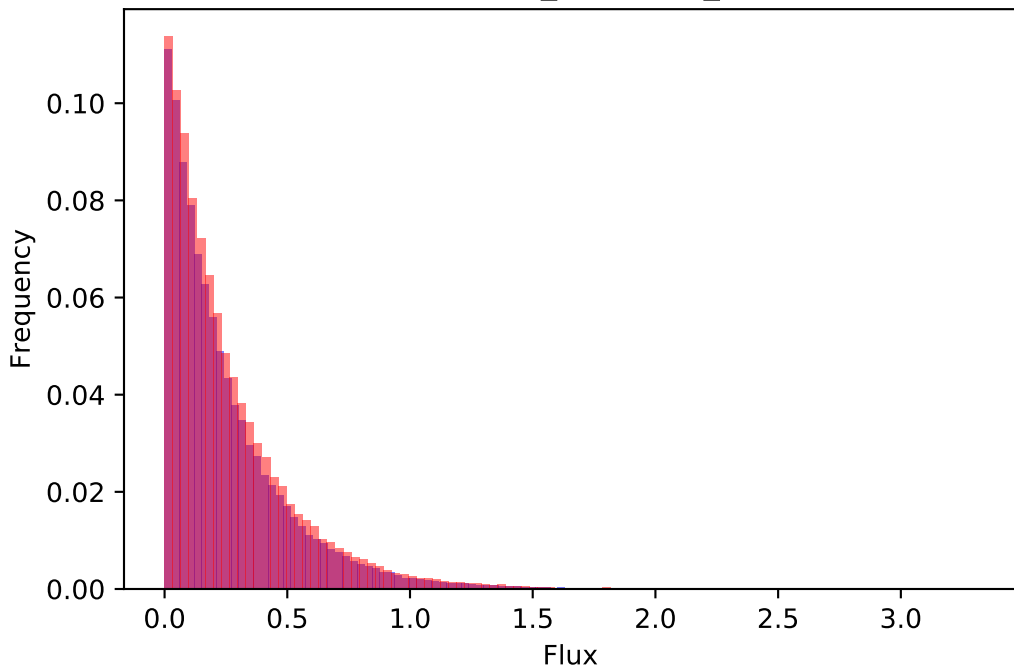
****418 : Arg_h --> Arg_c****



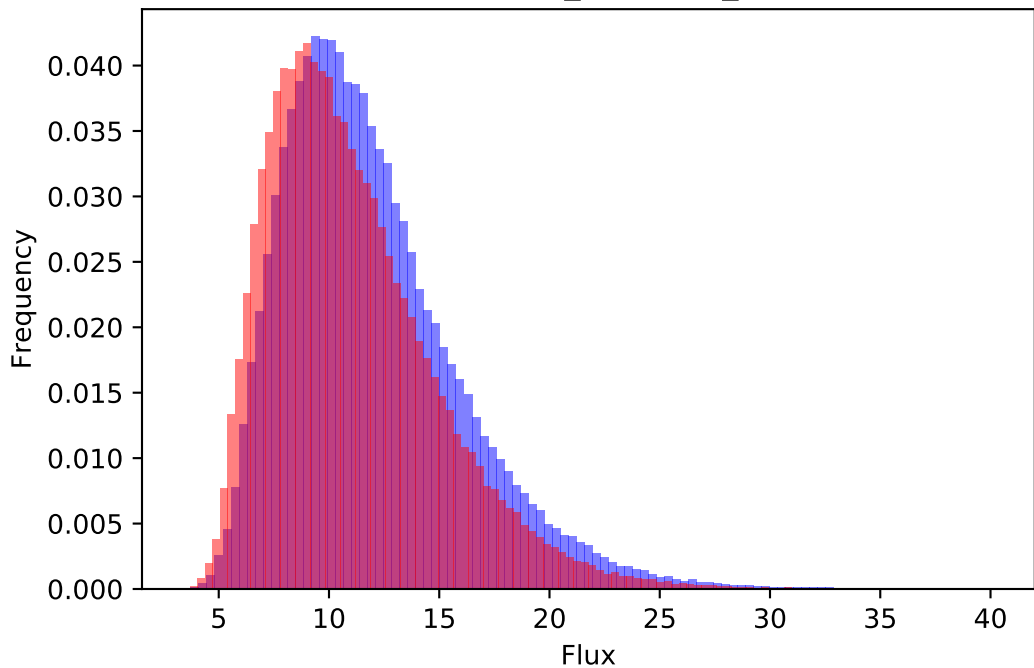
****419 : Asn_c --> Asn_h + H_h****



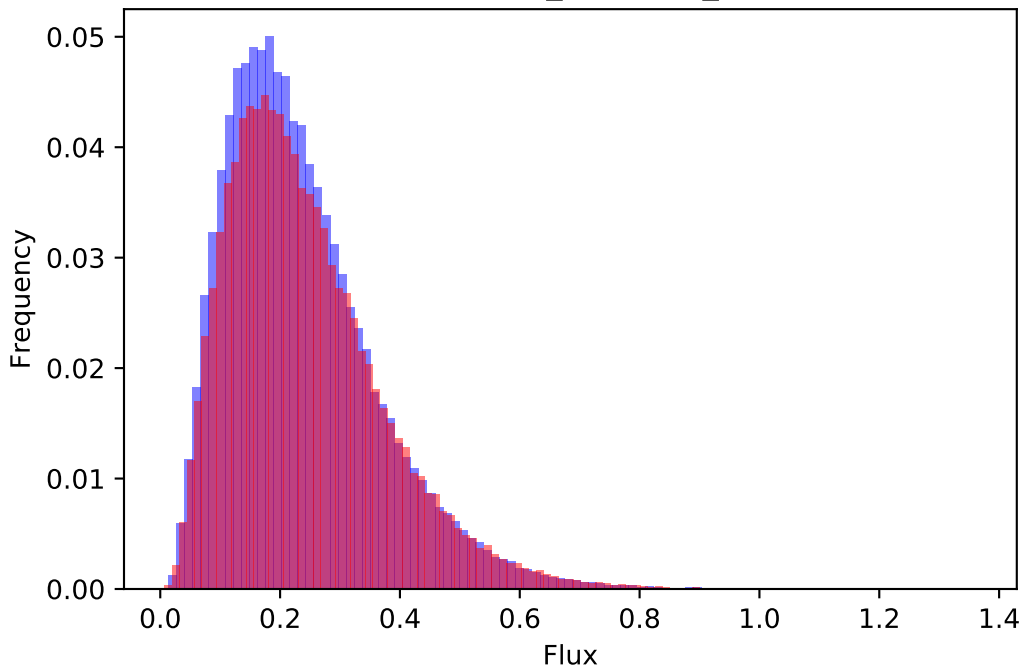
****420 : Asn_c --> Asn_m****



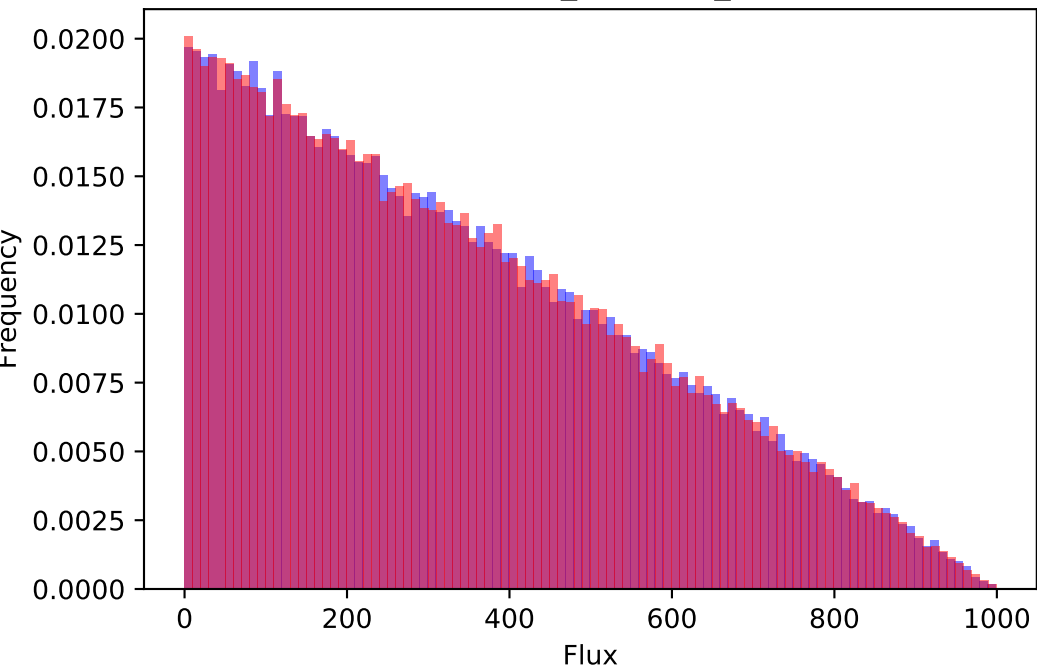
****421 : Glu_c --> Glu_h****



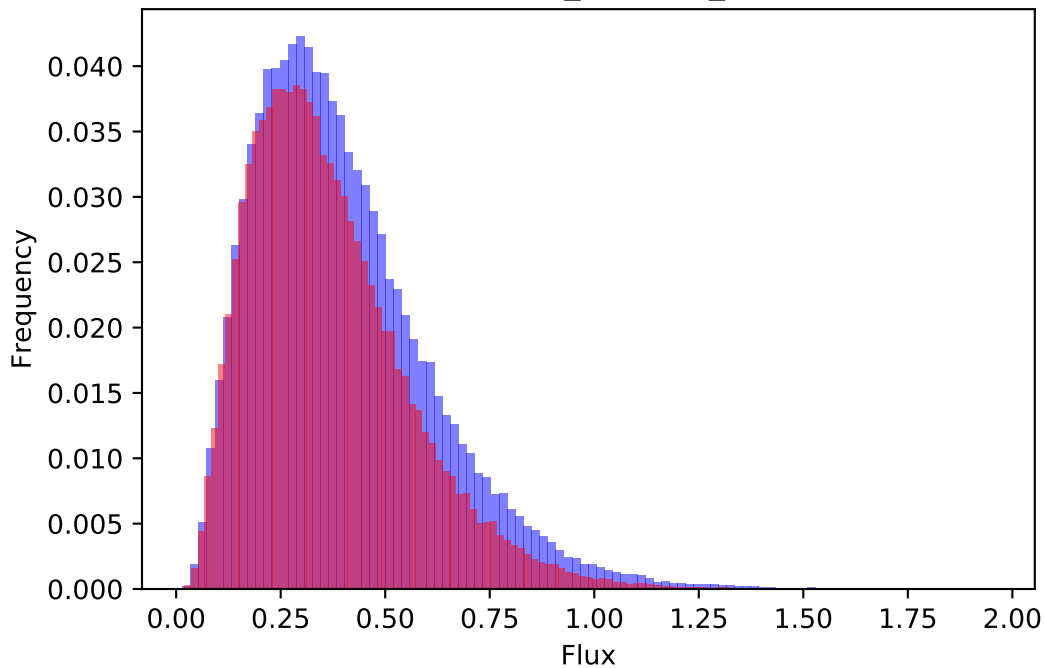
****422 : His_h --> His_c****



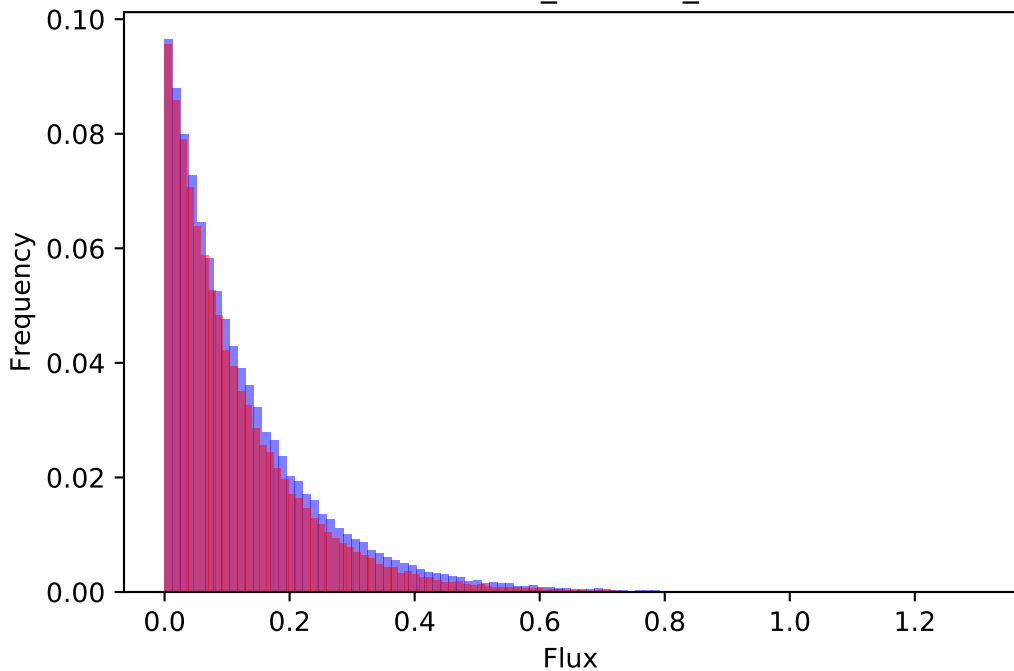
423 : His_c --> His_m



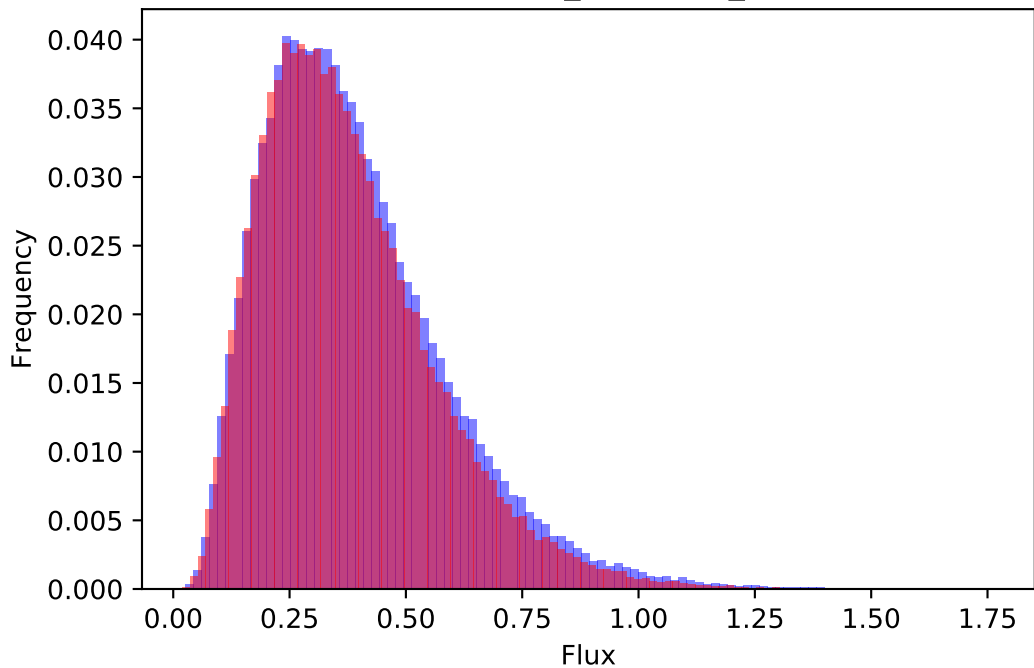
****424 : Ile_h --> Ile_c****



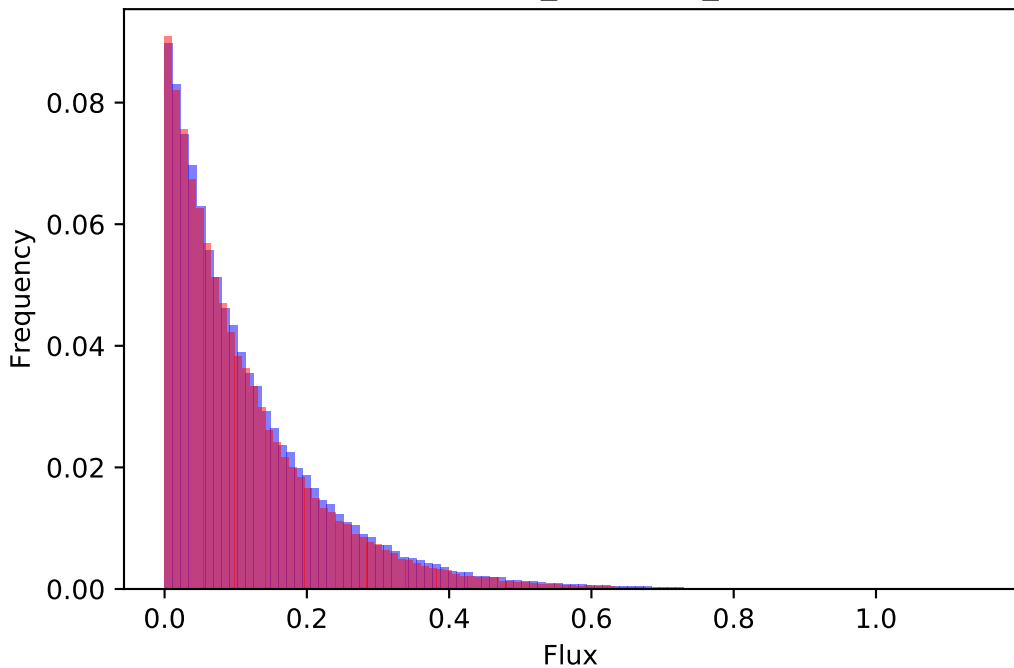
****425 : lle_c --> lle_m****



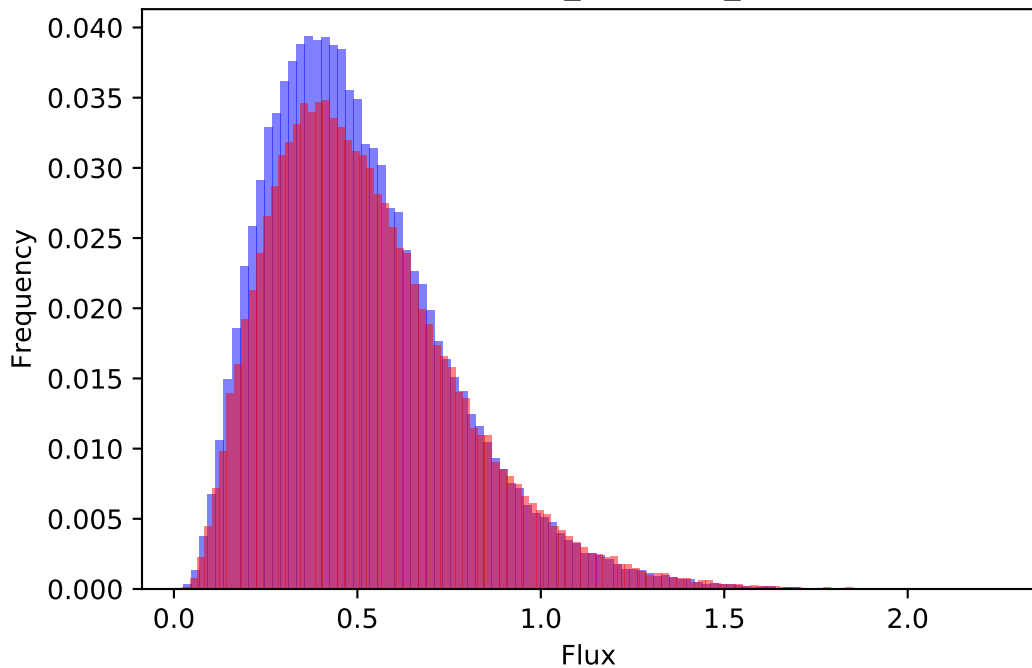
****426 : Leu_h --> Leu_c****



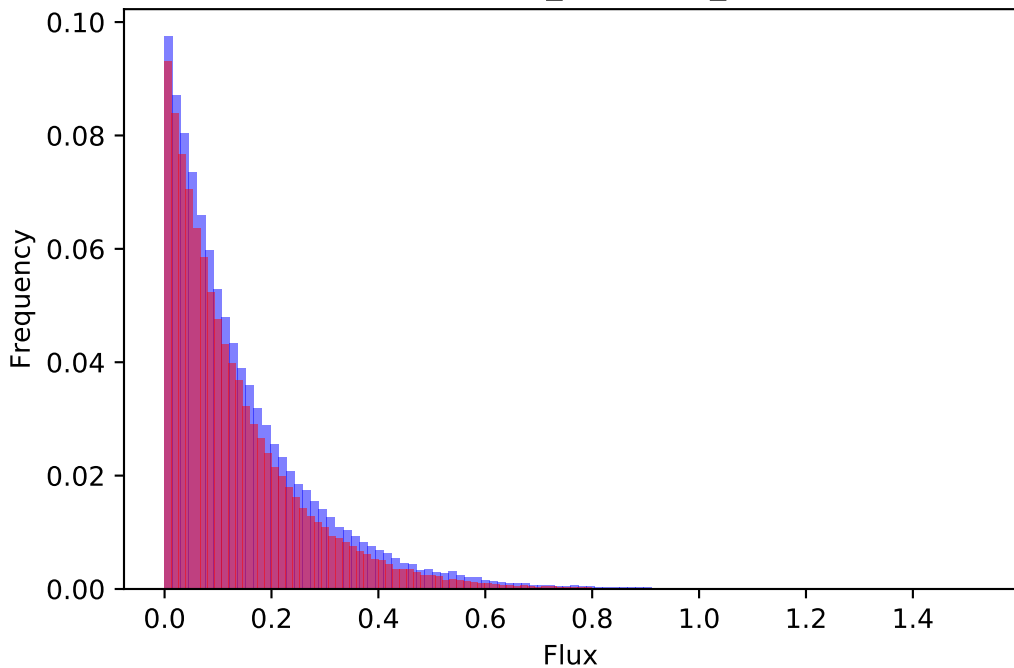
****427 : Leu_c --> Leu_m****



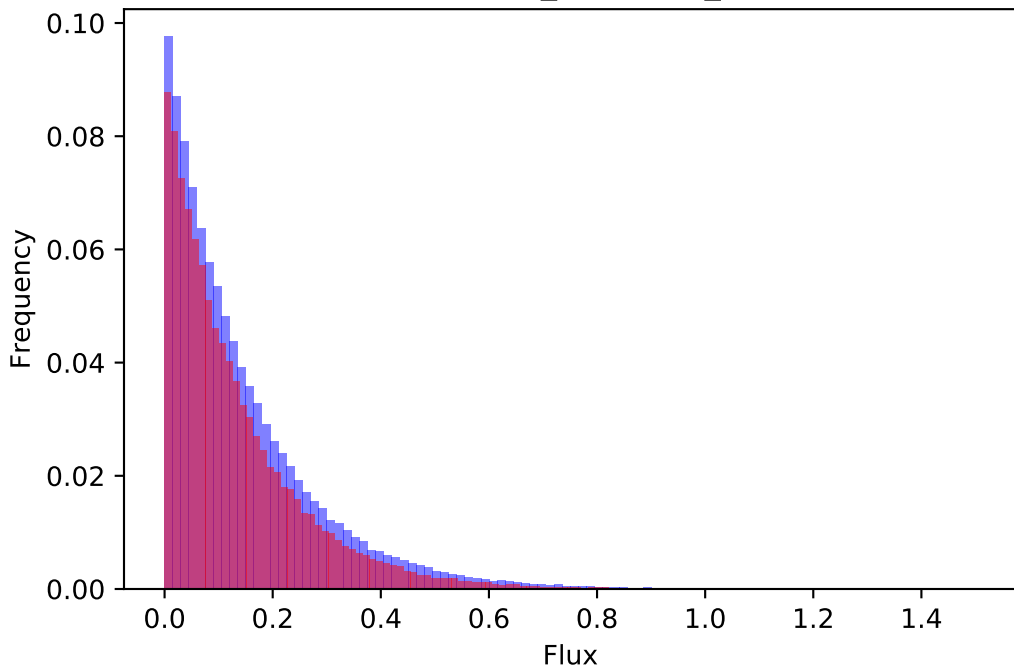
****428 : Lys_h --> Lys_c****



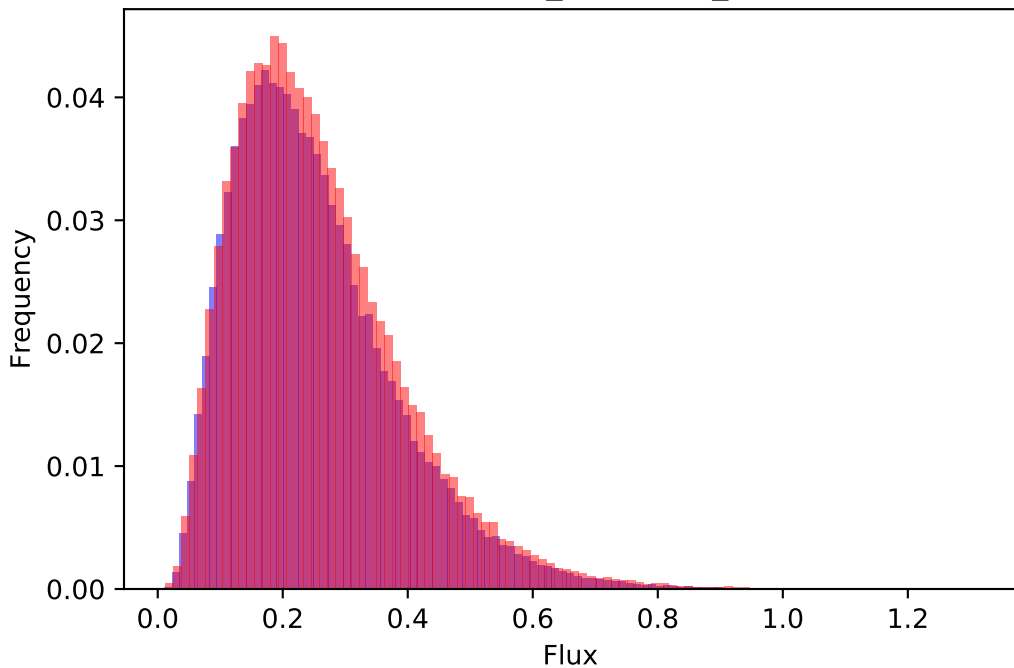
****429 : Met_c --> Met_h****



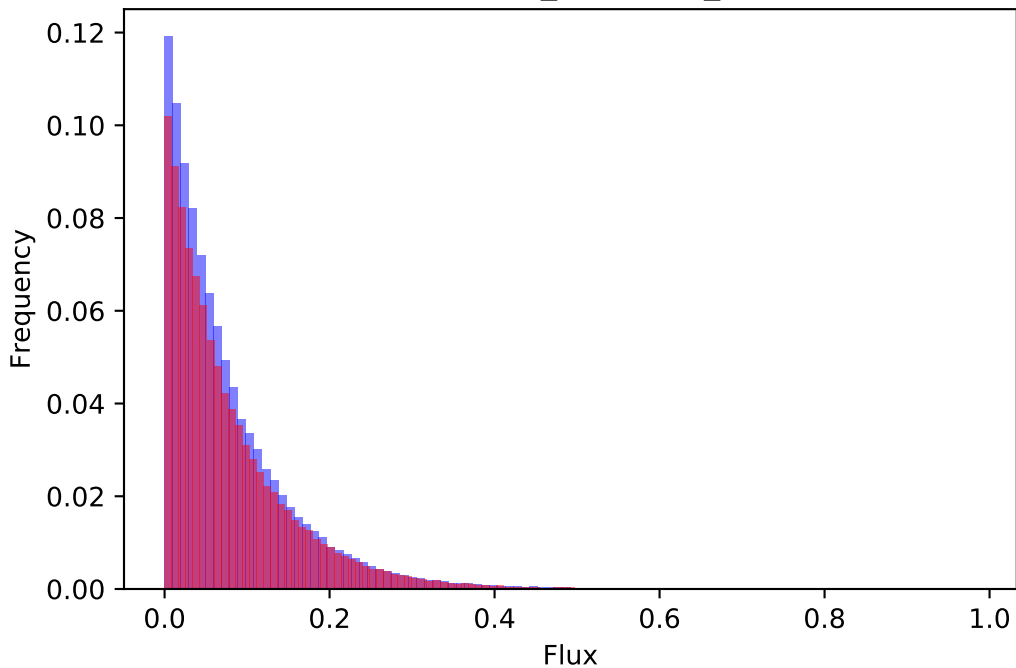
****430 : Met_c --> Met_m****



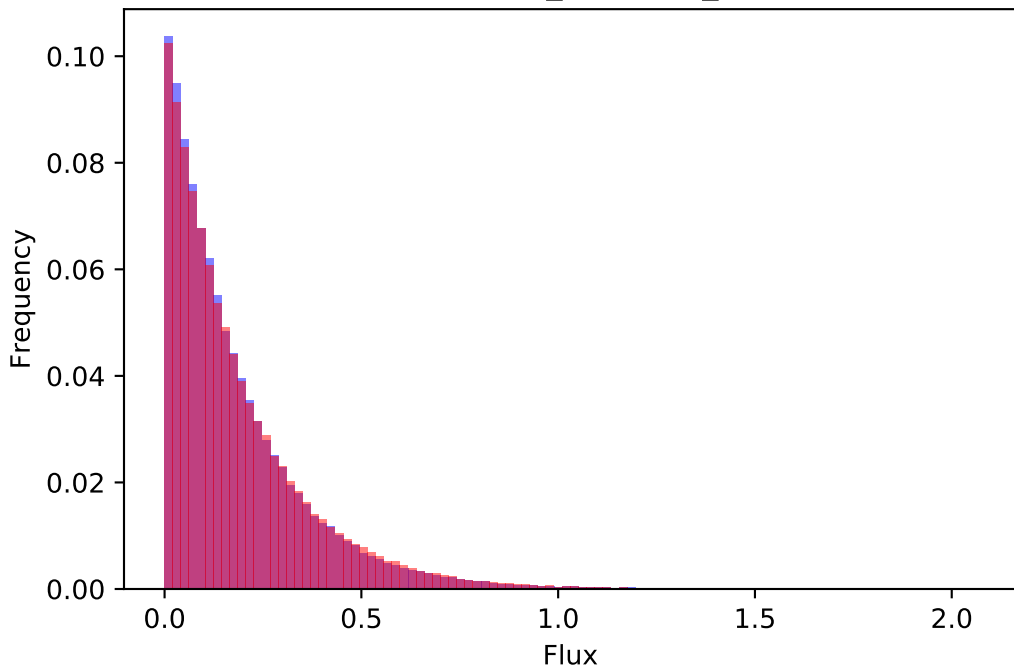
****431 : Phe_h --> Phe_c****



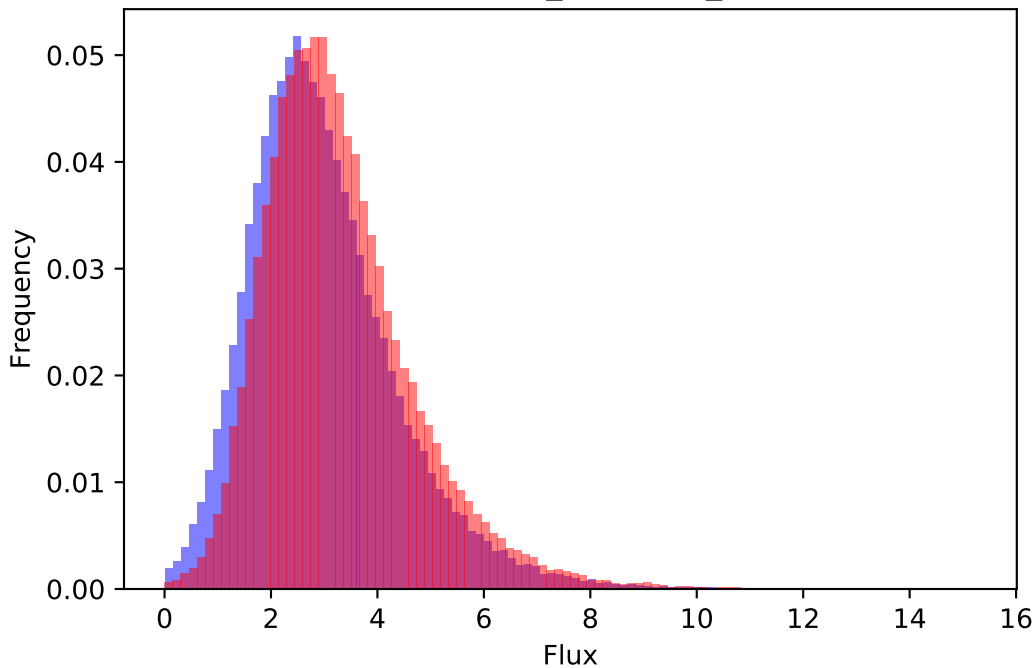
****432 : Phe_c --> Phe_m****



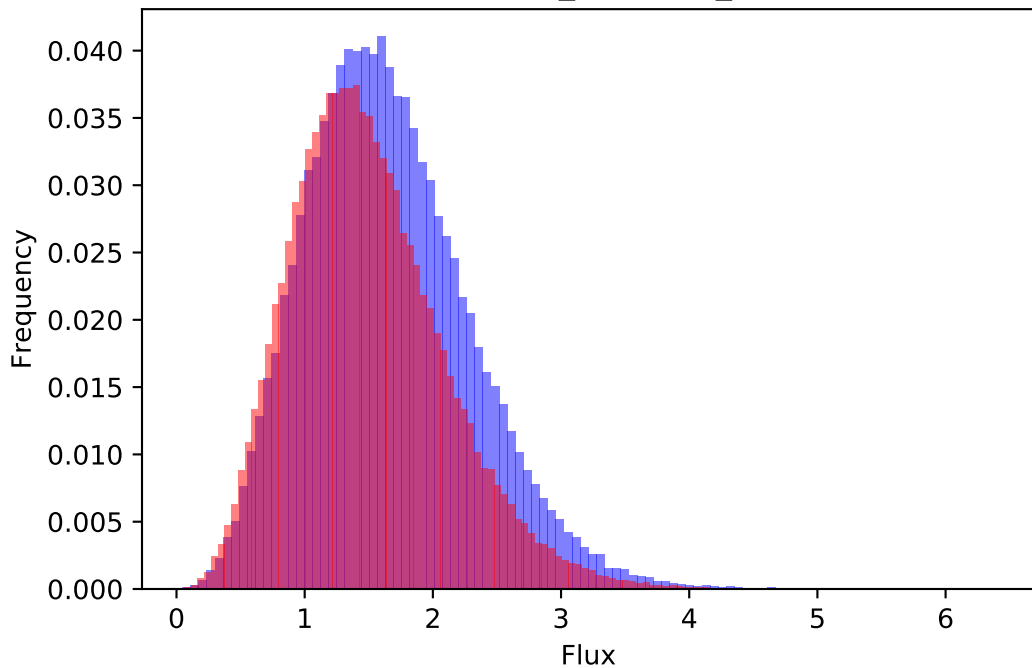
****433 : Pro_c --> Pro_h****



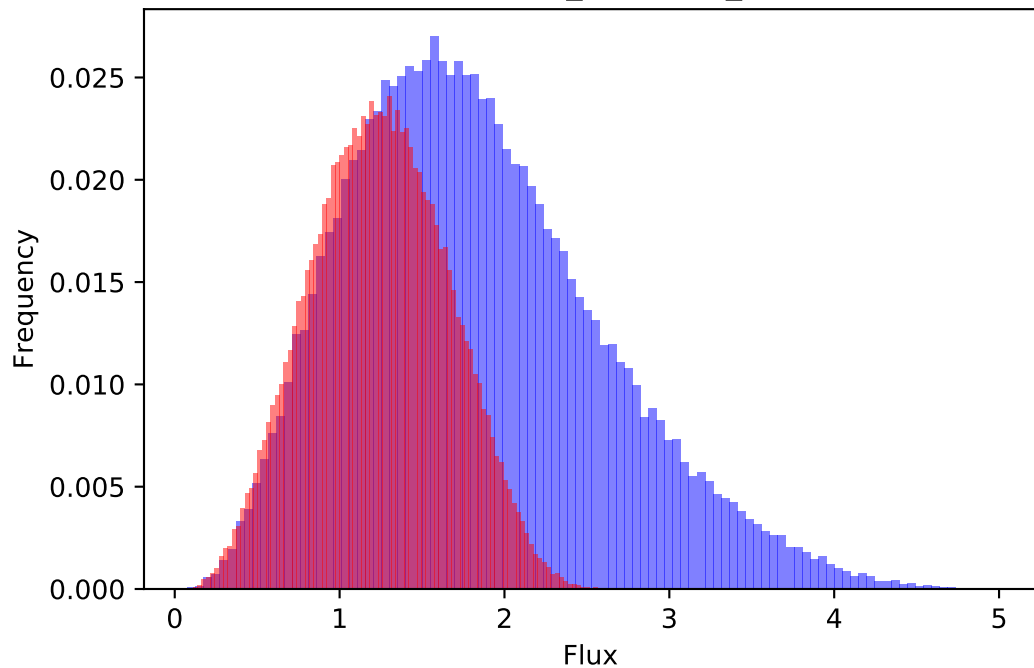
****434 : Ser_h --> Ser_c****



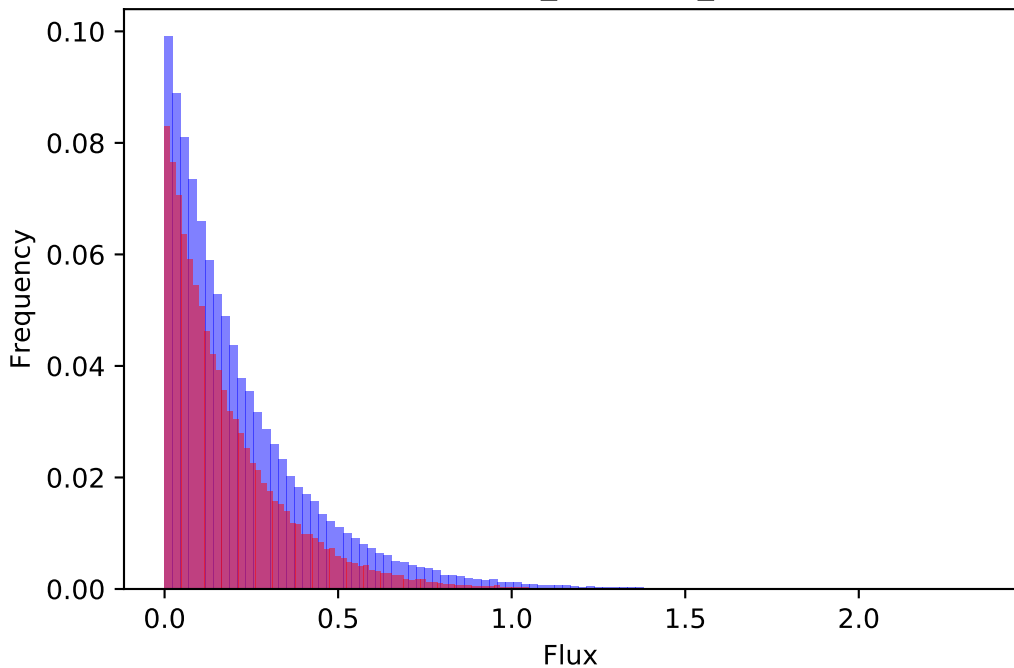
****435 : Ser_c --> Ser_m****



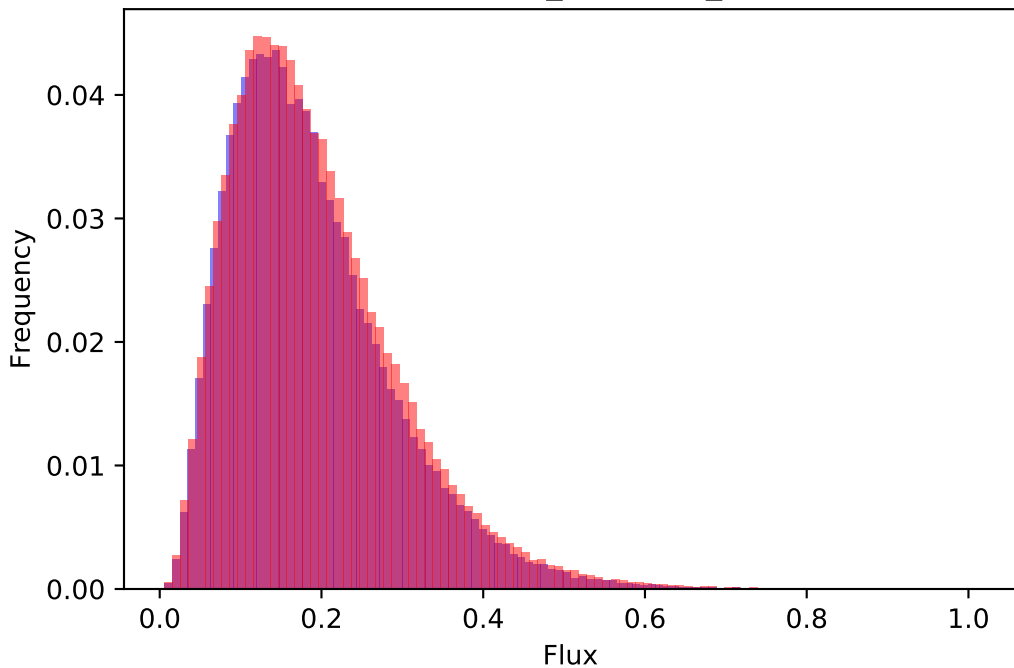
****436 : Thr_h --> Thr_c****



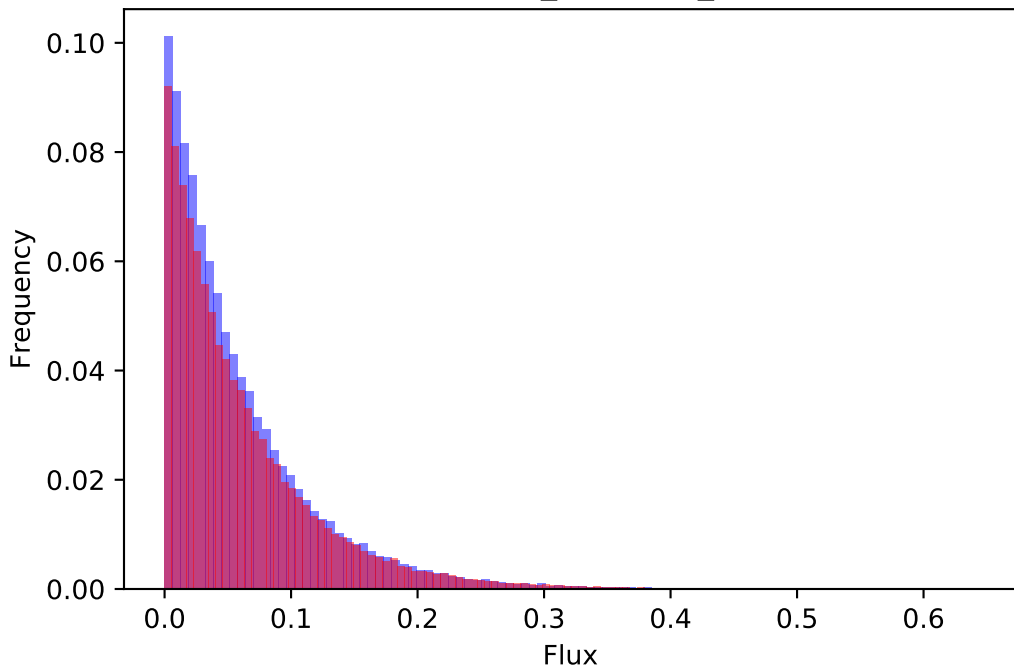
****437 : Thr_c --> Thr_m****



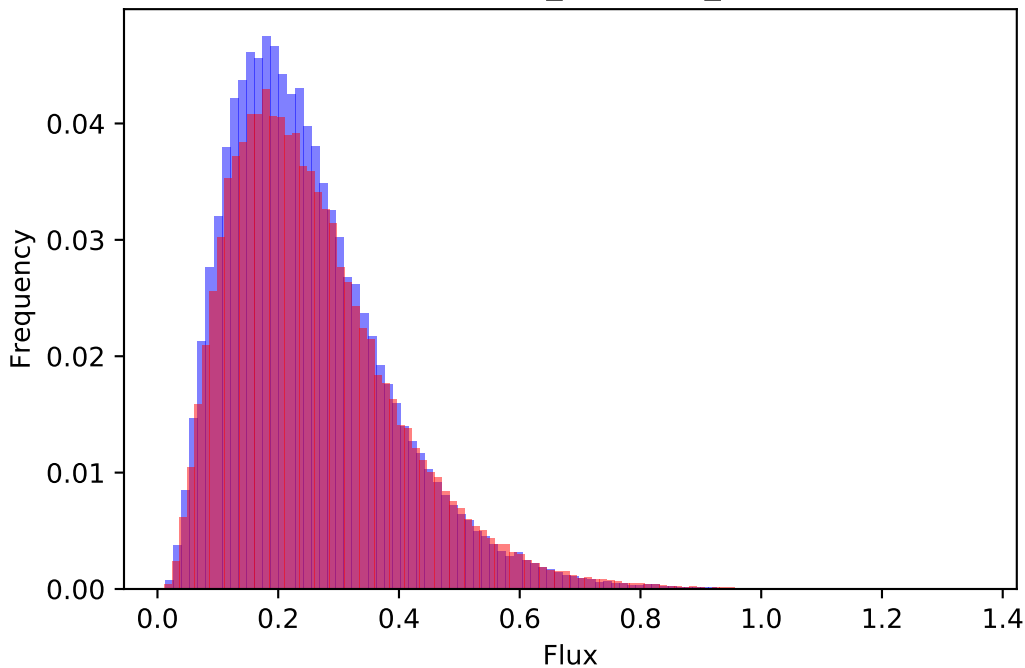
****438 : Trp_h --> Trp_c****



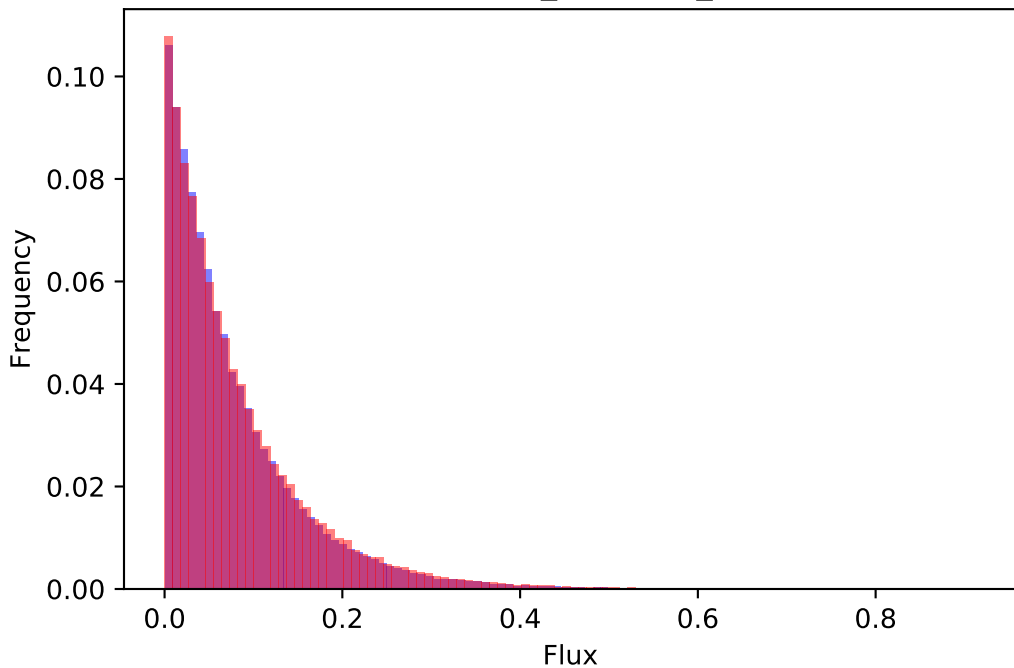
****439 : Trp_c --> Trp_m****



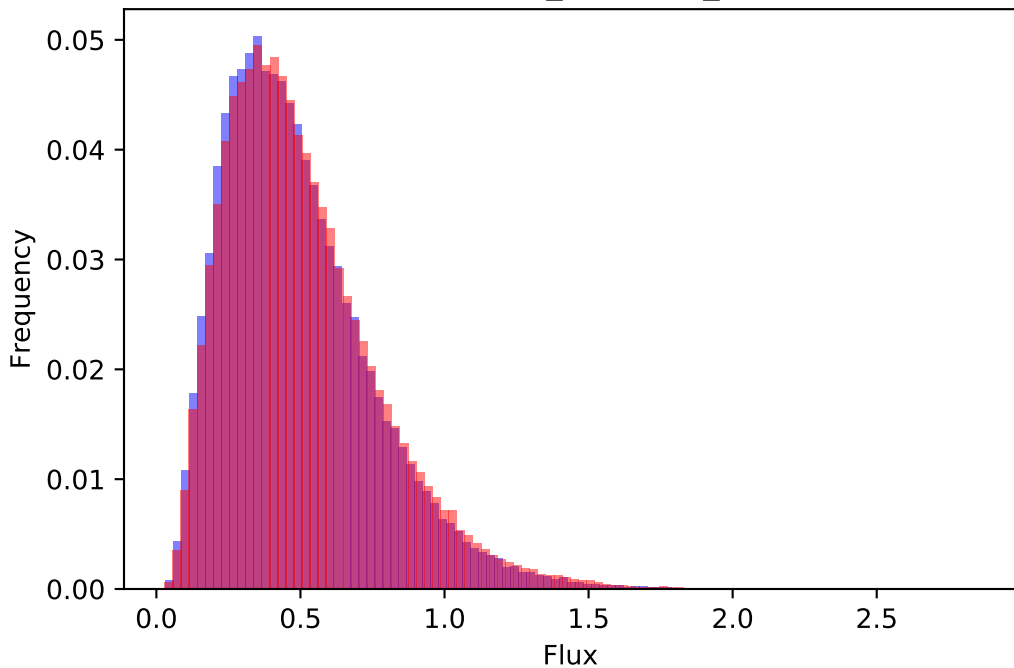
****440 : Tyr_h --> Tyr_c****



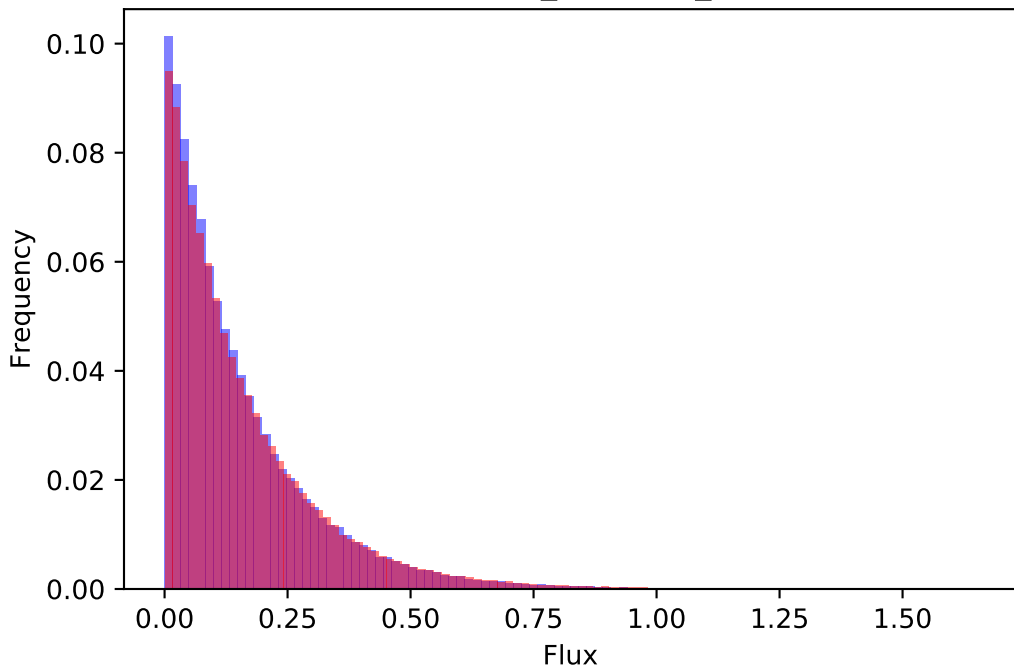
****441 : Tyr_c --> Tyr_m****



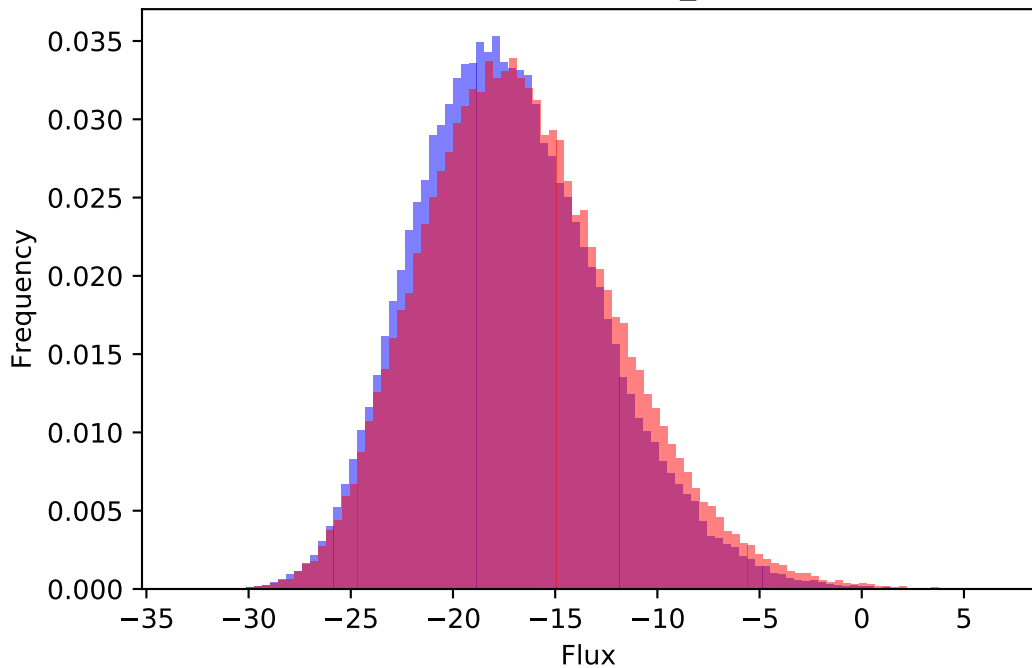
****442 : Val_h --> Val_c****



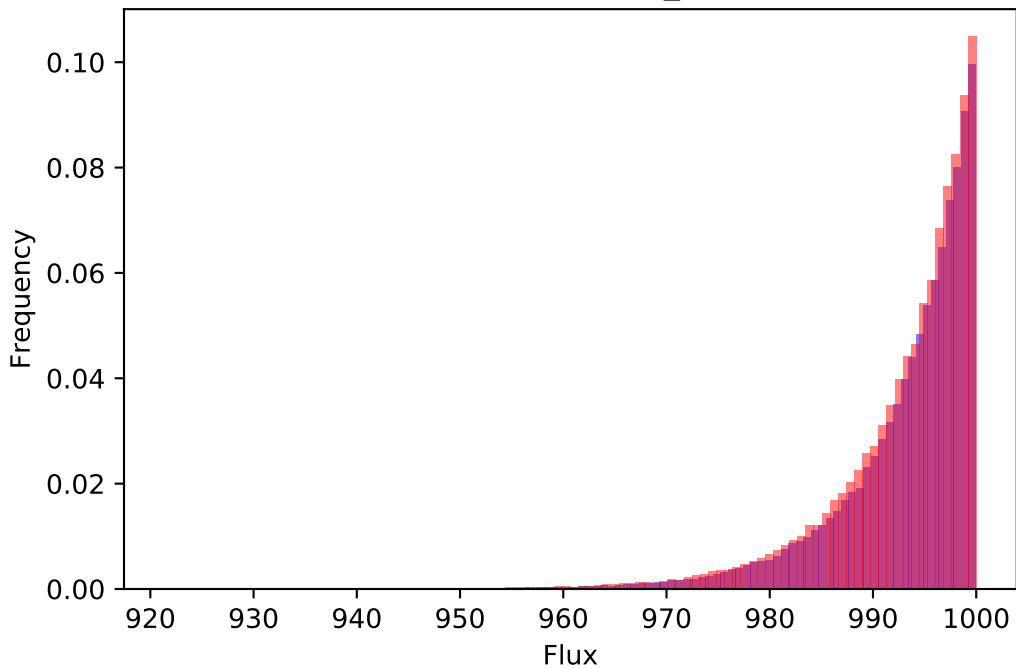
****443 : Val_c --> Val_m****



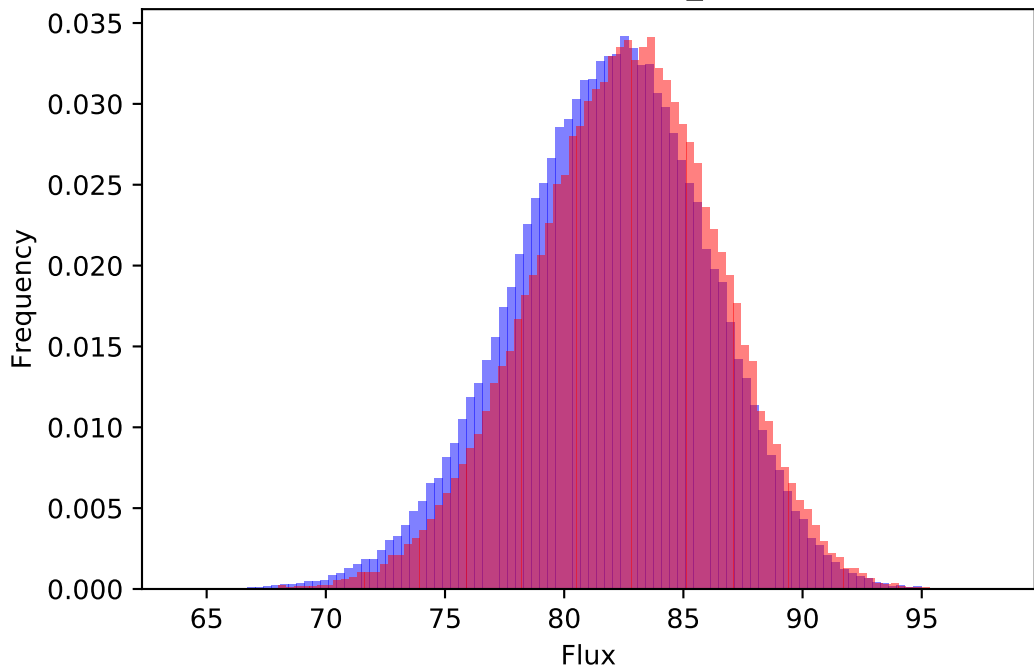
****444 : $\leq H_c$ ****



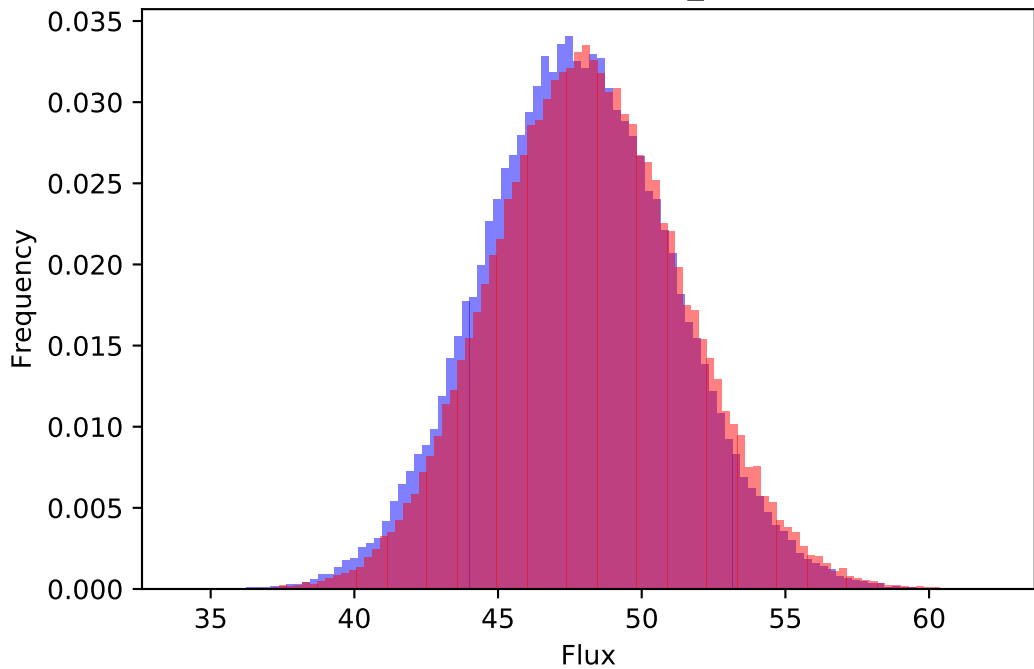
****445 : --> hnu_h****



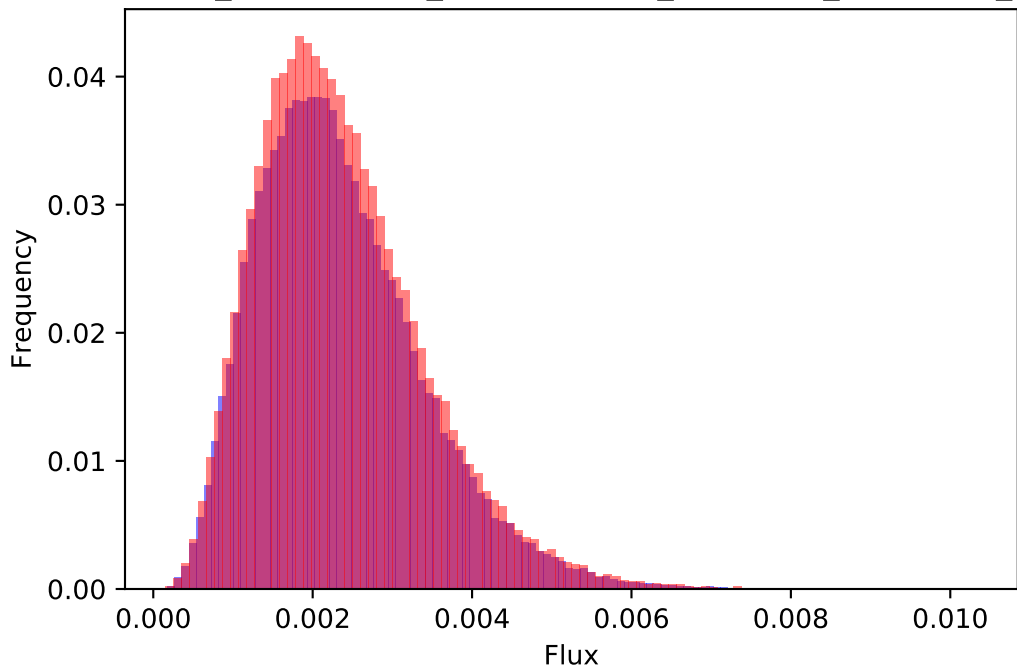
****446 : --> CO2_c****



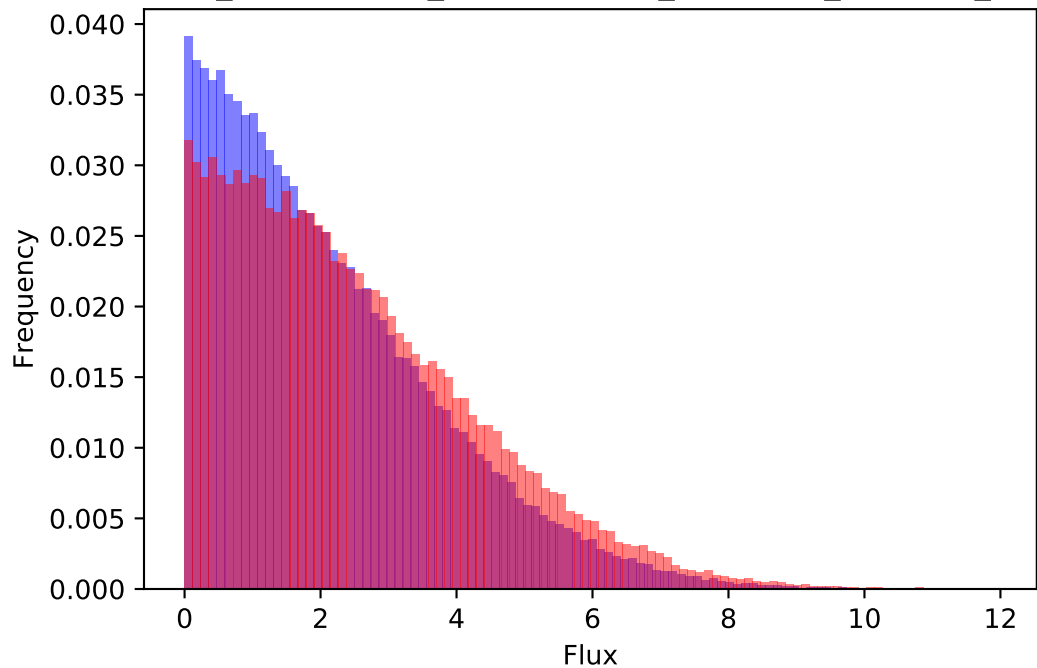
****447 : --> H2O_c****



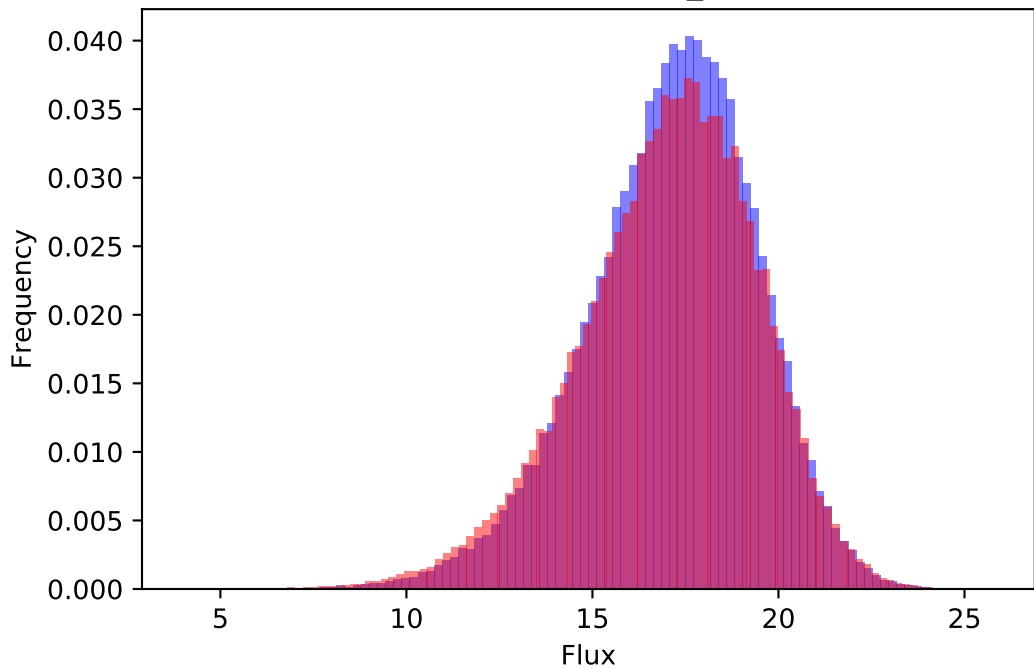
448 : 3.0 ATP_c + 3.0 H2O_c --> 3.0 ADP_c + 2.0 H_h + 3.0 Pi_c + Pi_h



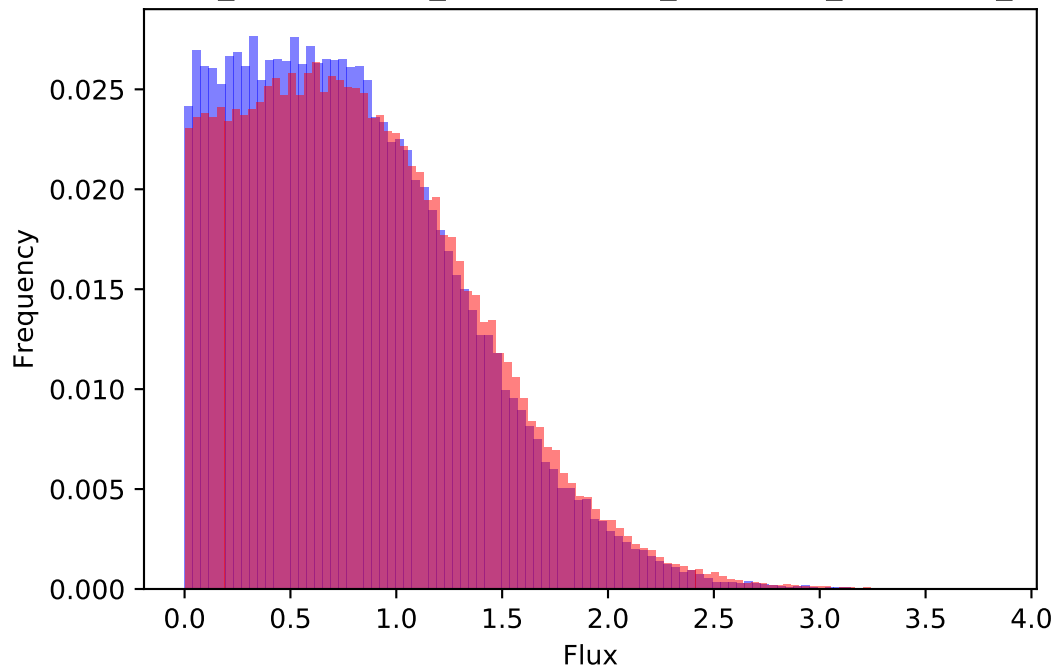
449 : 2.0 ATP_c + 2.0 H2O_c --> 2.0 ADP_c + 2.0 H_c + NO3_c + 2.0 Pi_c



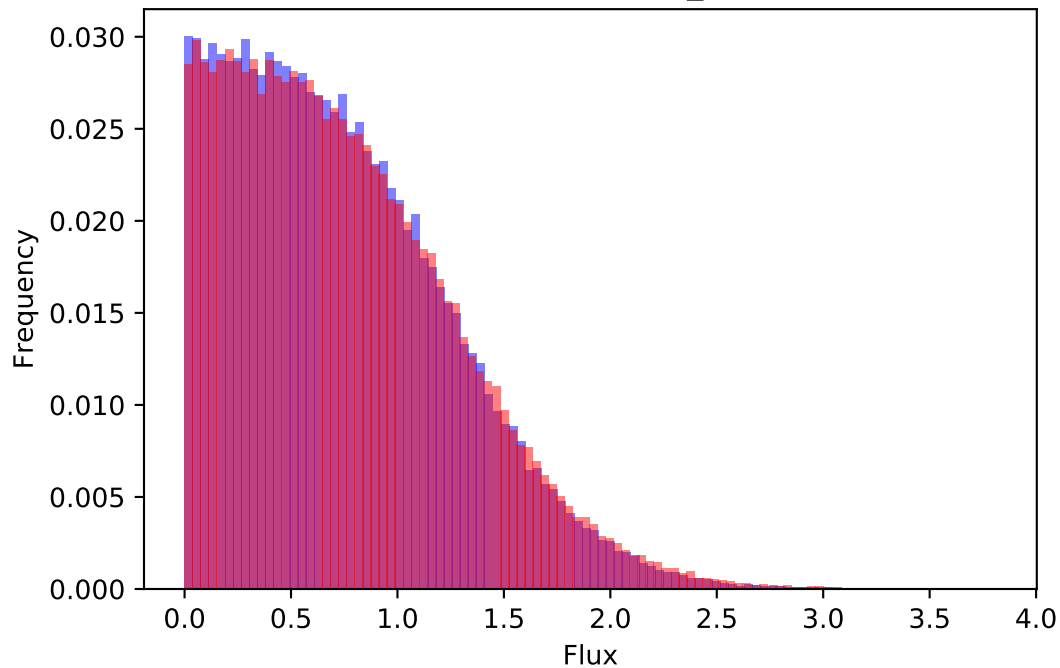
****450 : --> NH4_c****



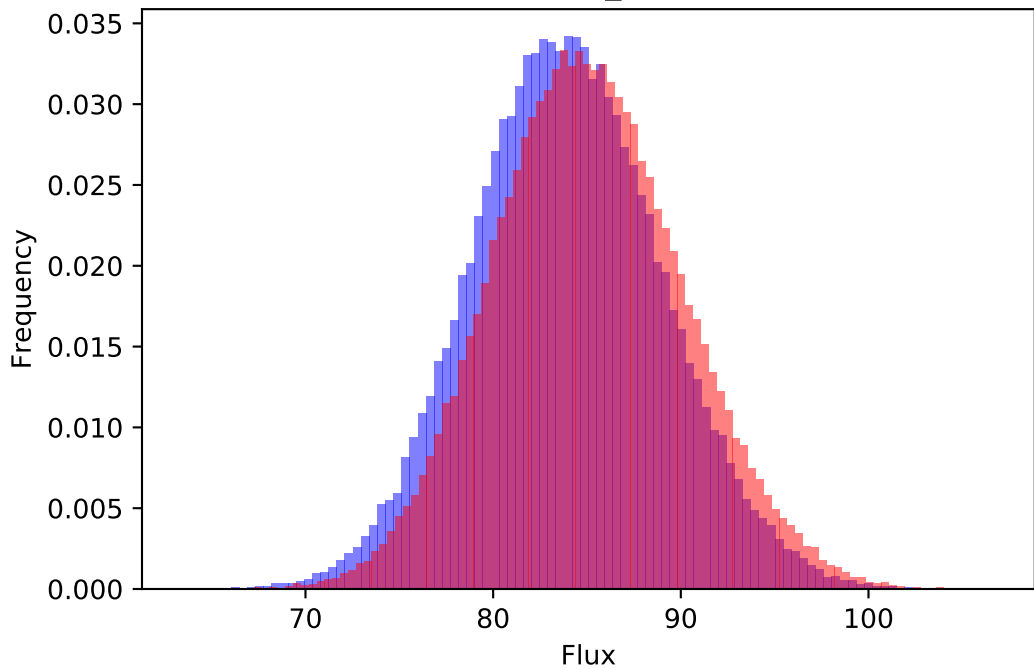
451 : 3.0 ATP_c + 3.0 H2O_c --> 3.0 ADP_c + 3.0 H_c + 3.0 Pi_c + SO4_c



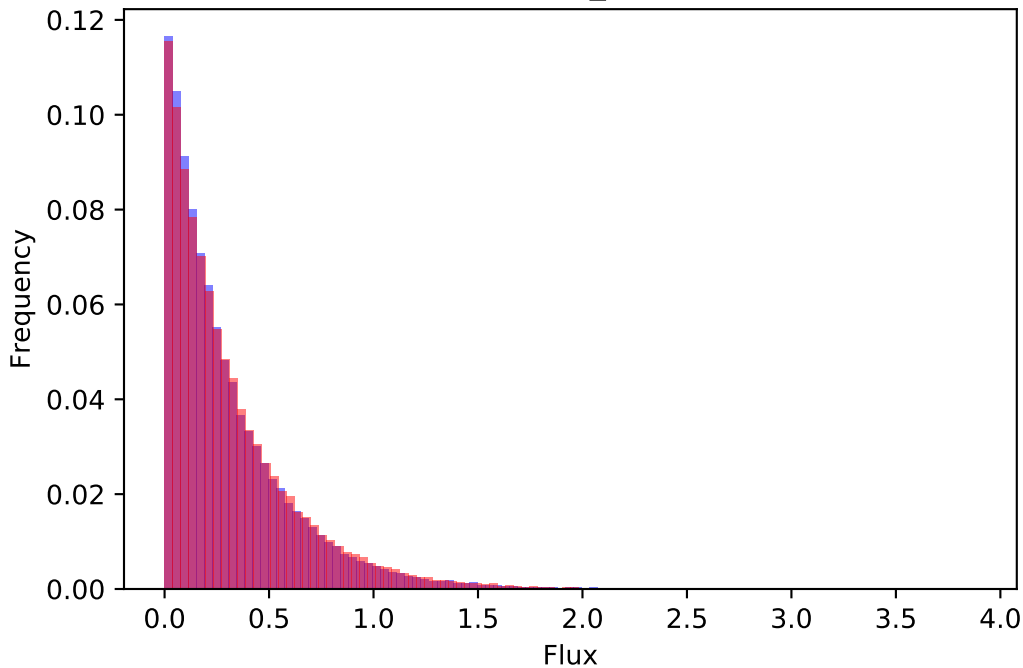
****452 : --> H2S_c****



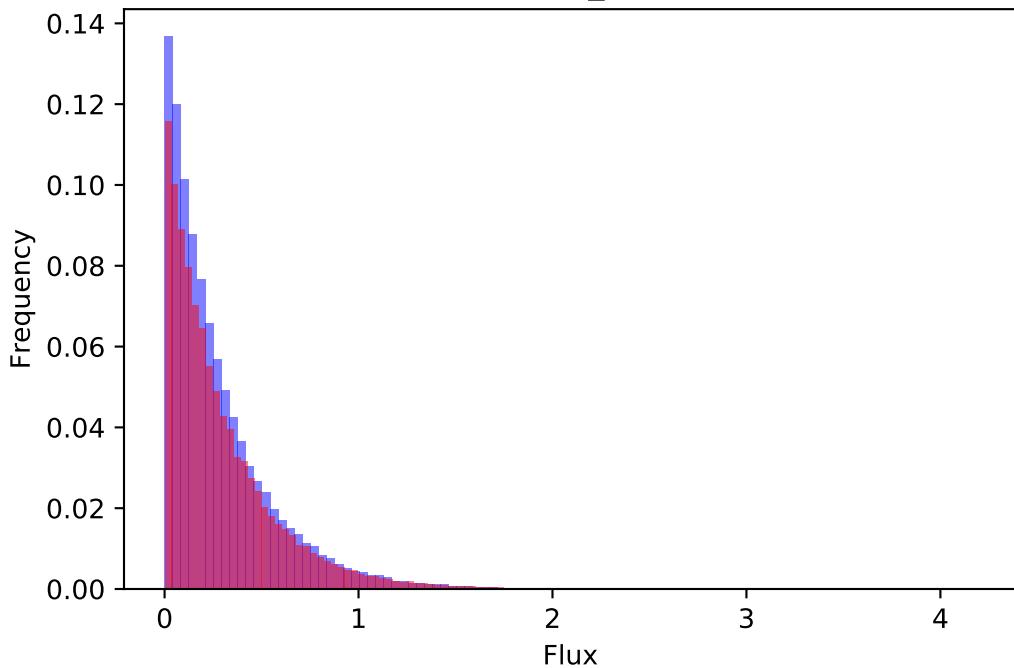
****453 : O2_c --> ****



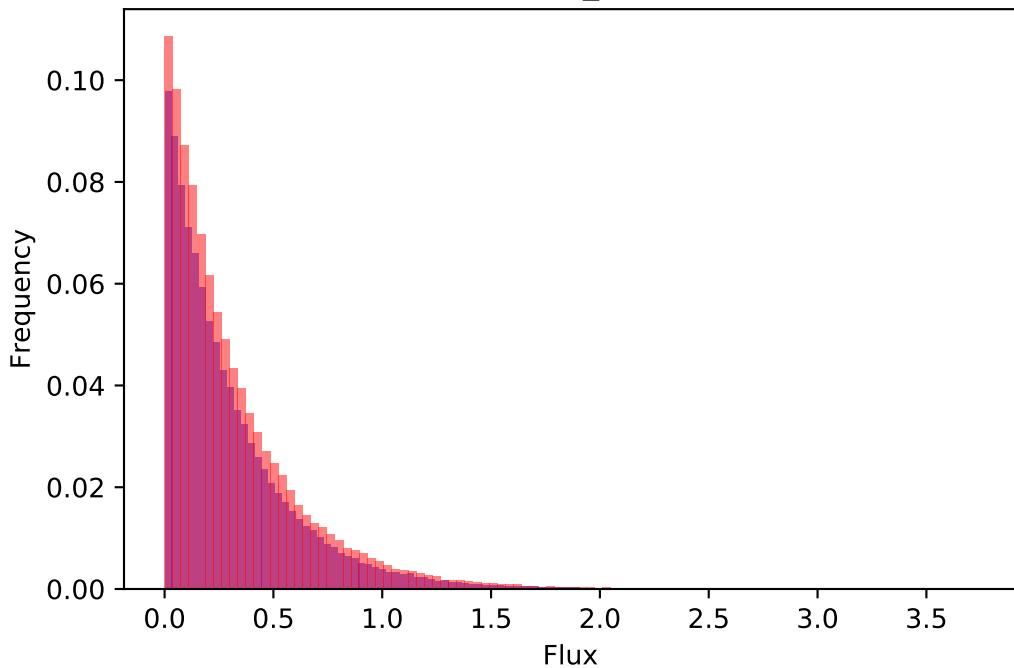
****454 : Ala_c --> ****



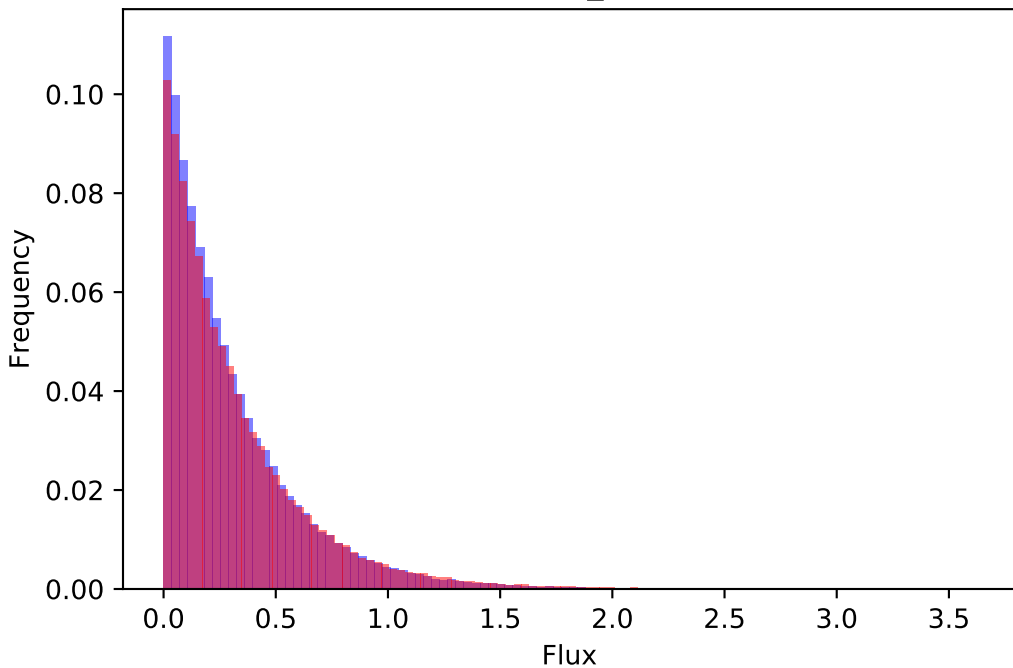
****455 : Ala_h --> ****



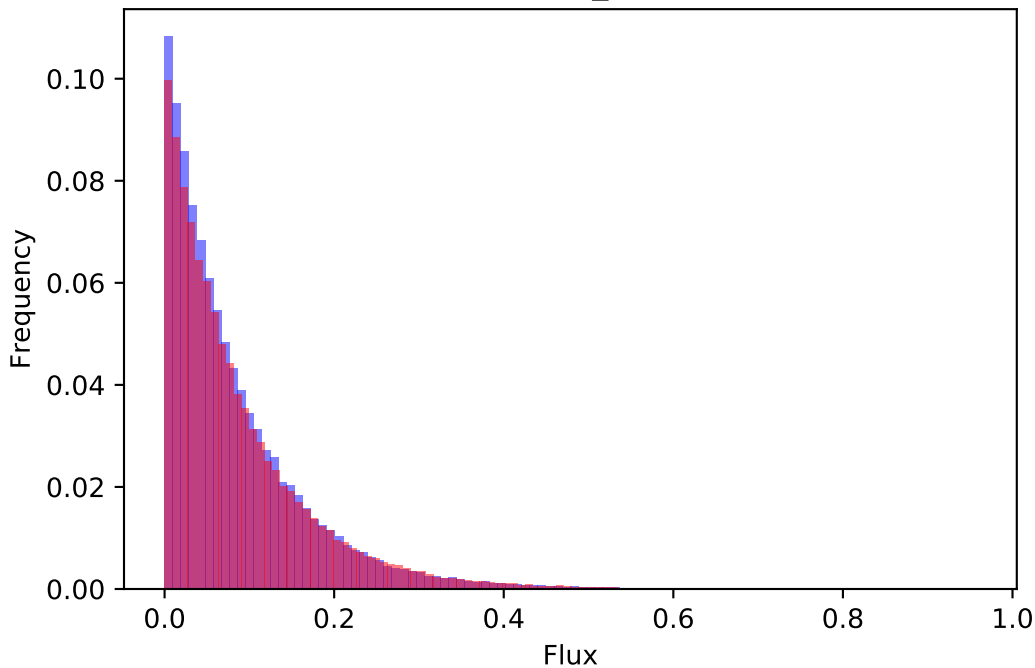
****456 : Ala_m --> ****



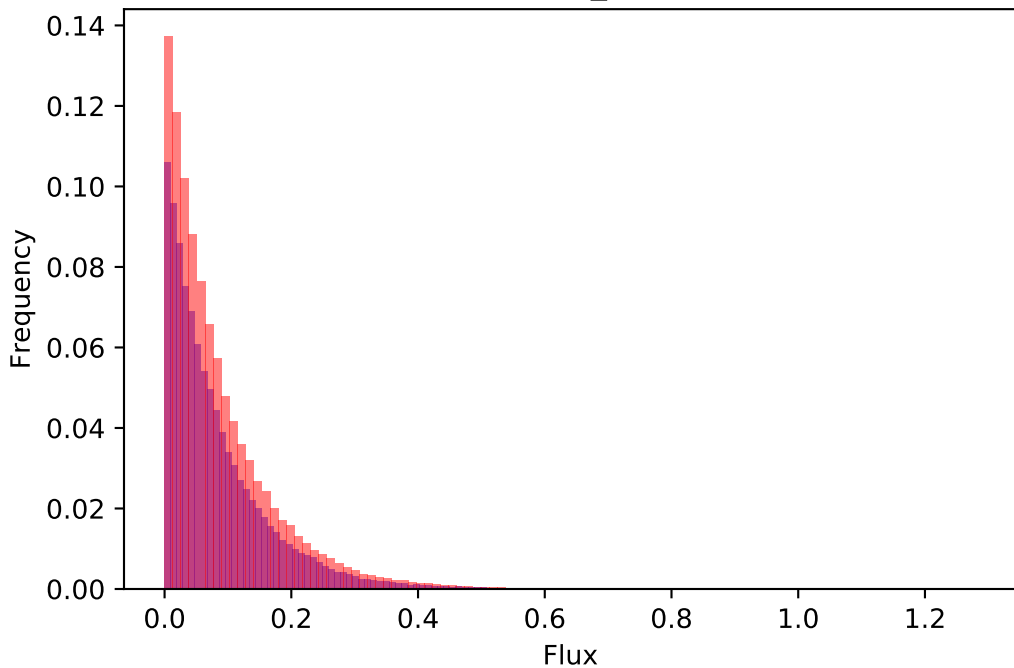
****457 : Ala_p --> ****



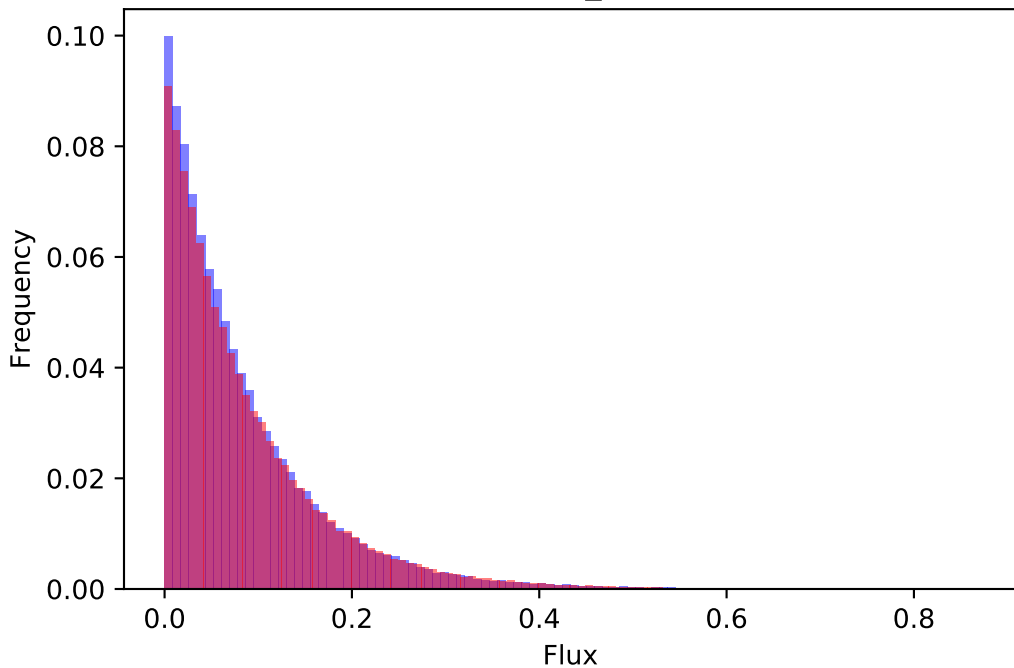
****458 : Arg_c --> ****



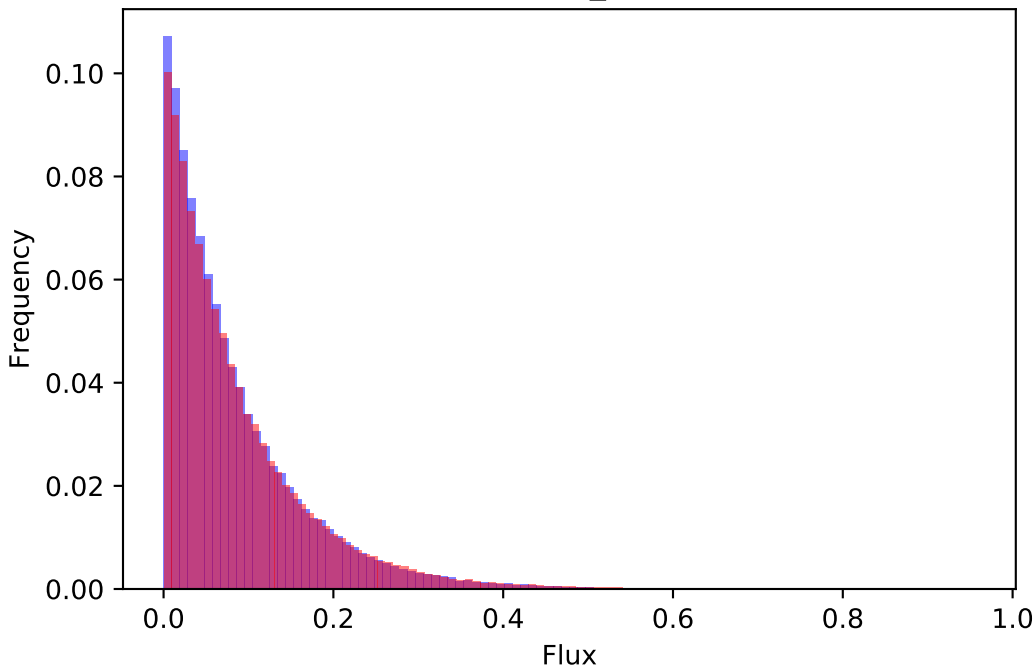
****459 : Arg_h --> ****



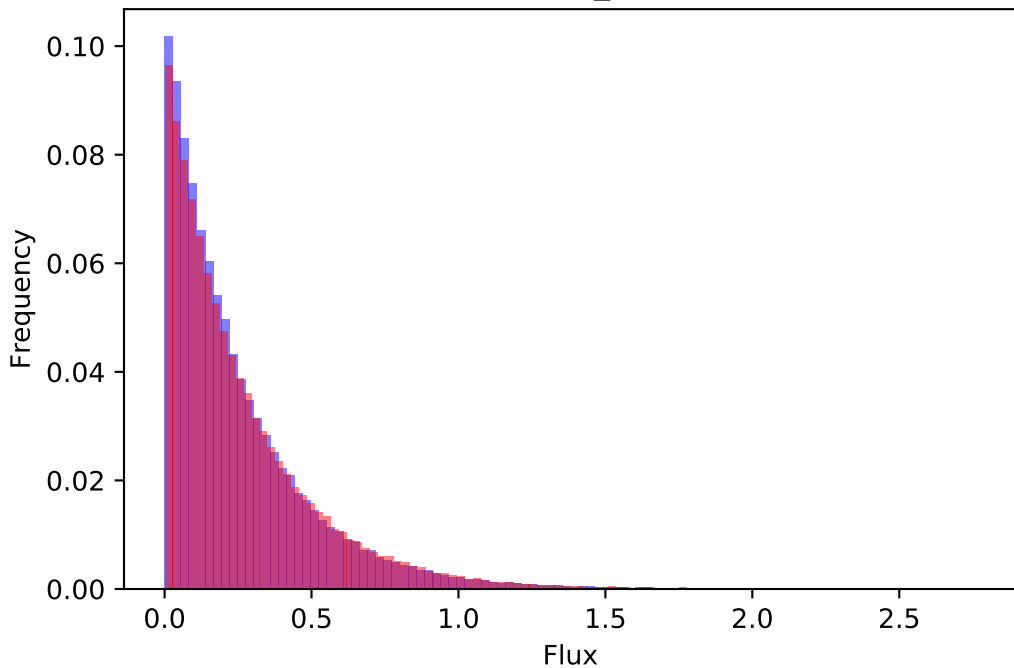
****460 : Arg_m --> ****



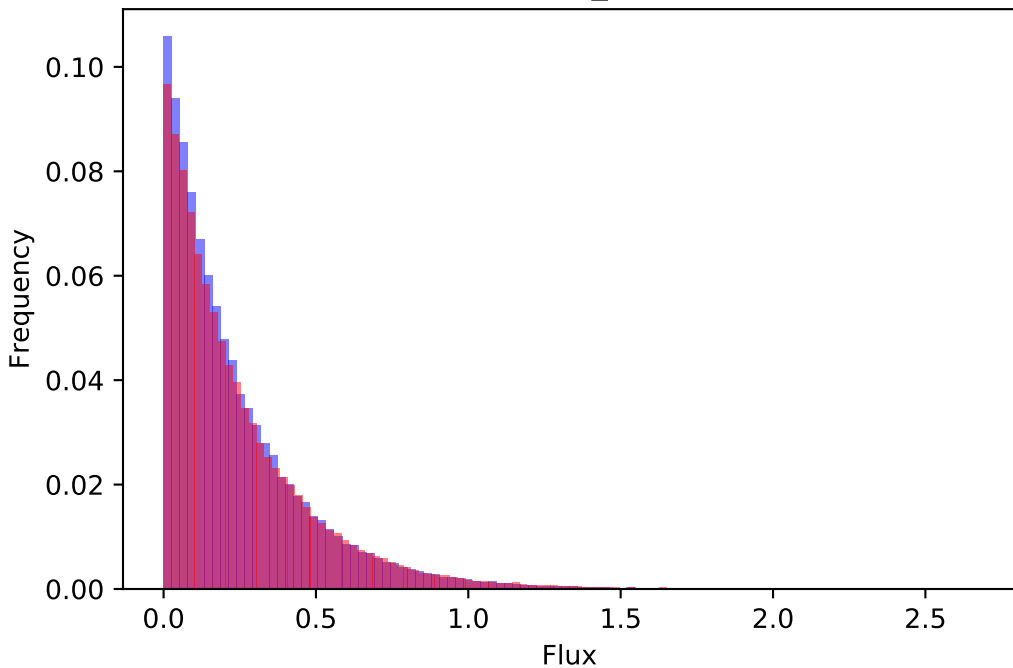
****461 : Arg_p --> ****



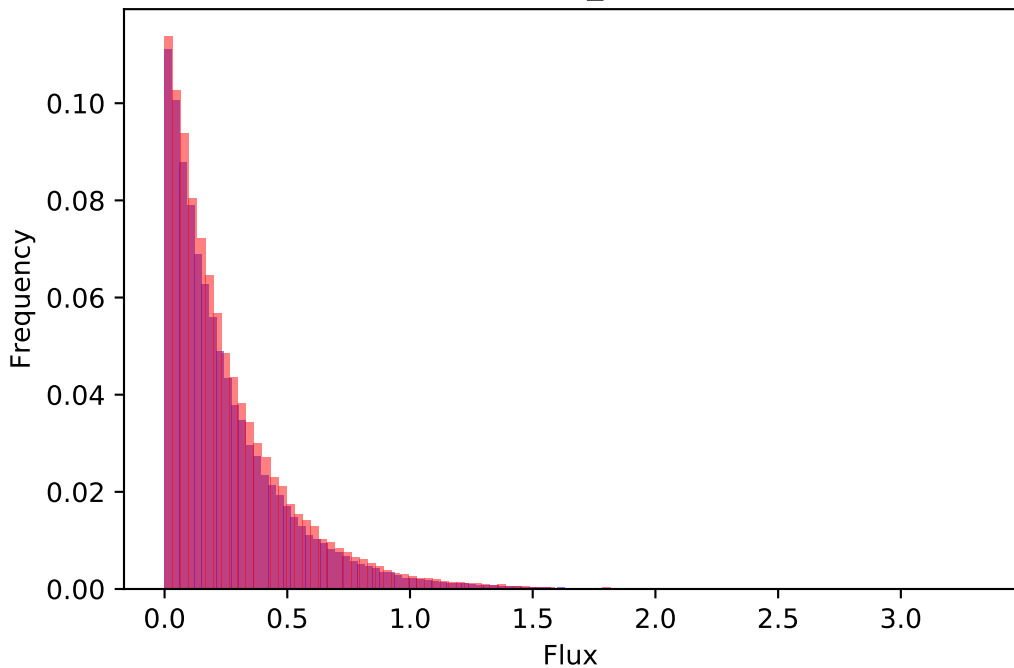
****462 : Asn_c --> ****



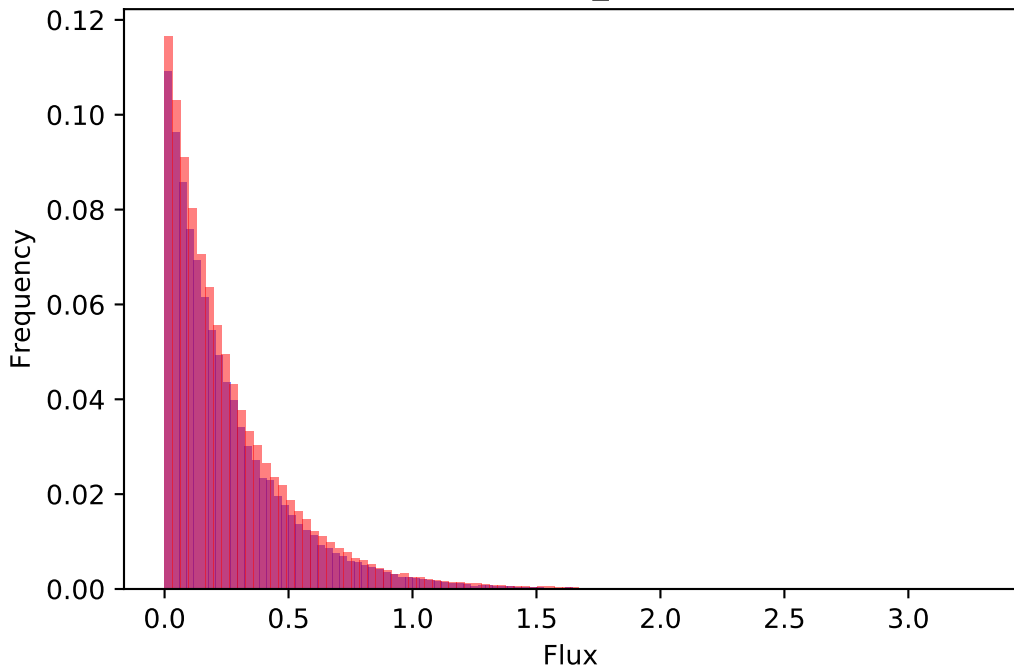
****463 : Asn_h --> ****



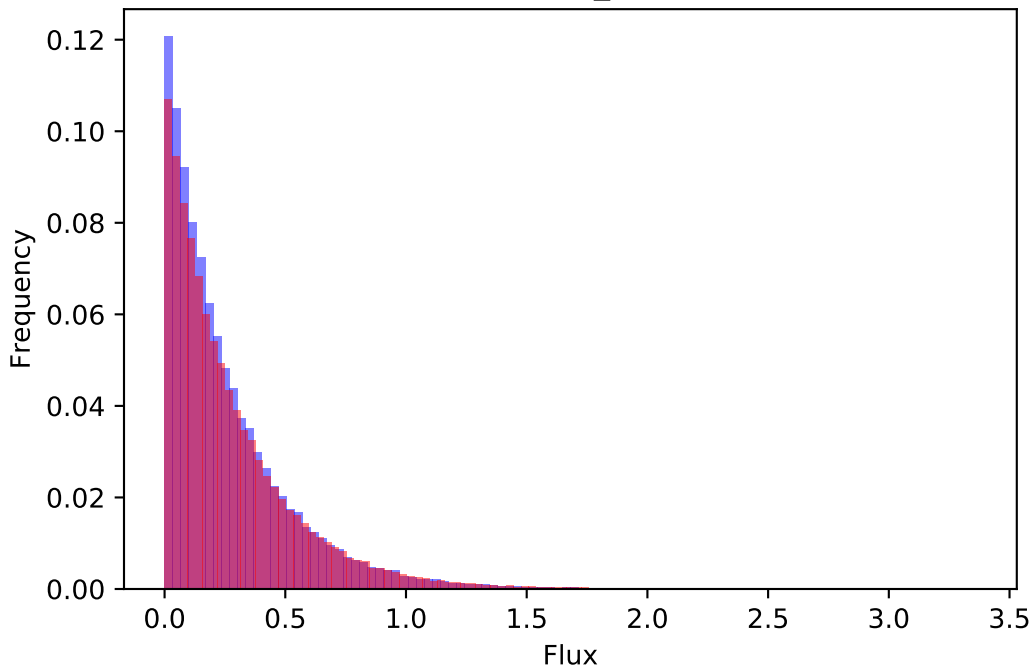
****464 : Asn_m --> ****



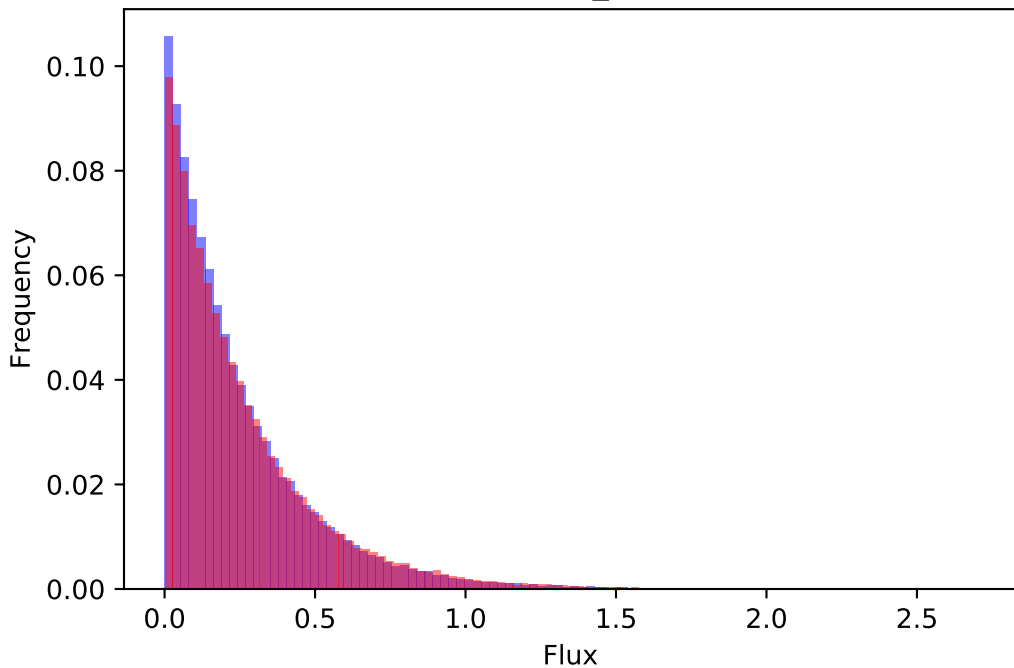
****465 : Asn_p --> ****



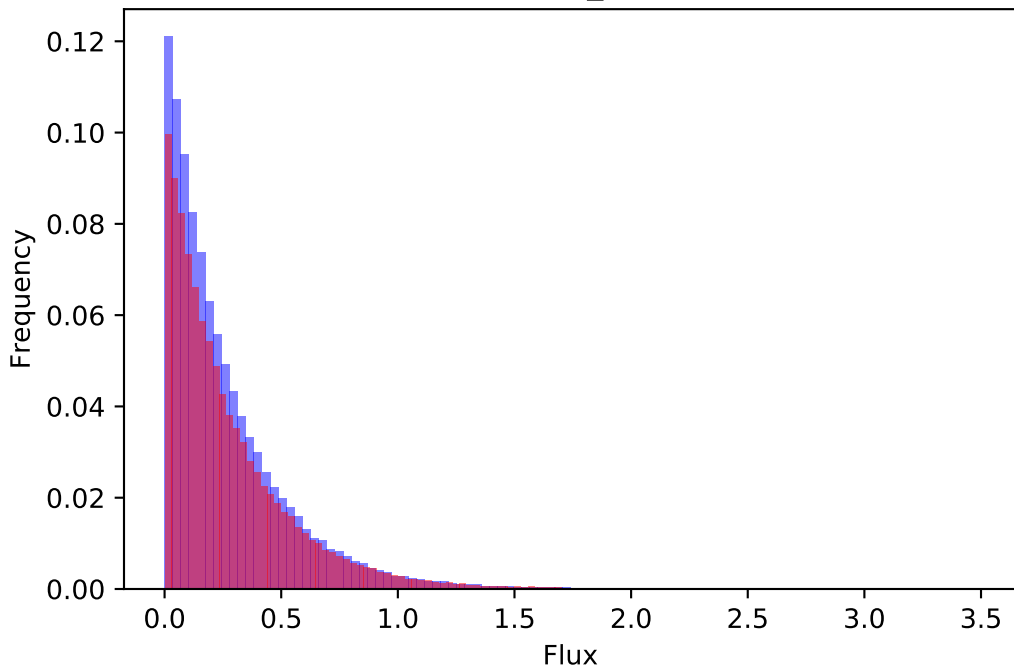
****466 : Asp_c --> ****



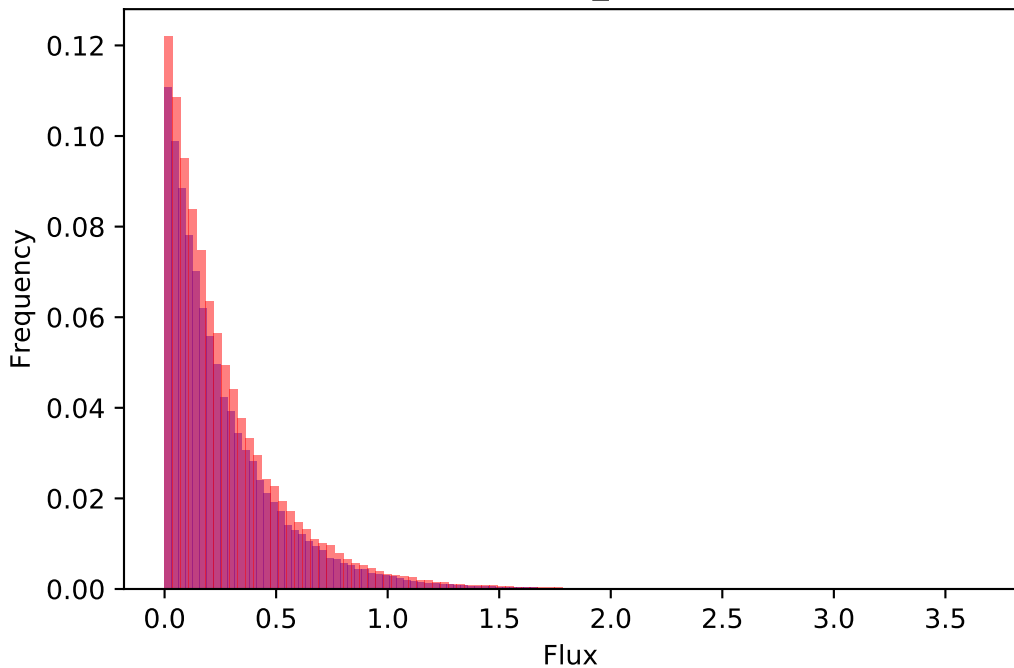
****467 : Asp_h --> ****



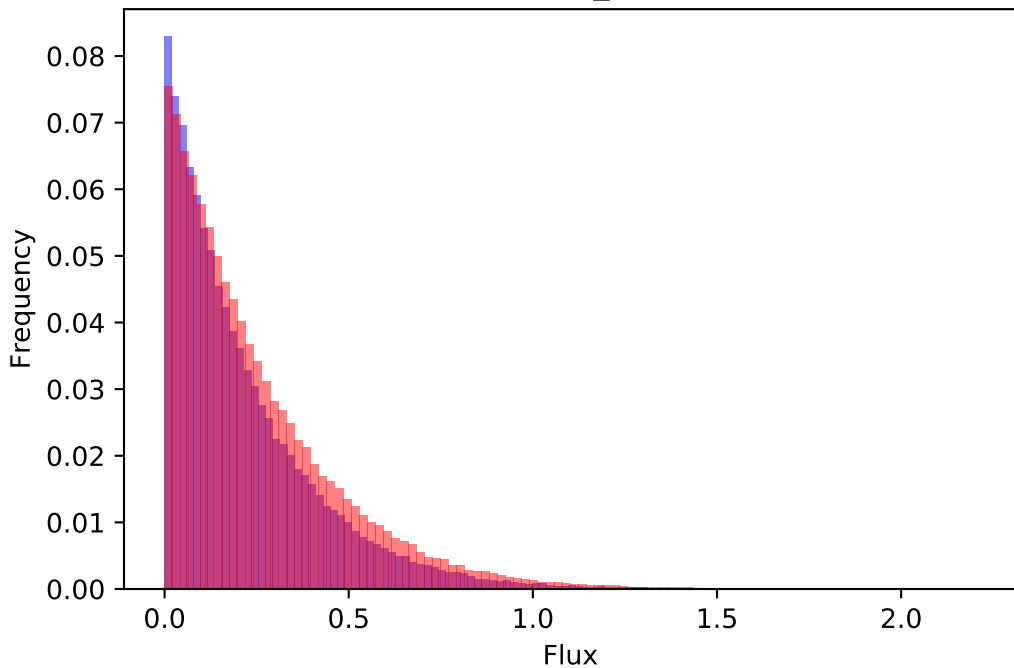
****468 : Asp_m --> ****



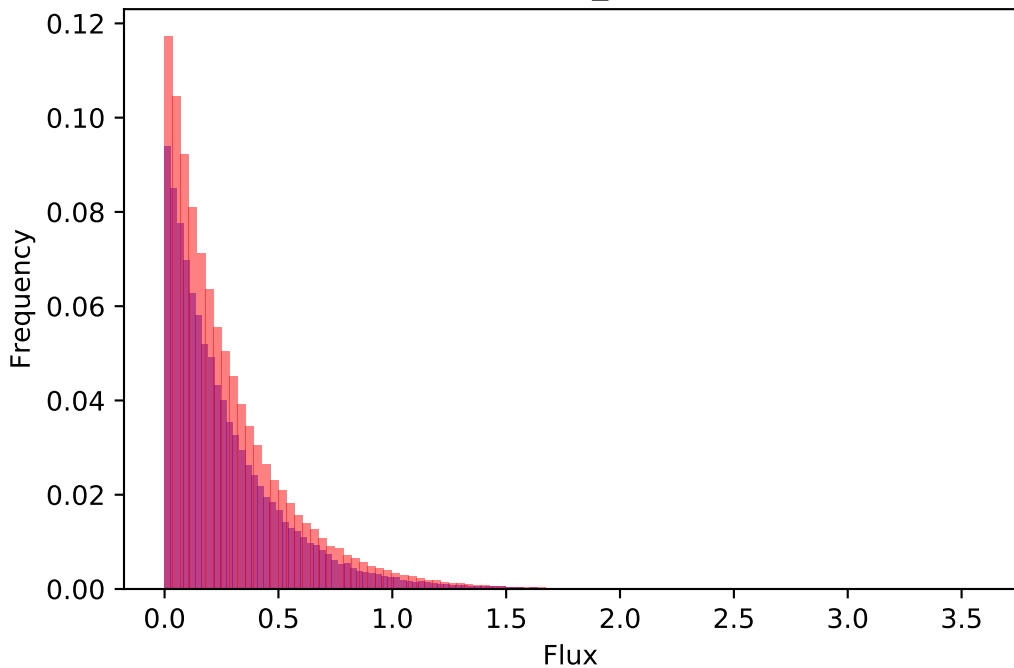
****469 : Asp_p --> ****



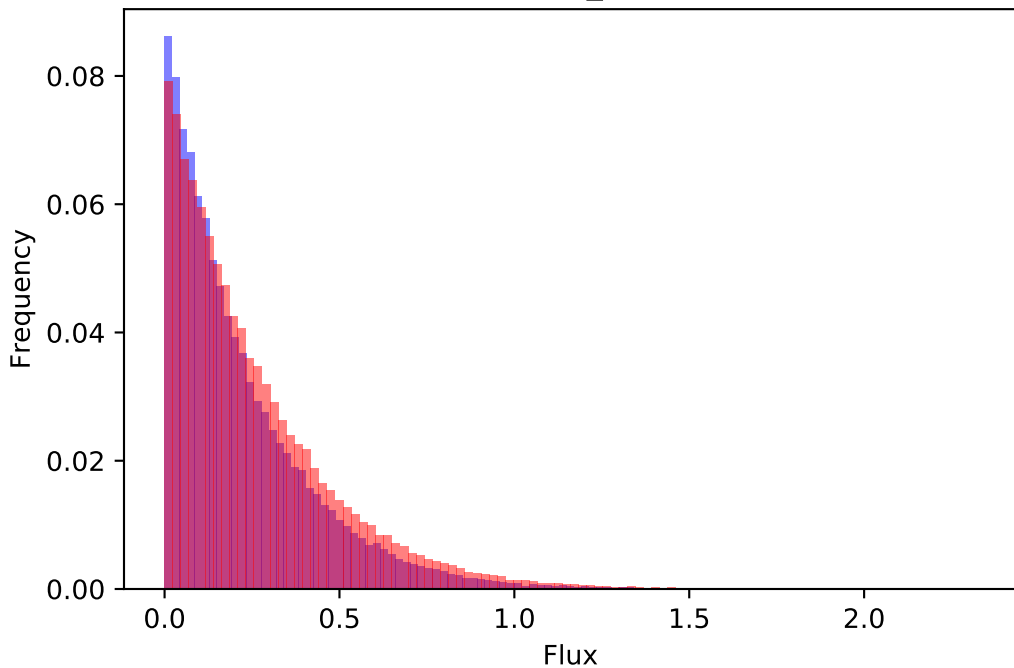
****470 : Cys_c --> ****



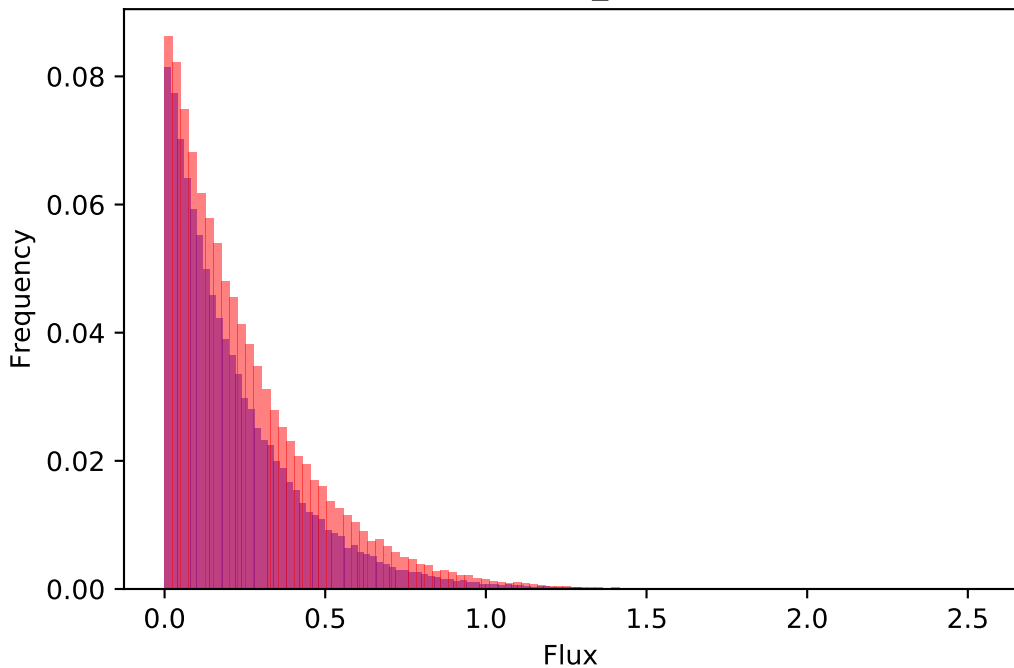
****471 : Cys_h --> ****



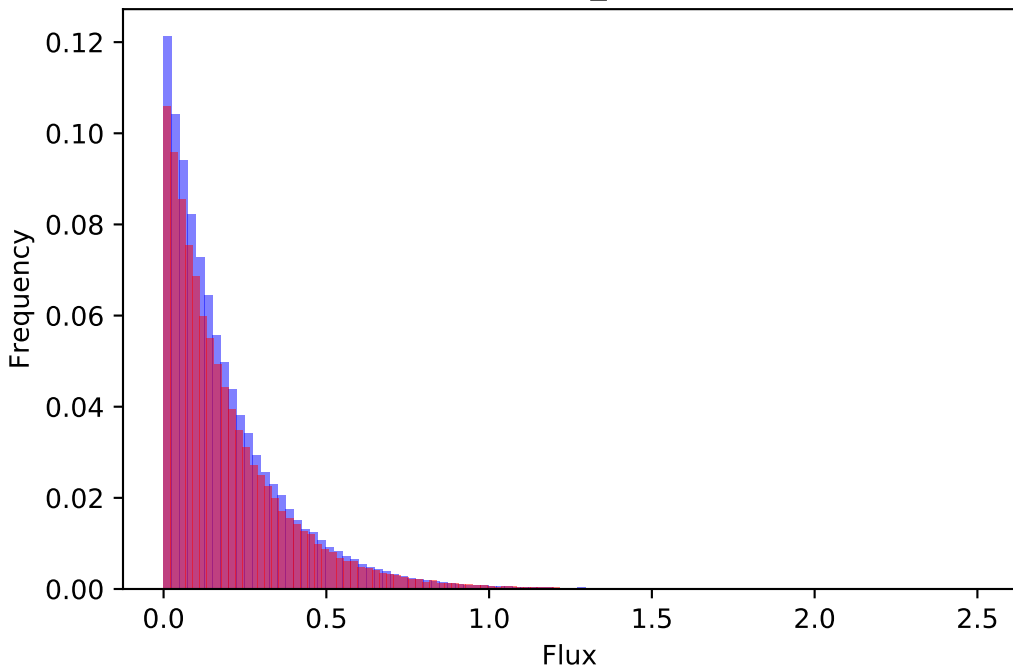
****472 : Cys_m --> ****



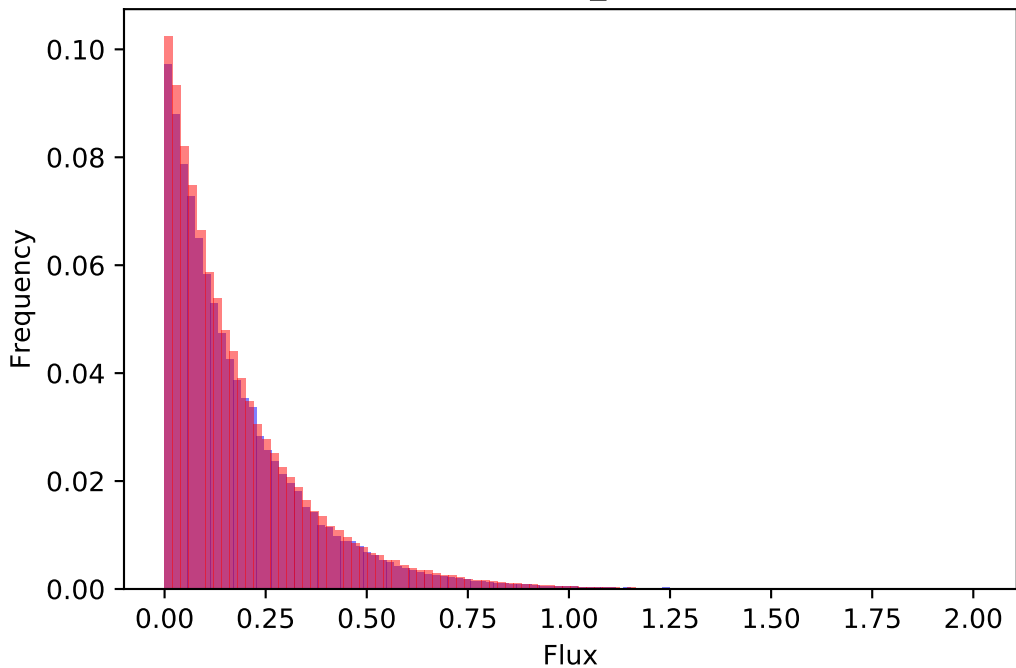
****473 : Cys_p --> ****



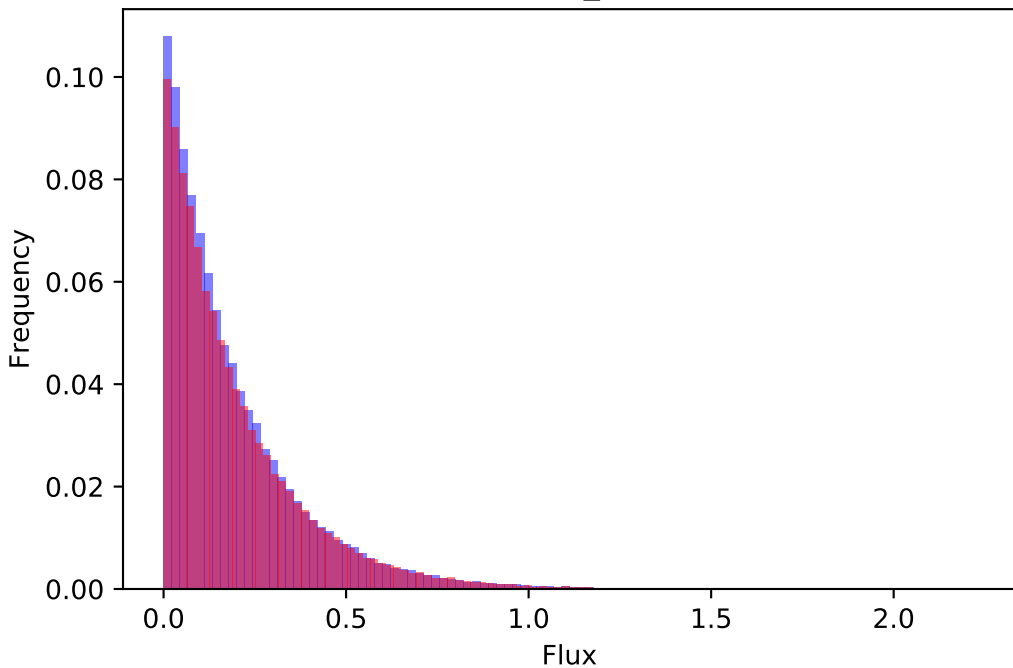
474 : Gln_c -->



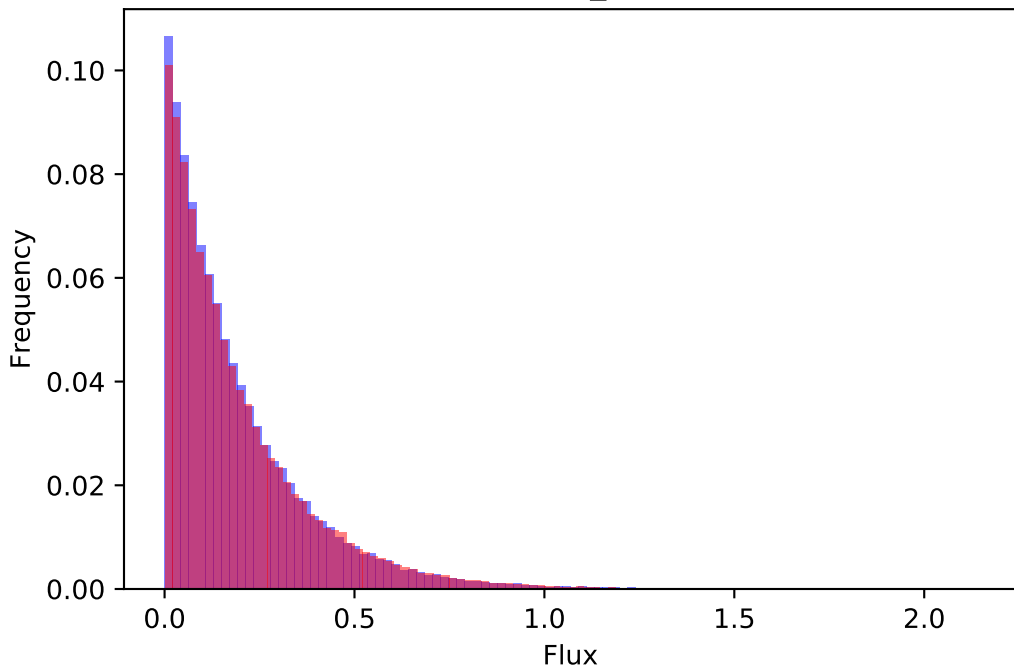
475 : Gln_h -->



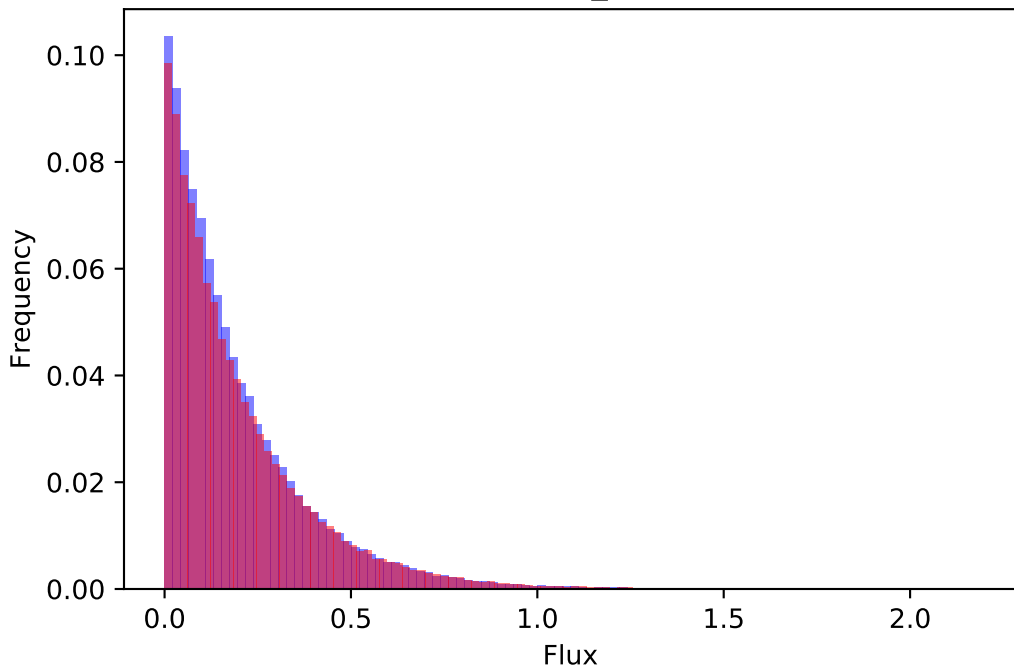
****476 : Gln_m --> ****



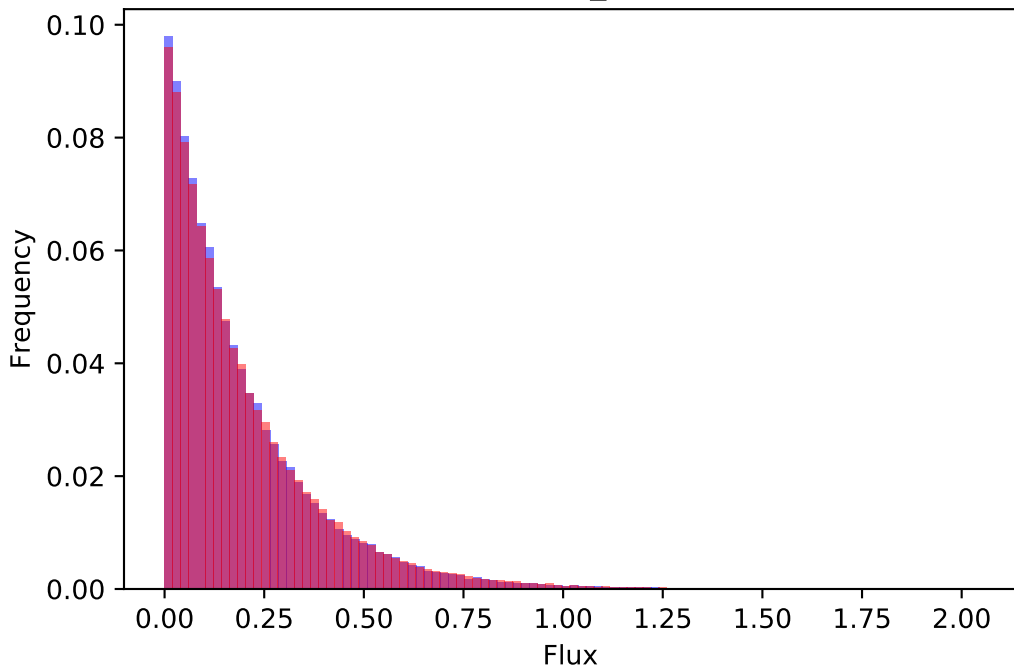
477 : Gln_p -->



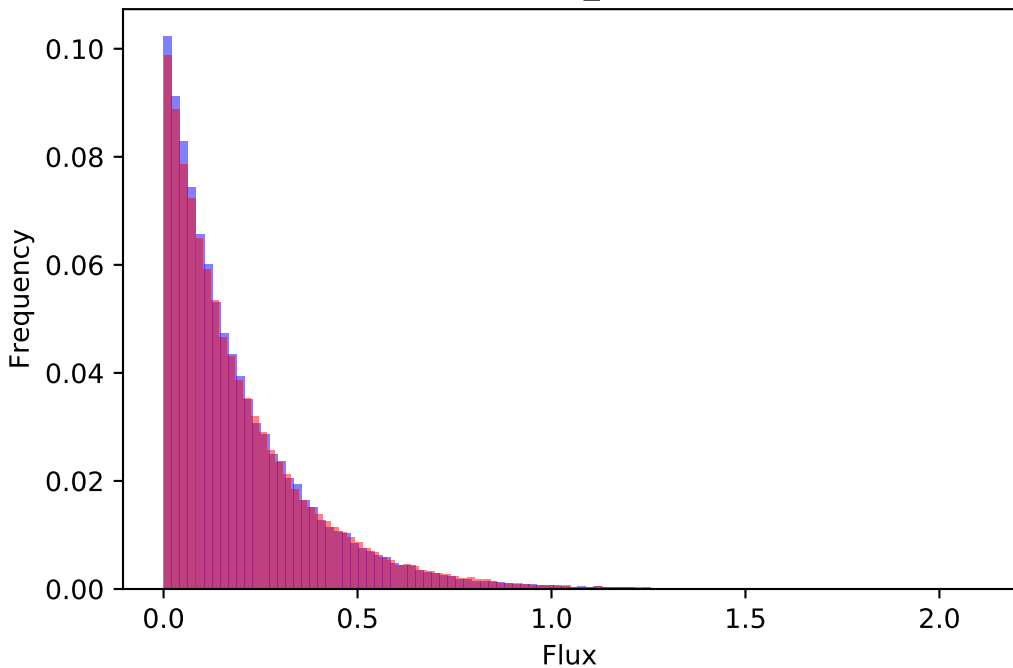
478 : Glu_c -->



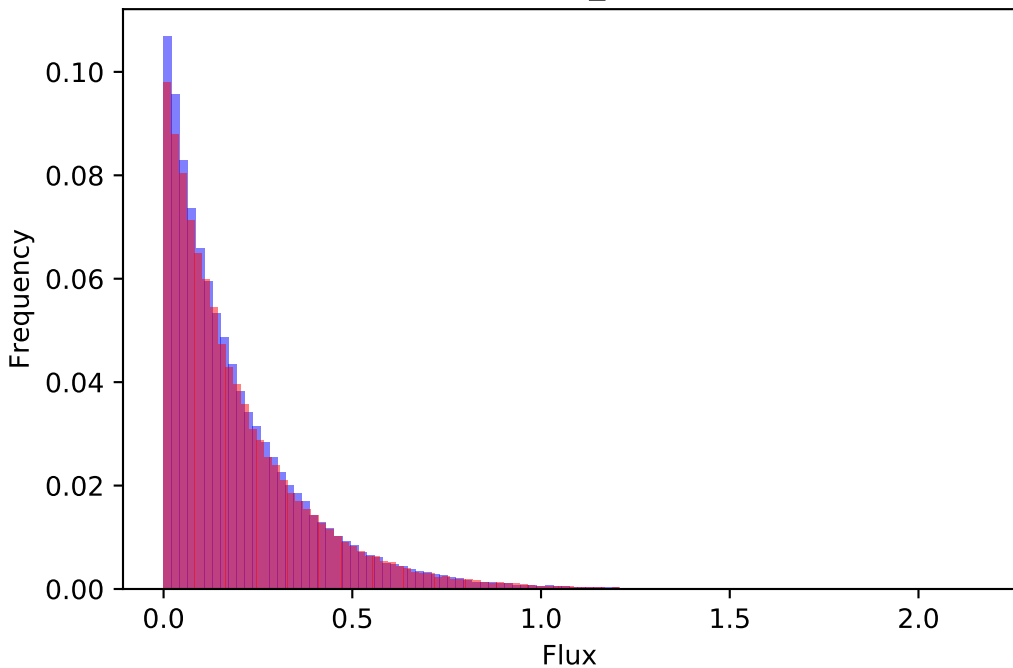
****479 : Glu_h --> ****



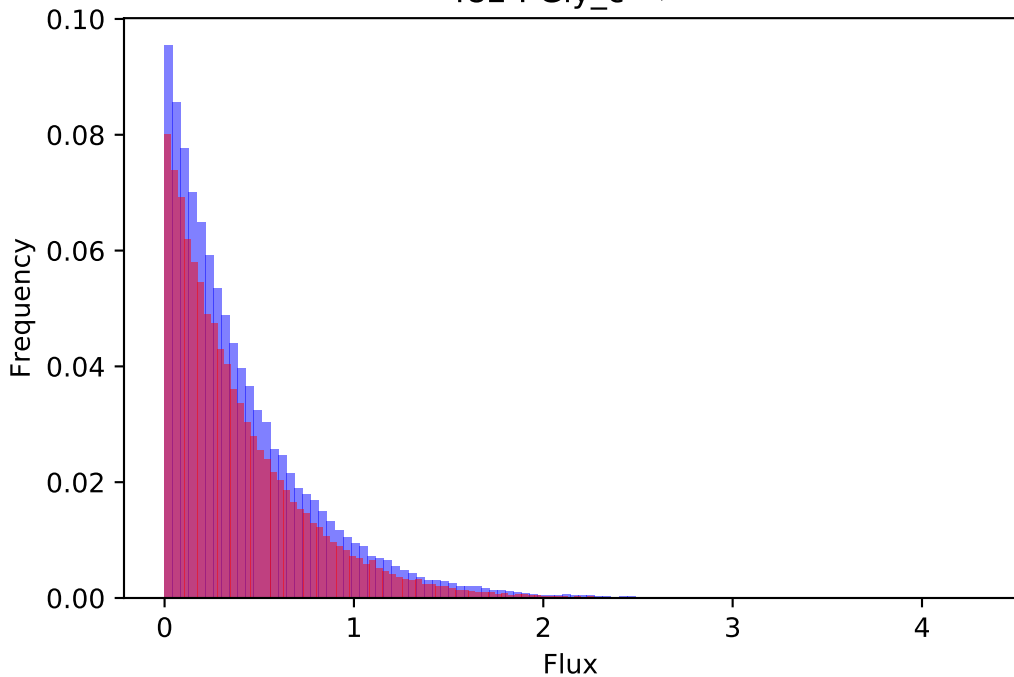
****480 : Glu_m --> ****



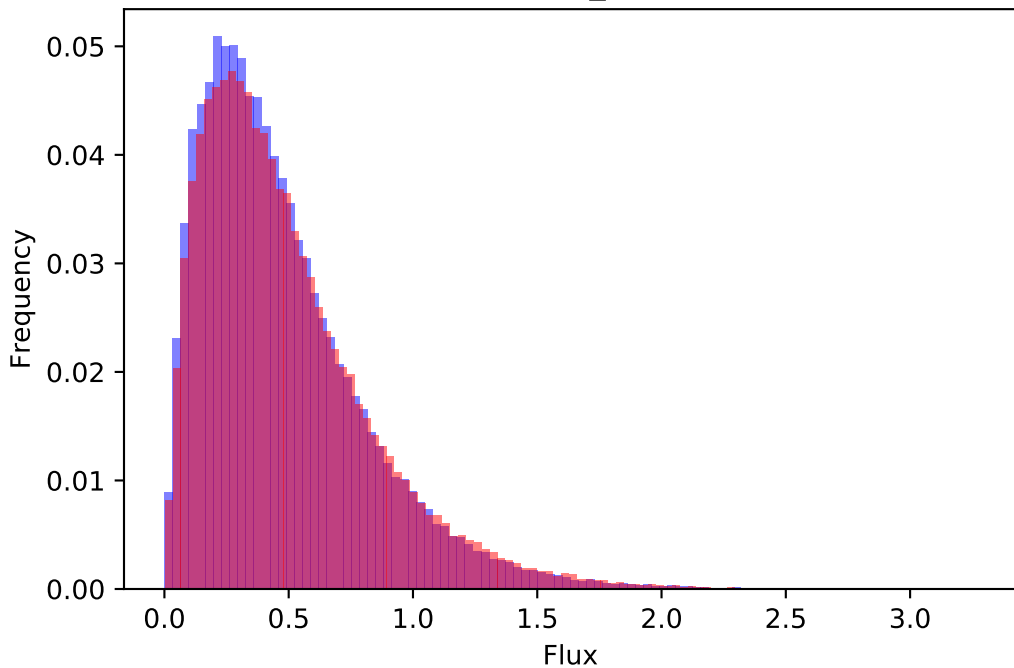
****481 : Glu_p --> ****



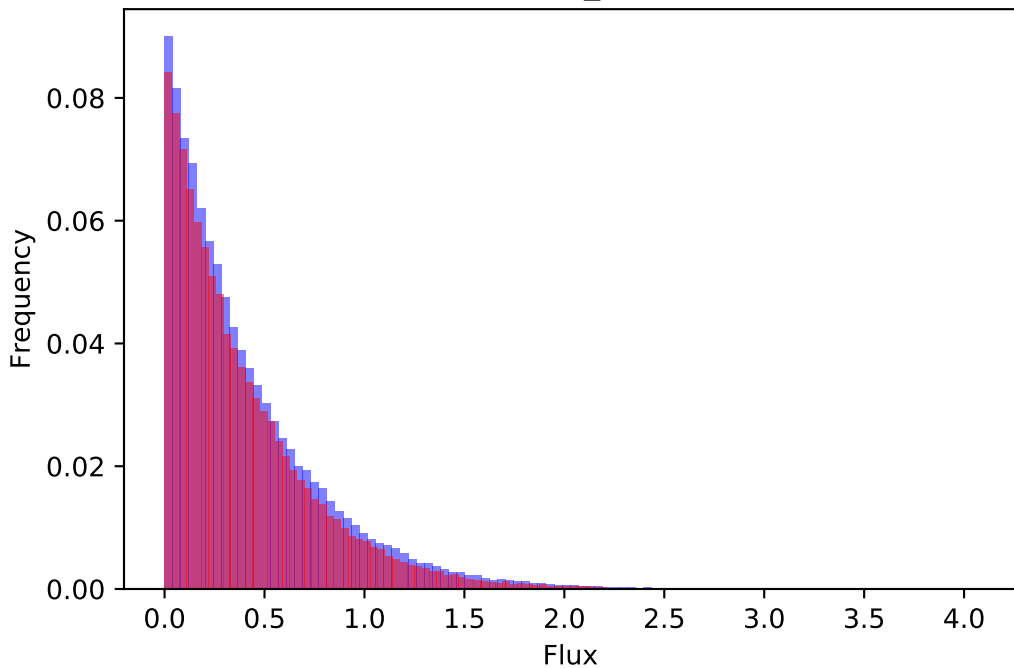
****482 : Gly_c --> ****



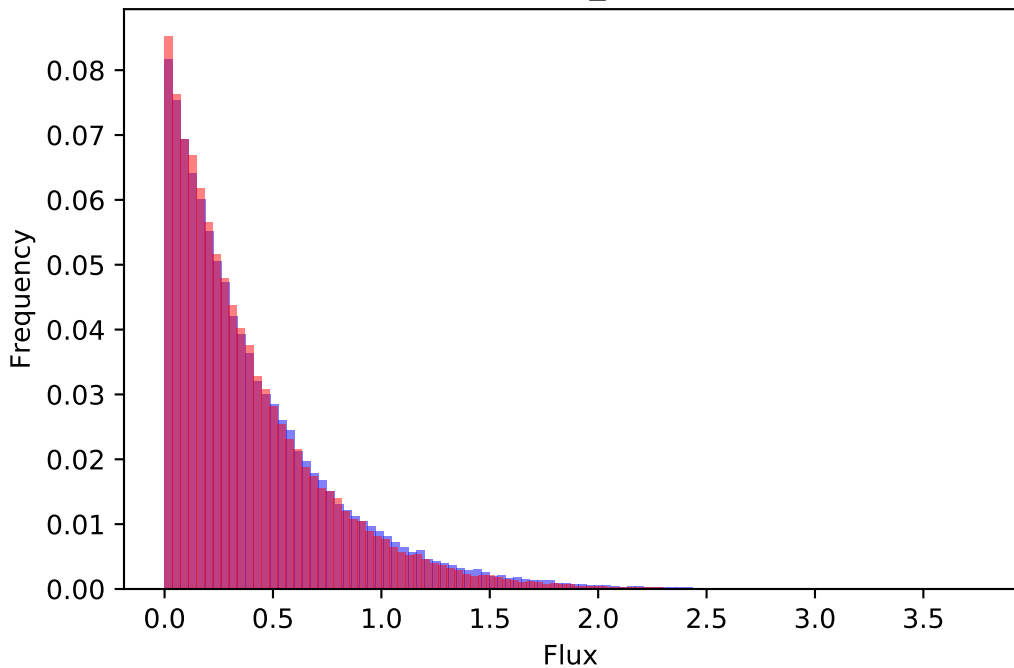
****483 : Gly_h --> ****



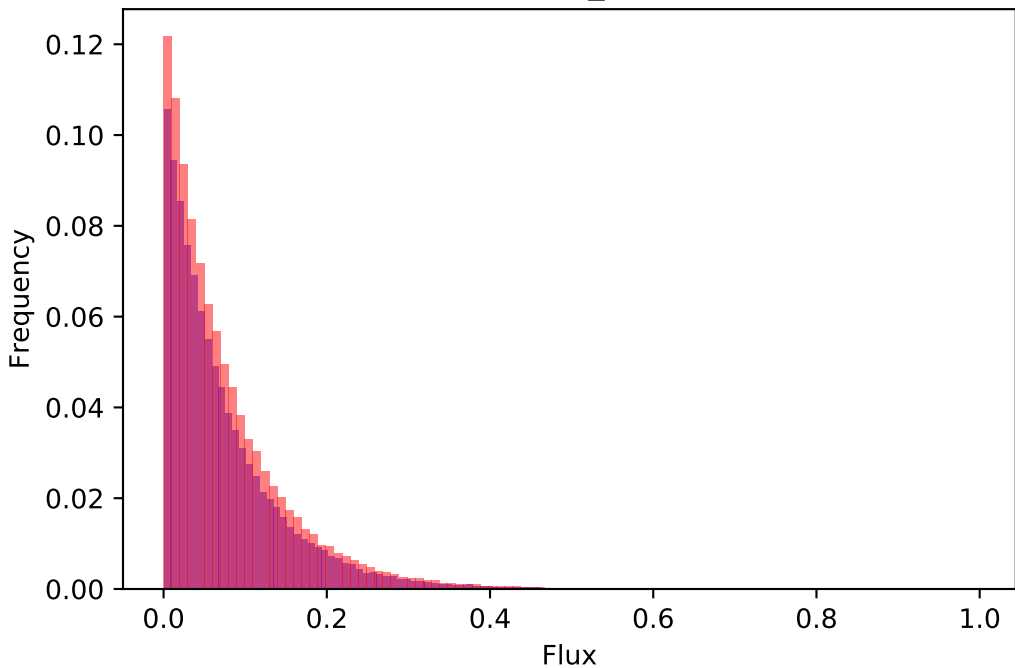
****484 : Gly_m --> ****



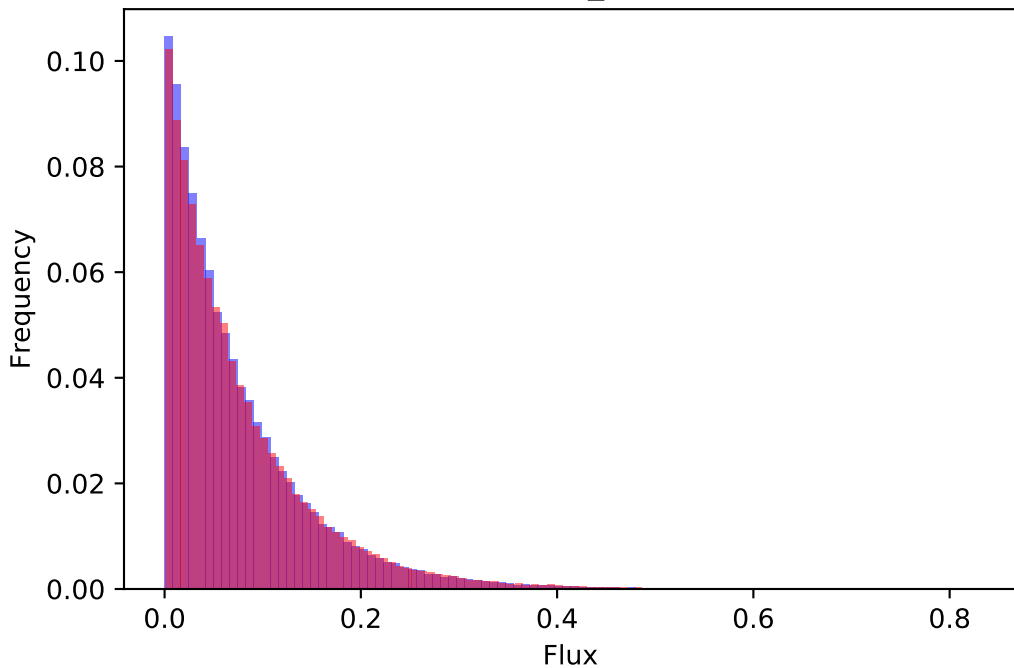
****485 : Gly_p --> ****



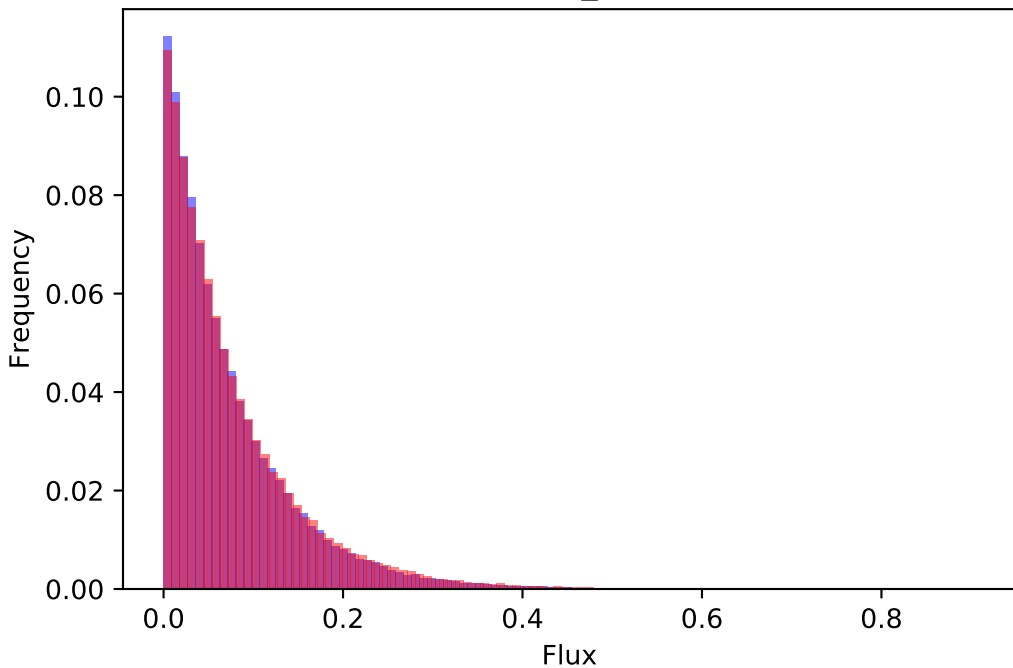
****486 : His_c --> ****



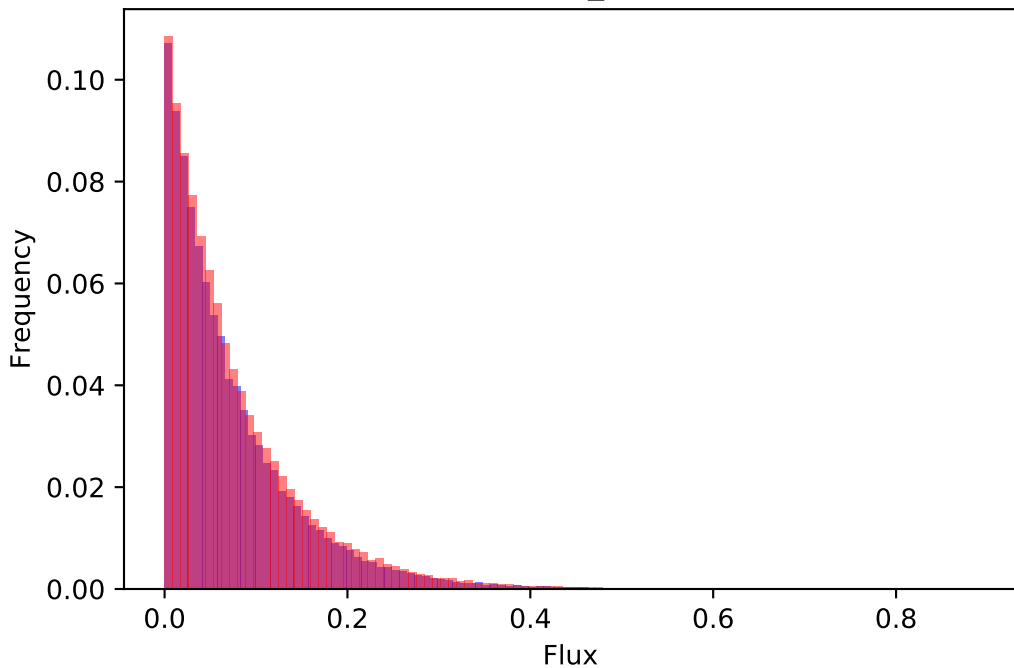
****487 : His_h --> ****



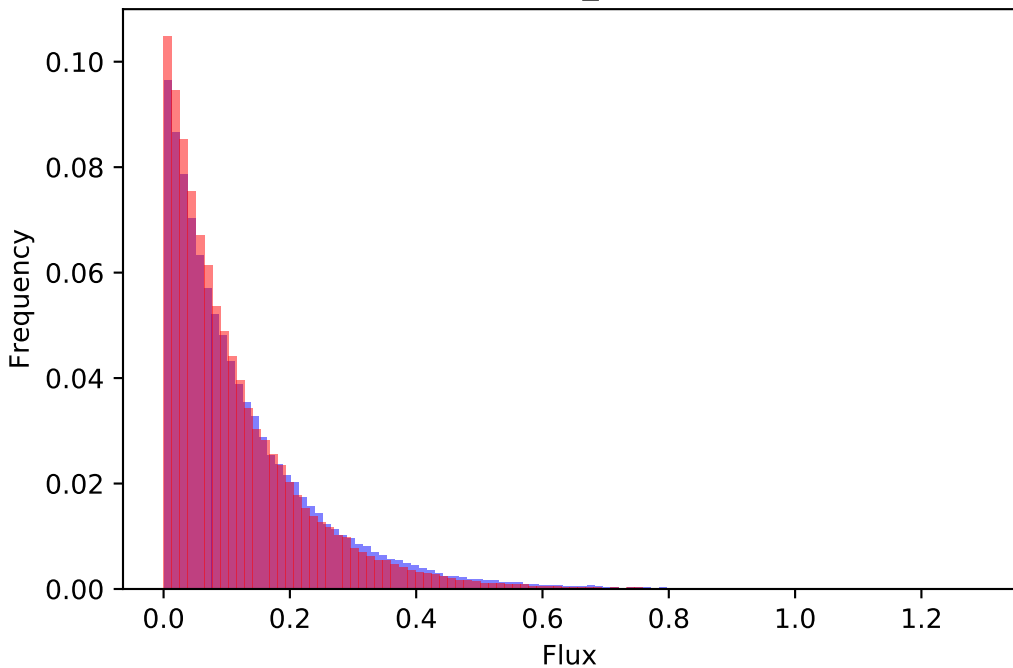
****488 : His_m --> ****



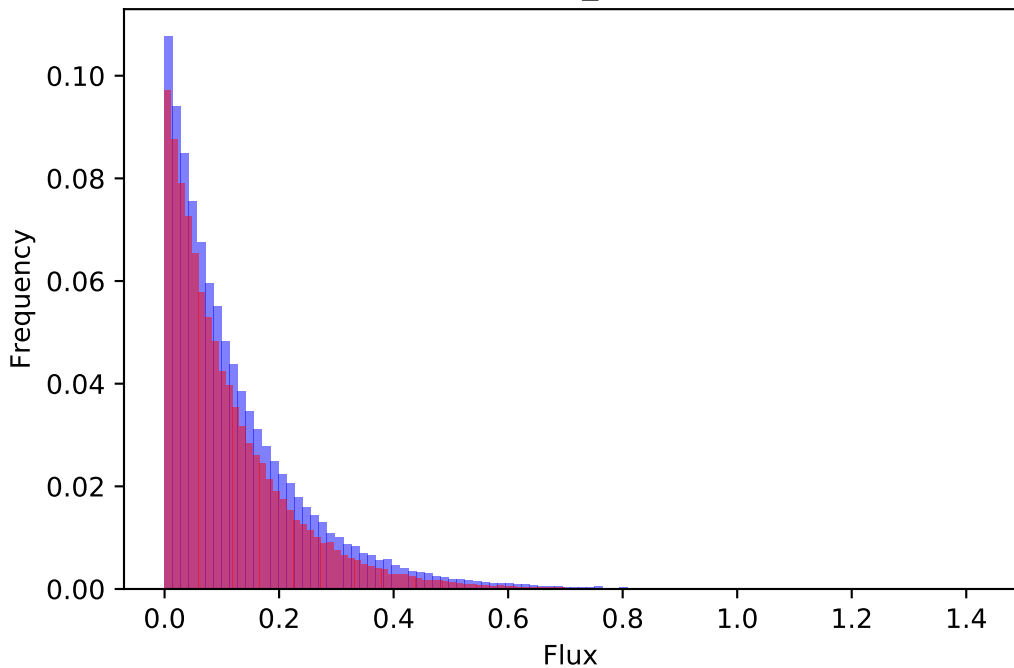
****489 : His_p --> ****



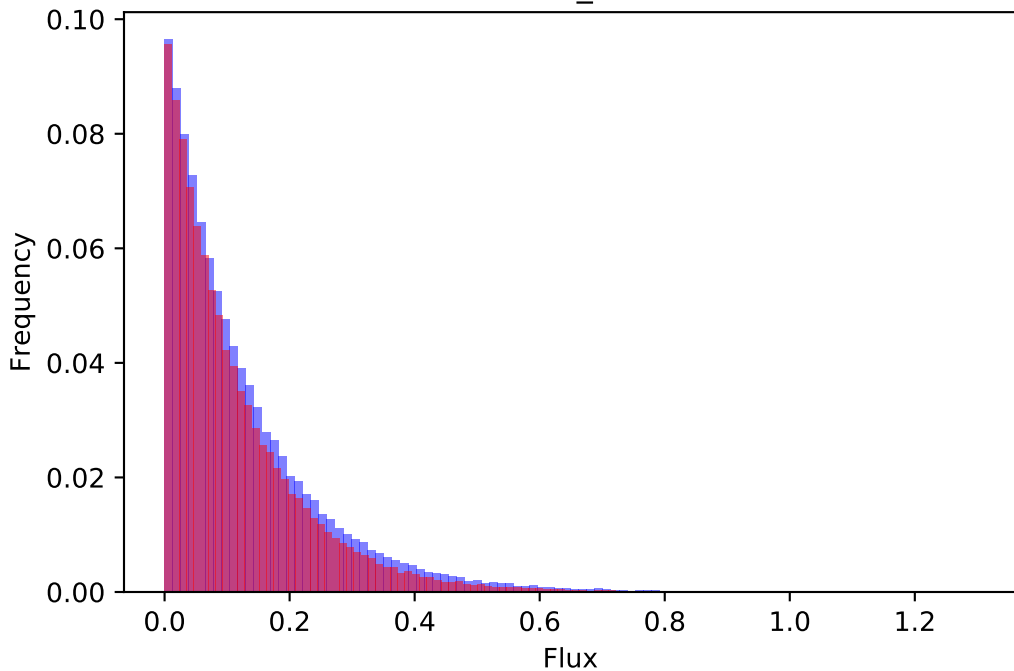
****490 : lle_c --> ****



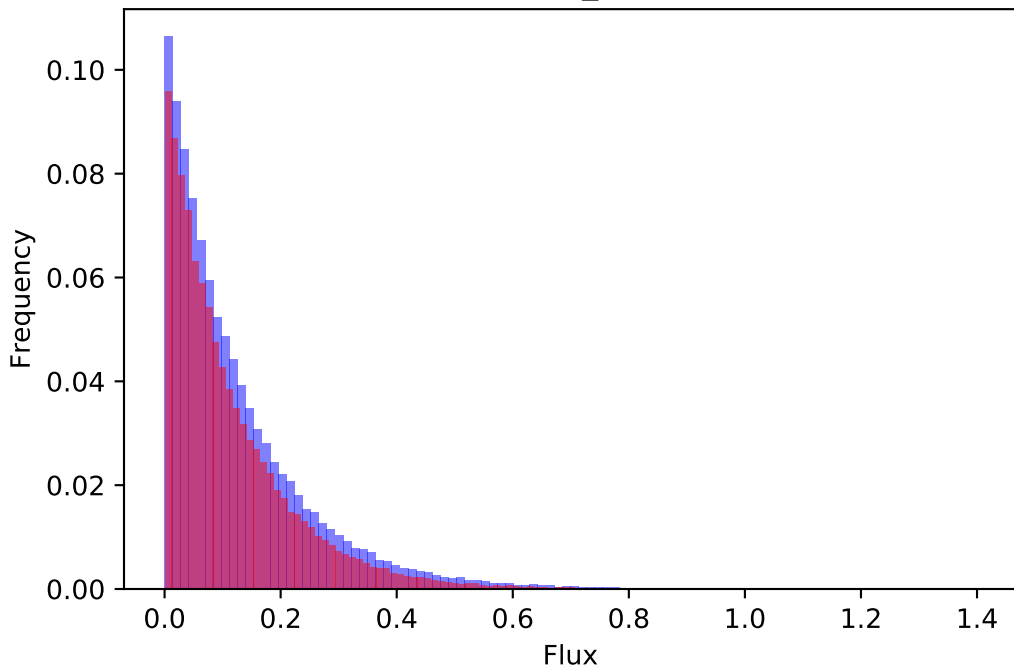
****491 : lle_h --> ****



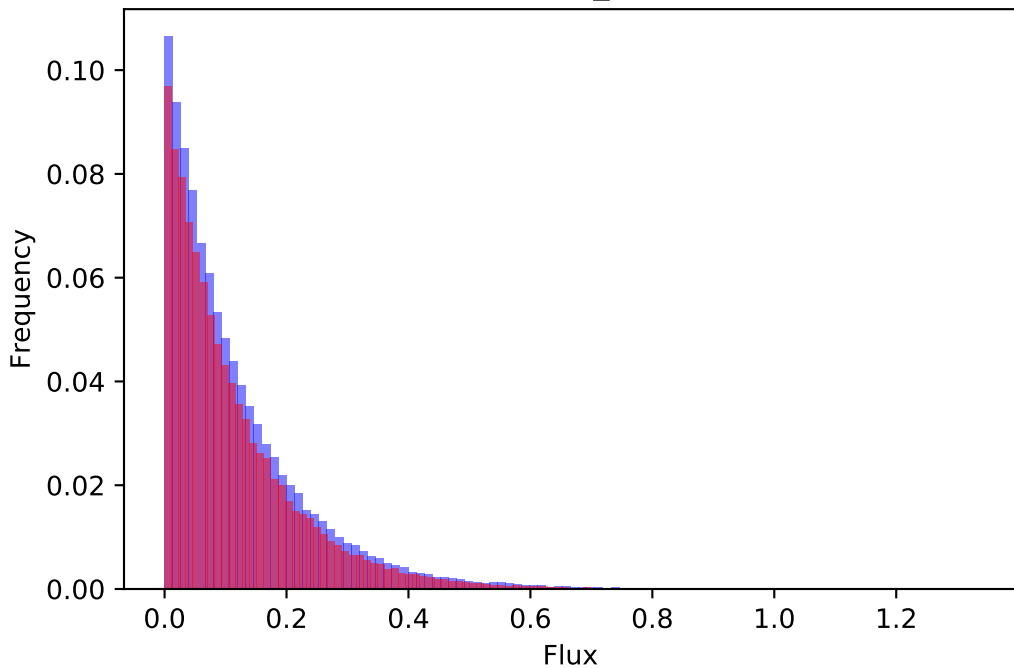
****492 : lle_m --> ****



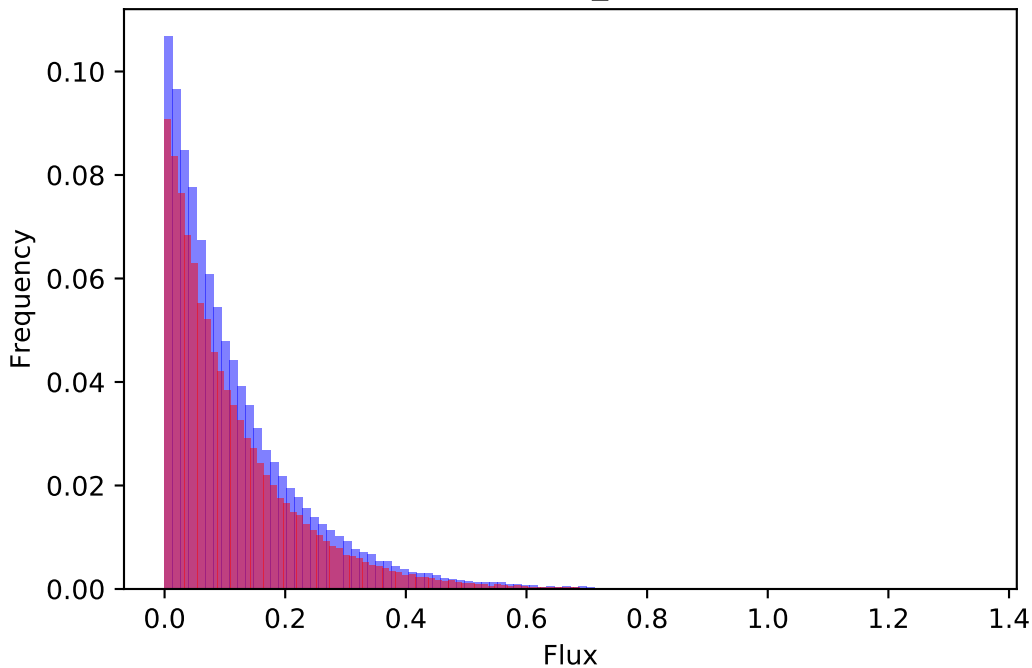
****493 : Ile_p --> ****



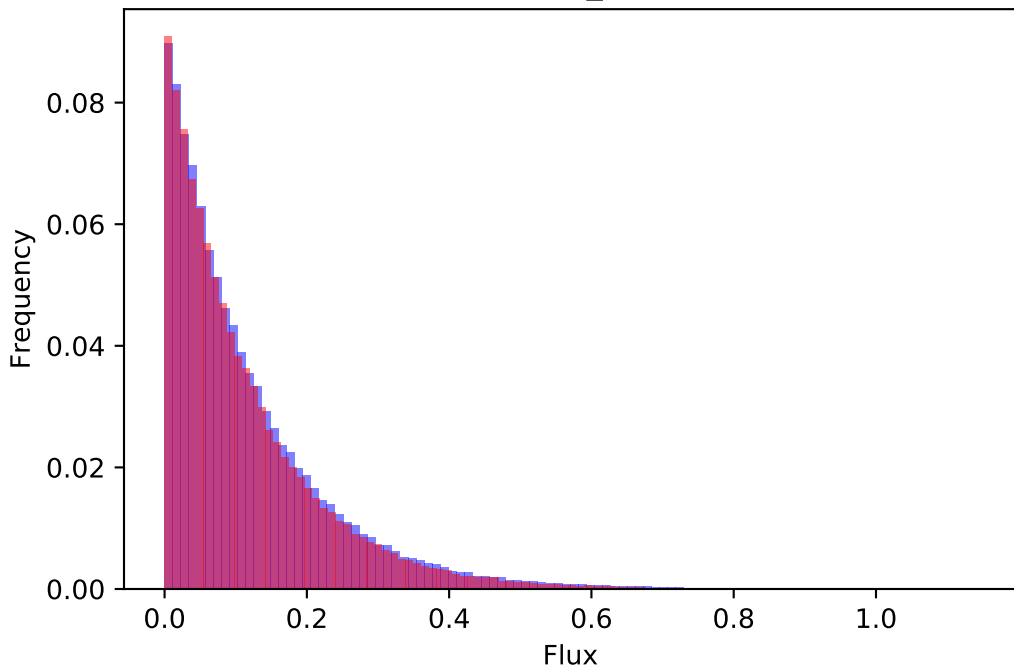
****494 : Leu_c --> ****



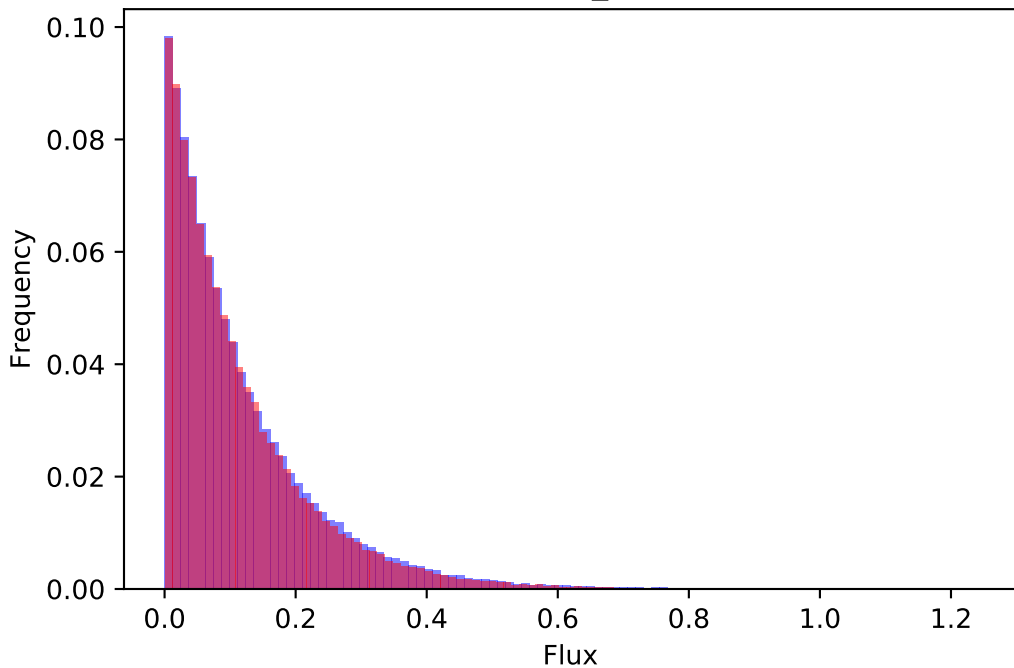
****495 : Leu_h --> ****



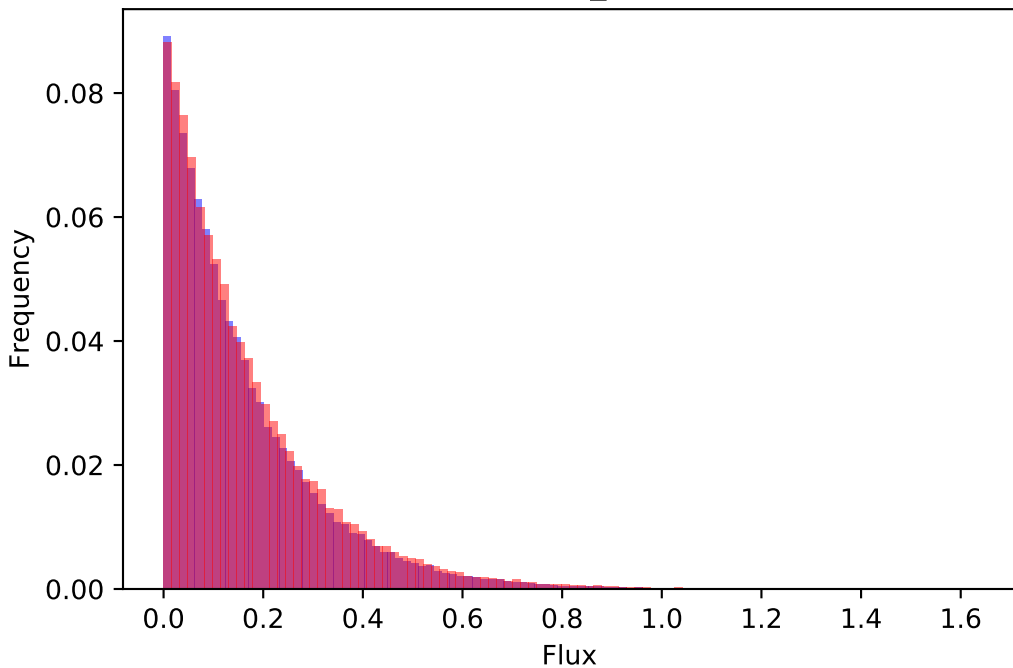
****496 : Leu_m --> ****



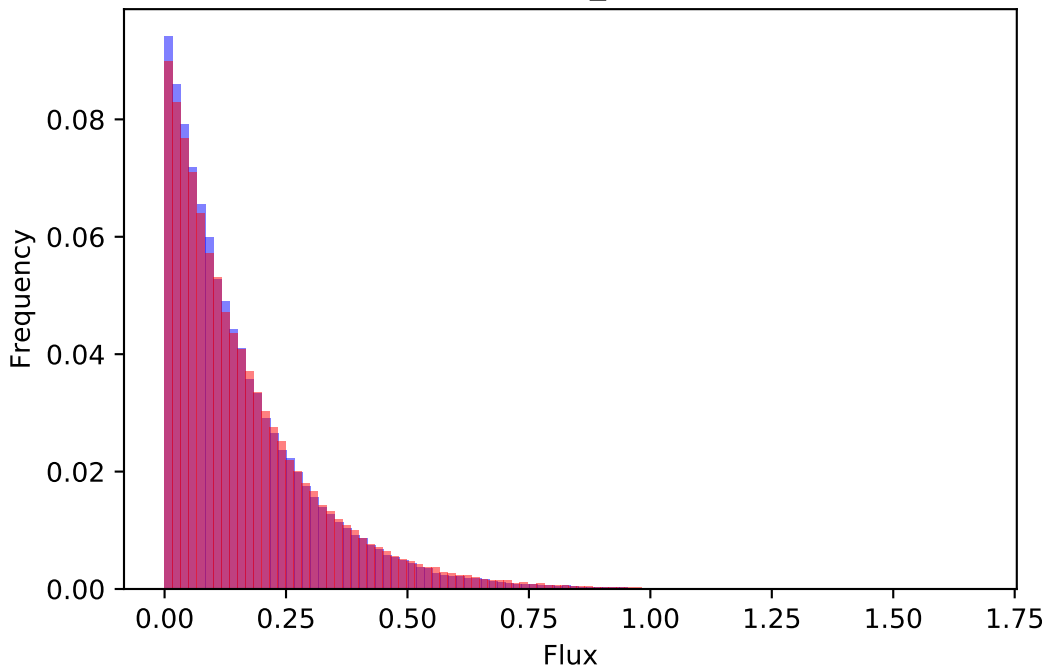
****497 : Leu_p --> ****



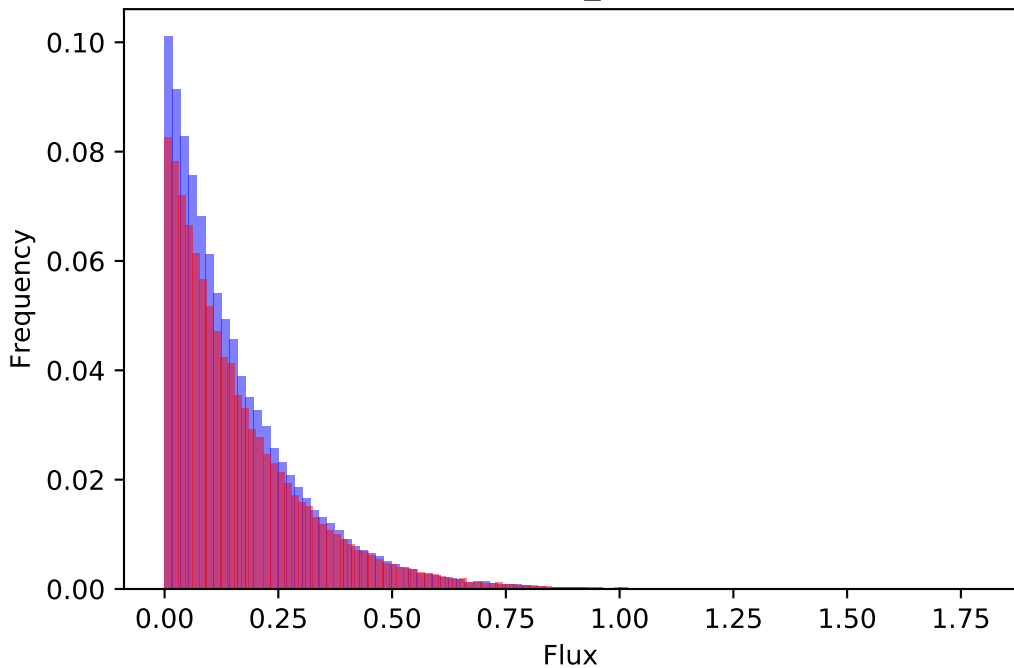
****498 : Lys_c --> ****



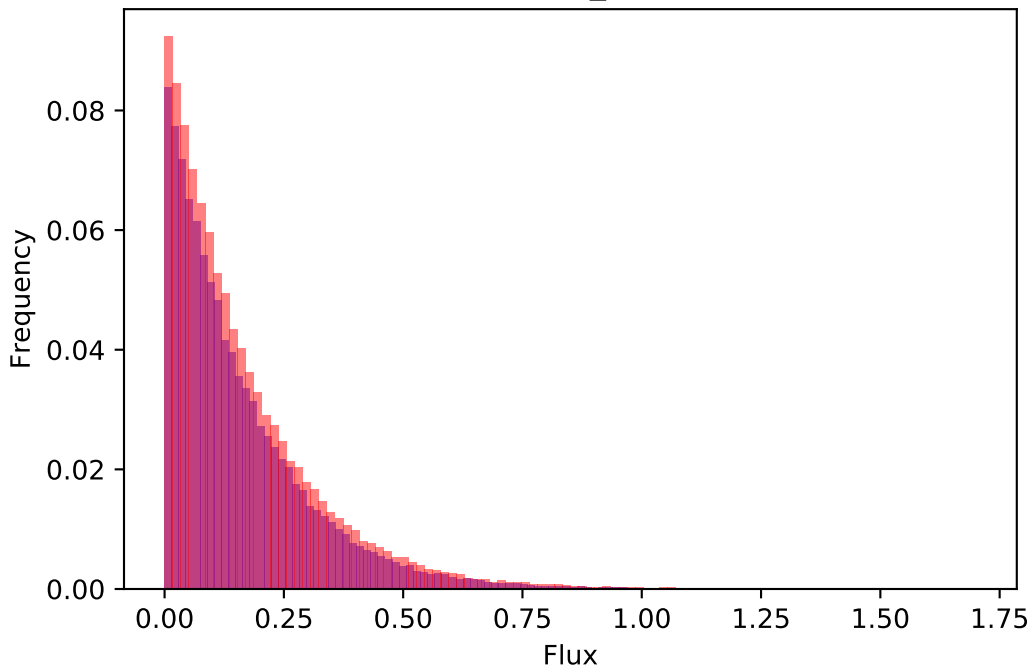
****499 : Lys_h --> ****



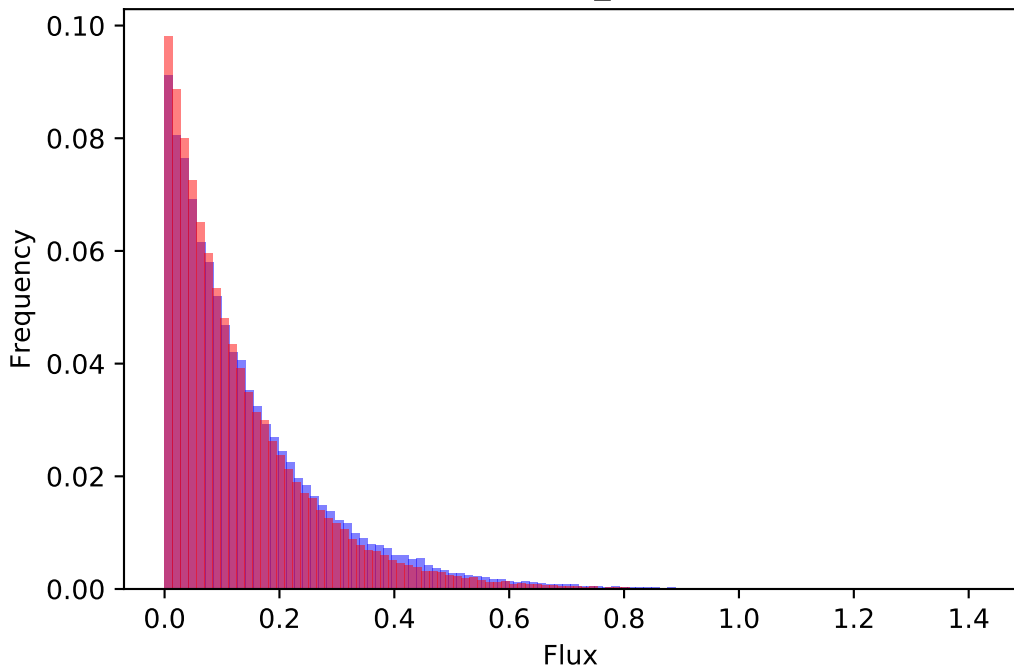
****500 : Lys_m --> ****



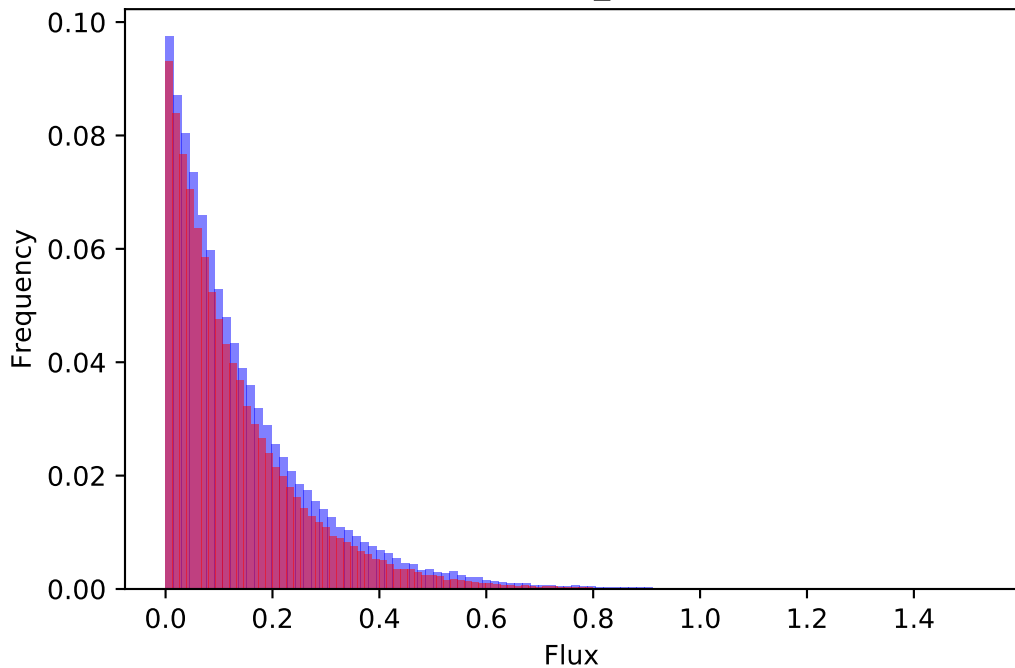
****501 : Lys_p --> ****



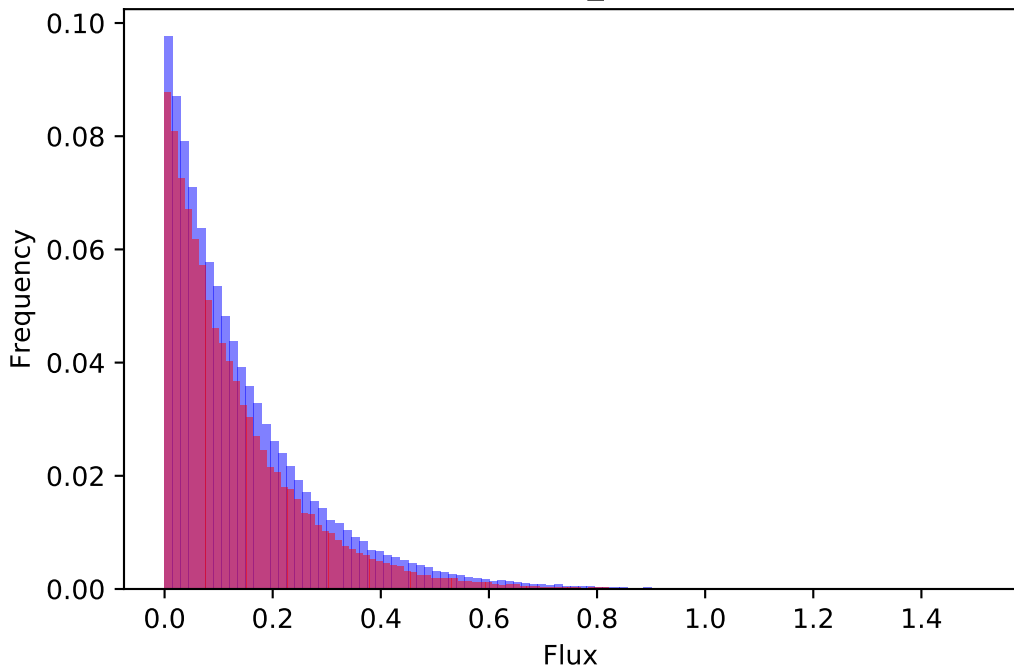
****502 : Met_c --> ****



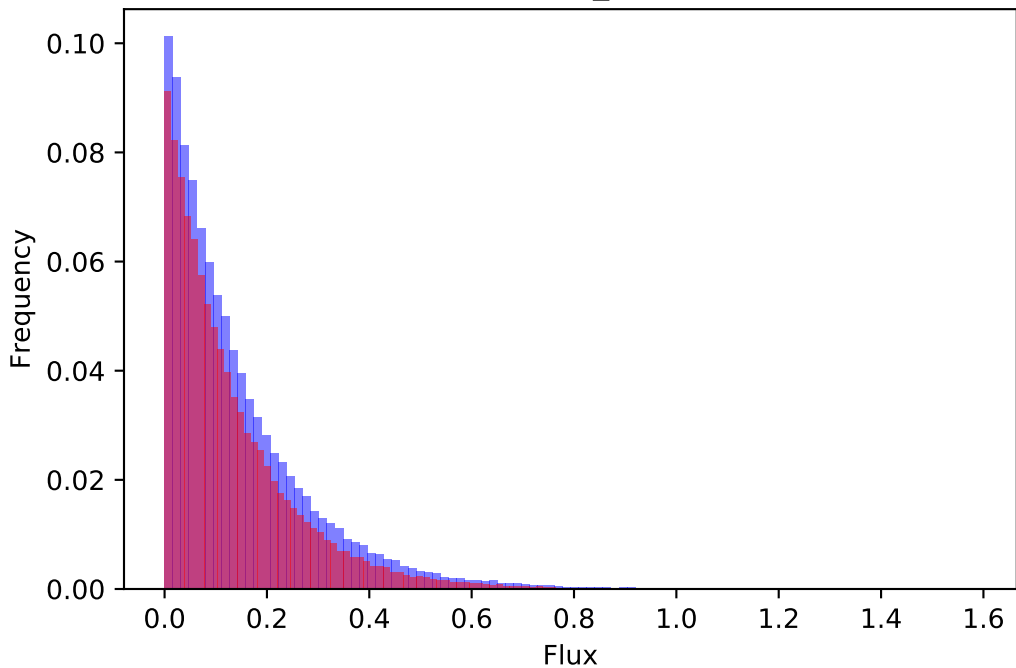
****503 : Met_h --> ****



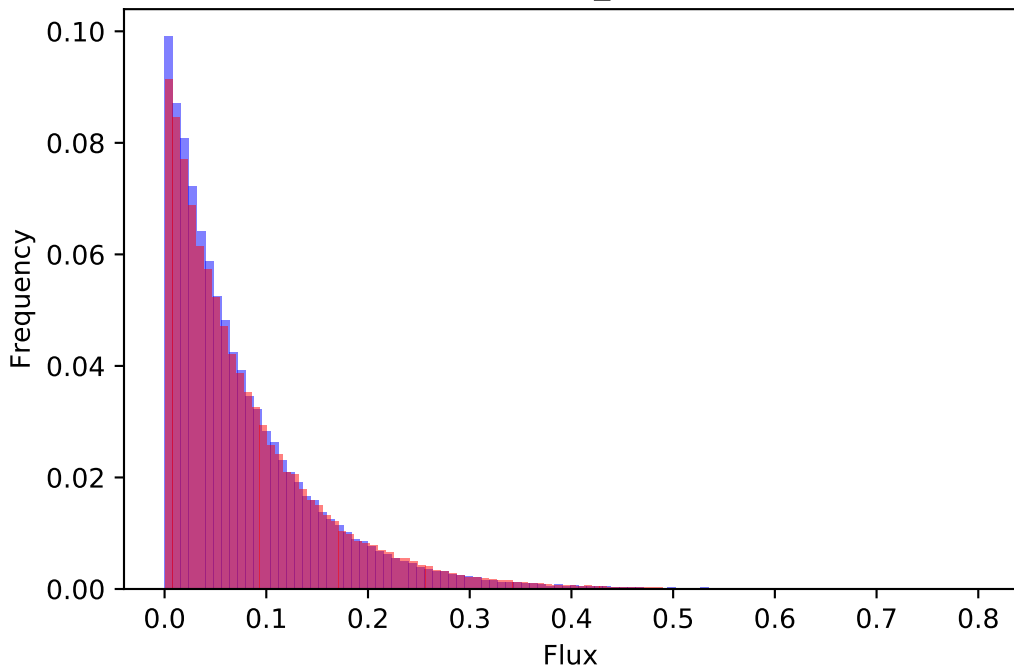
****504 : Met_m --> ****



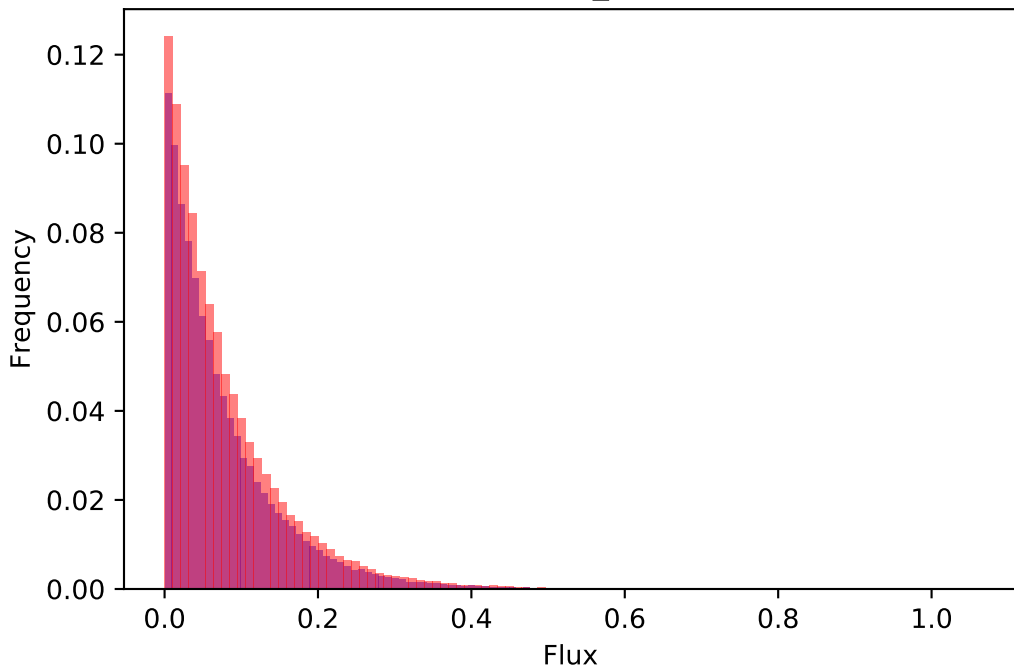
****505 : Met_p --> ****



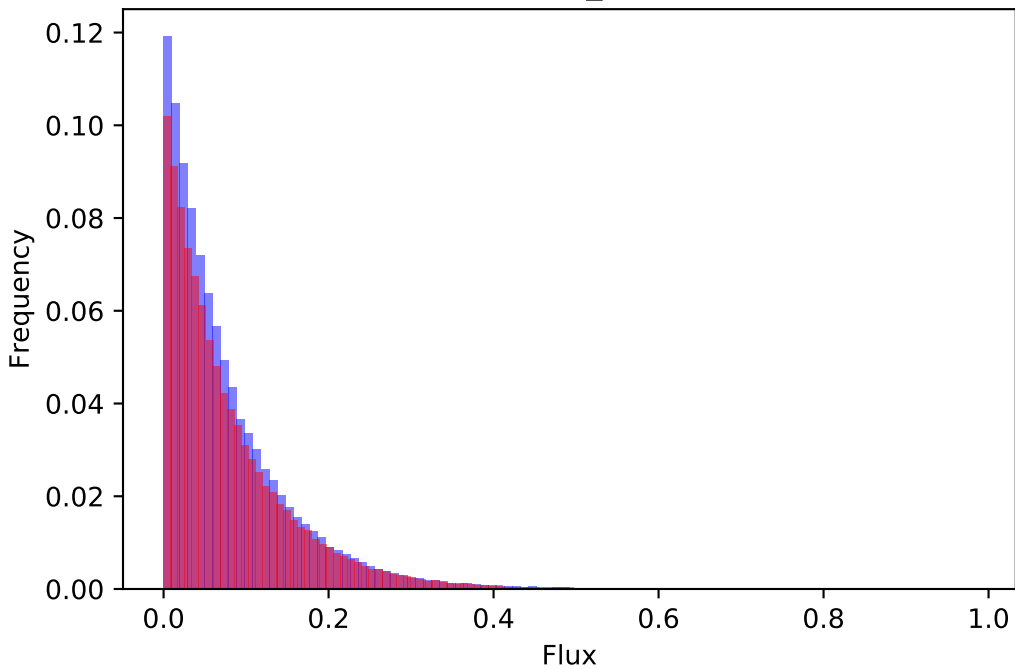
****506 : Phe_c --> ****



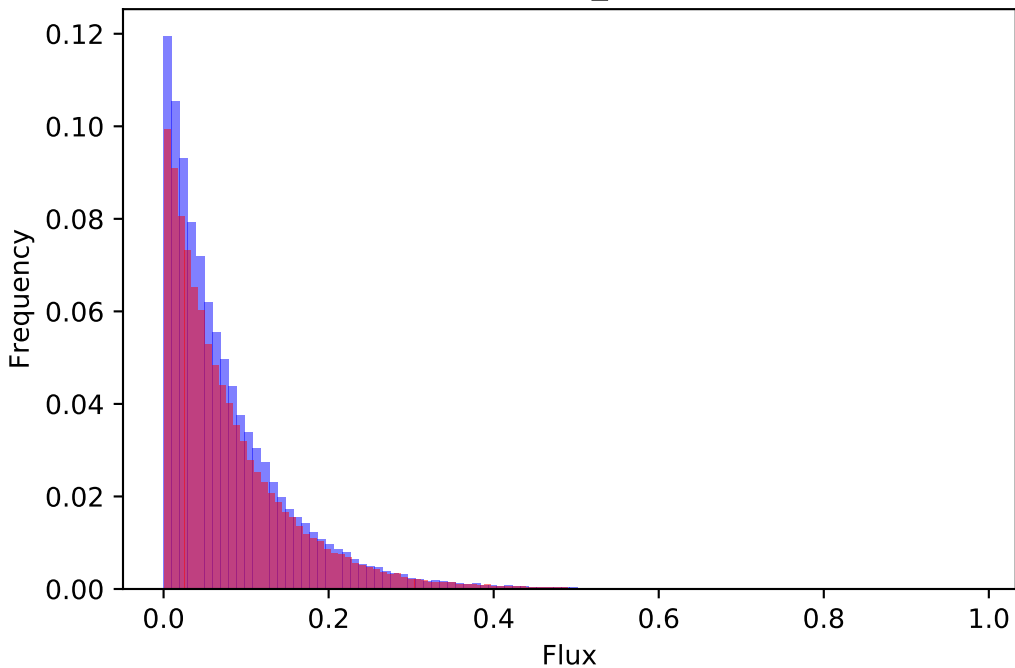
****507 : Phe_h --> ****



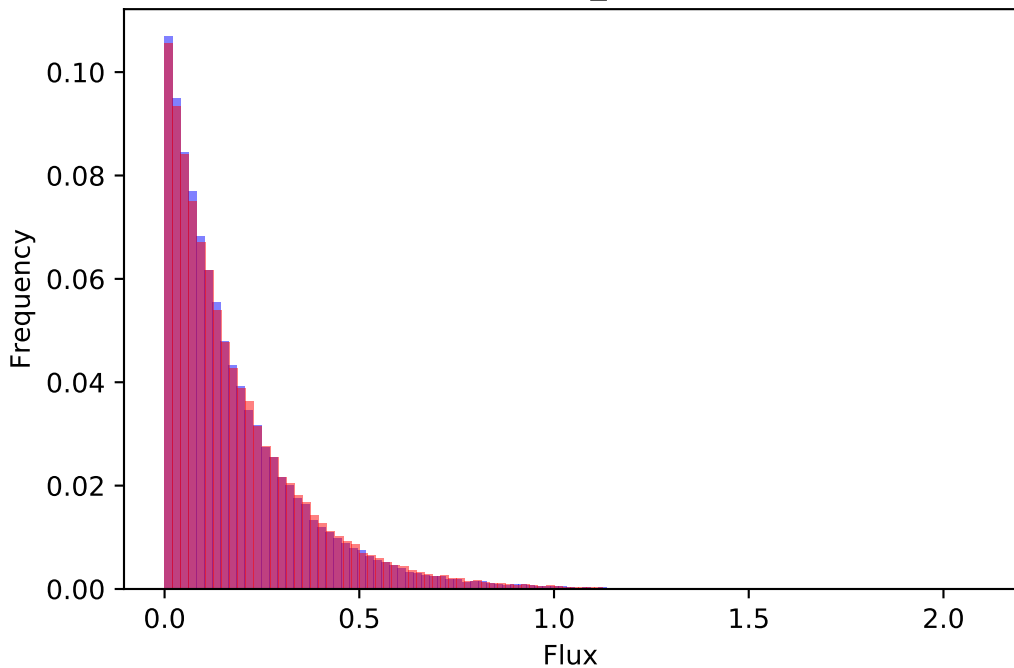
****508 : Phe_m --> ****



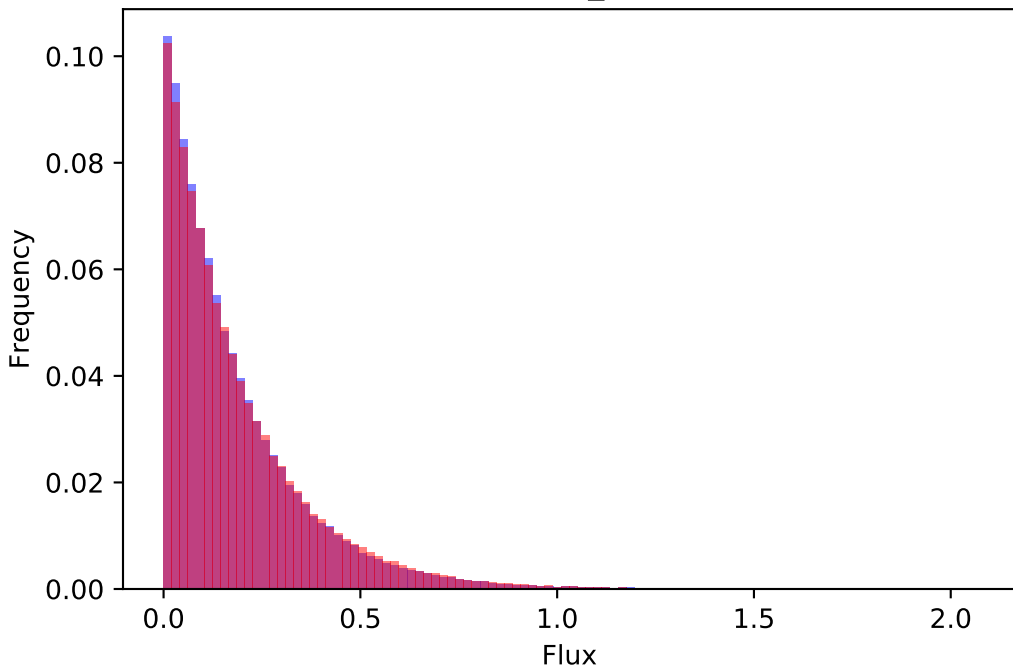
****509 : Phe_p --> ****



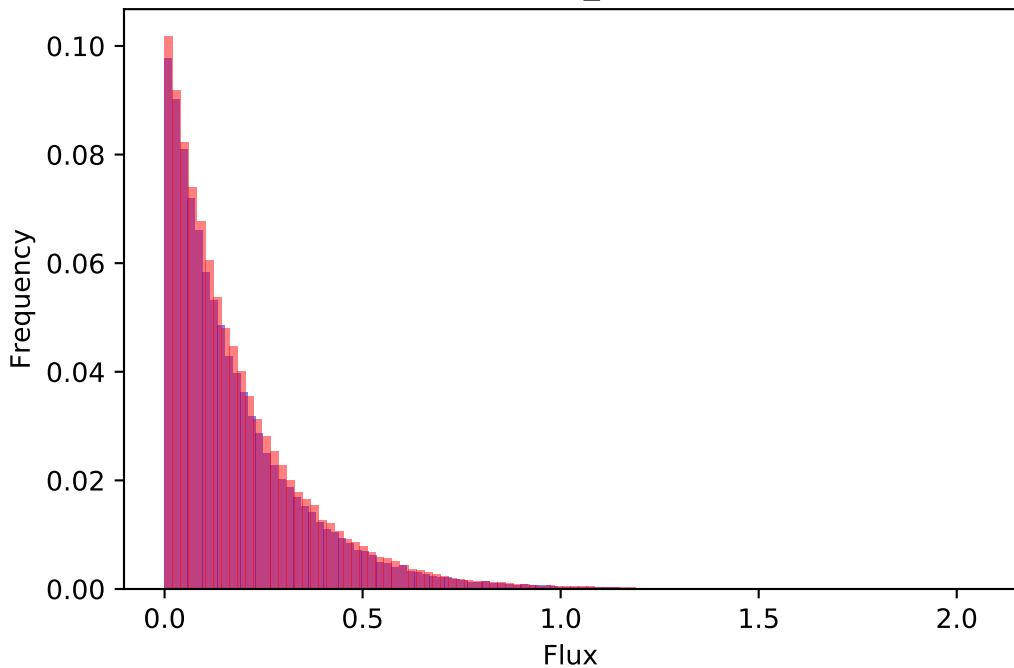
****510 : Pro_c --> ****



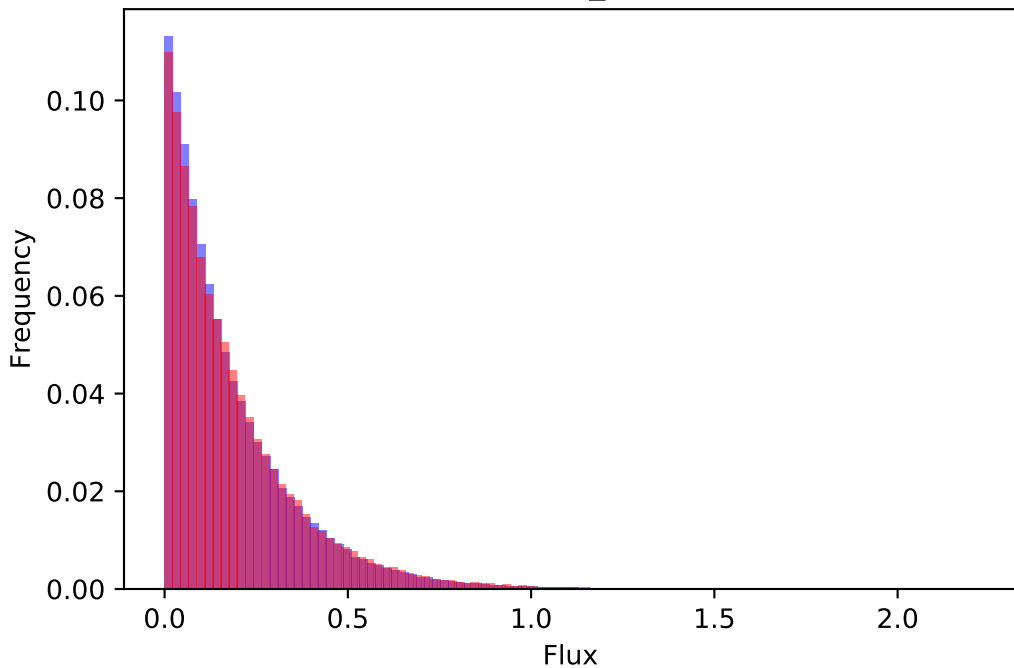
****511 : Pro_h --> ****



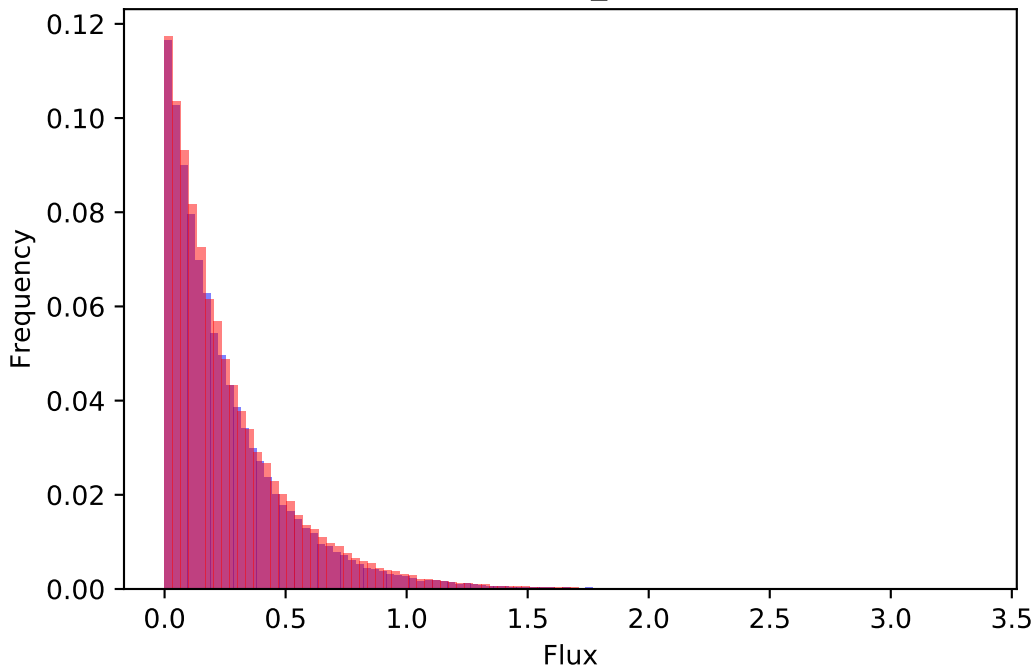
****512 : Pro_m --> ****



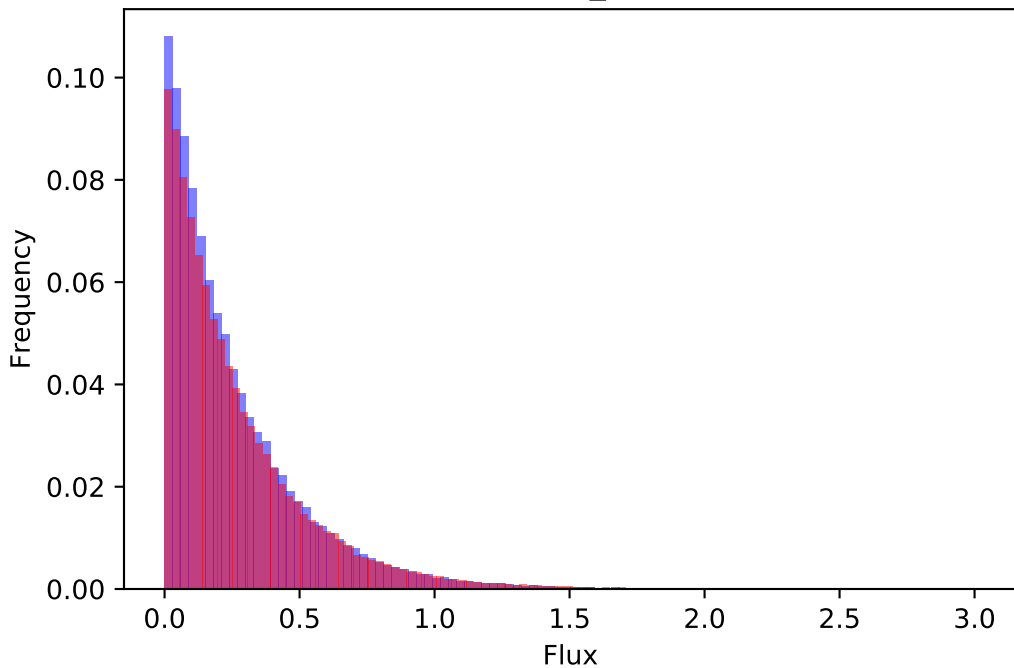
****513 : Pro_p --> ****



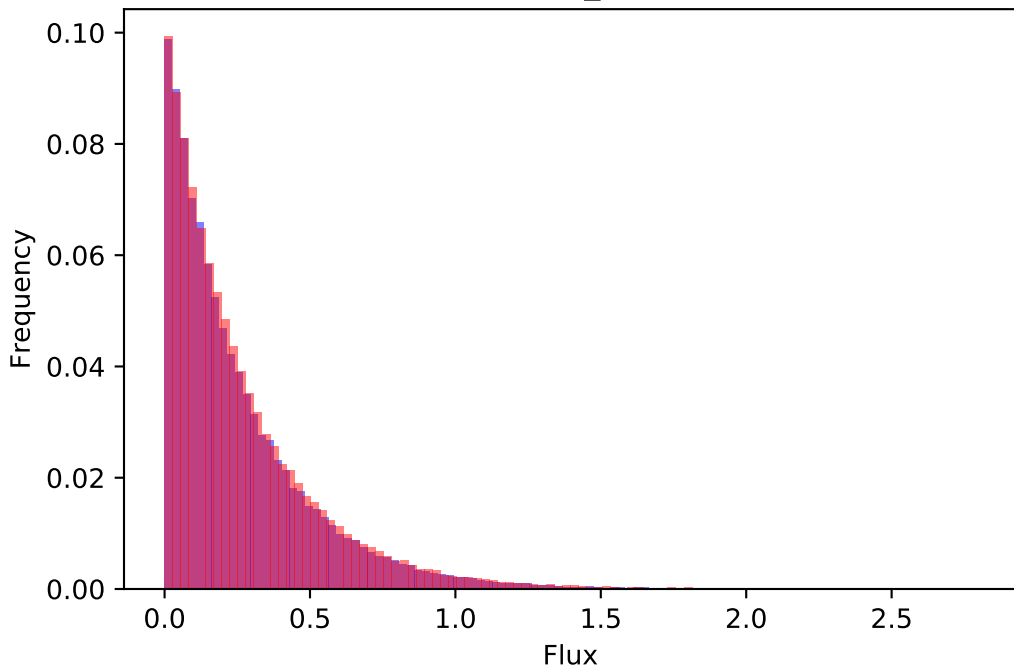
****514 : Ser_c --> ****



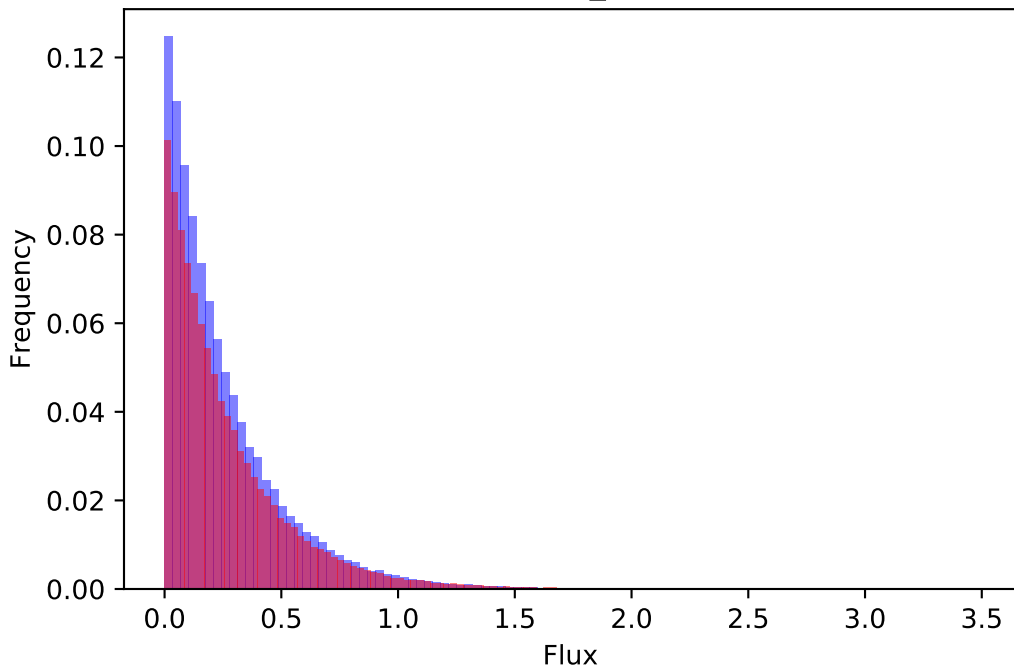
****515 : Ser_h --> ****



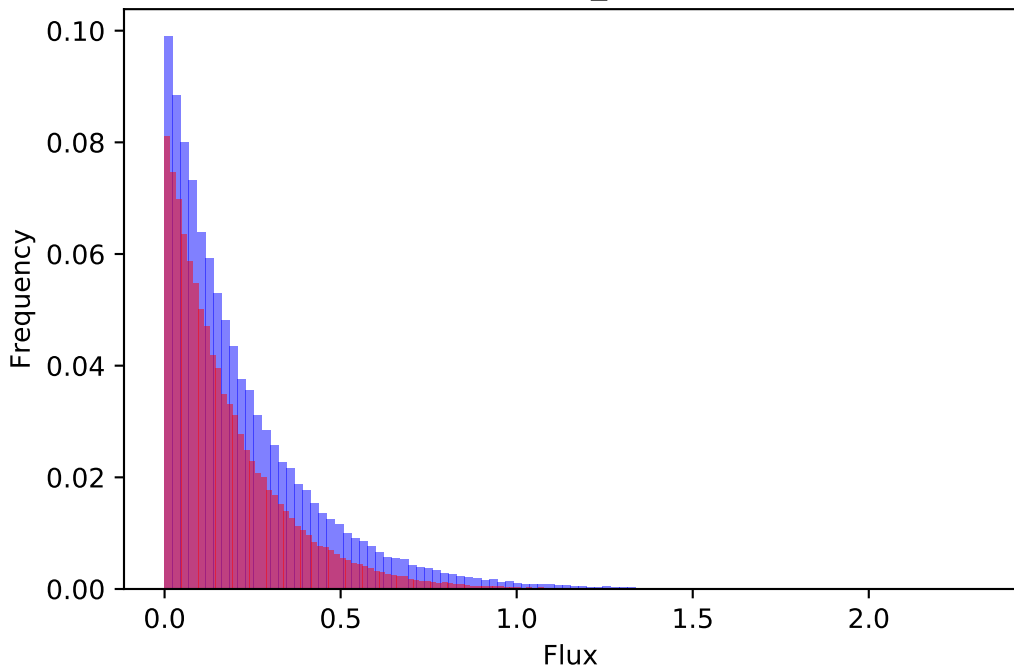
****516 : Ser_m --> ****



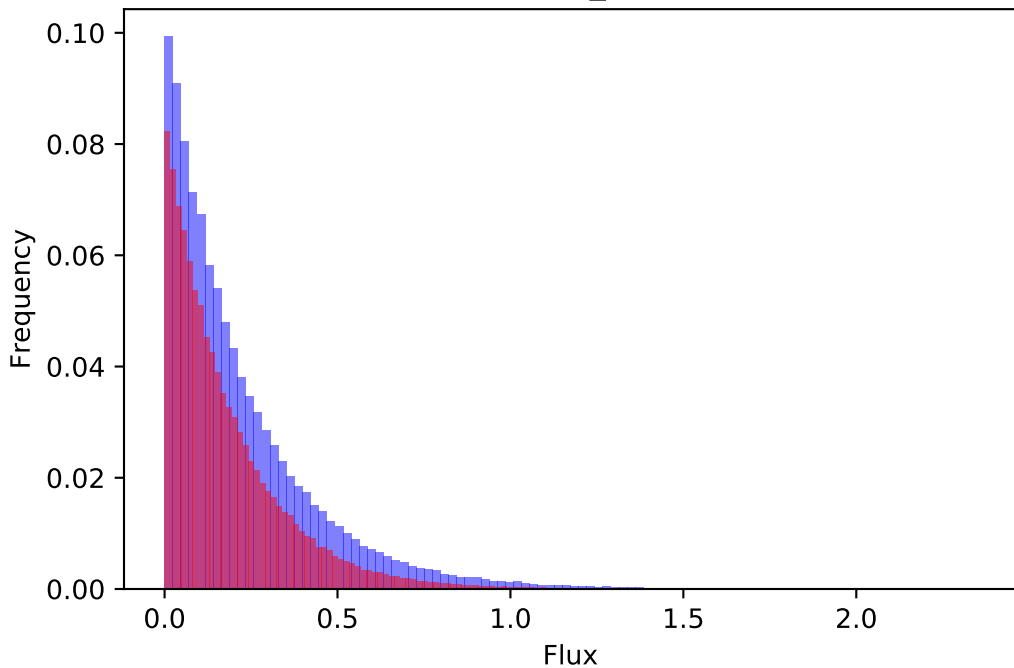
****517 : Ser_p --> ****



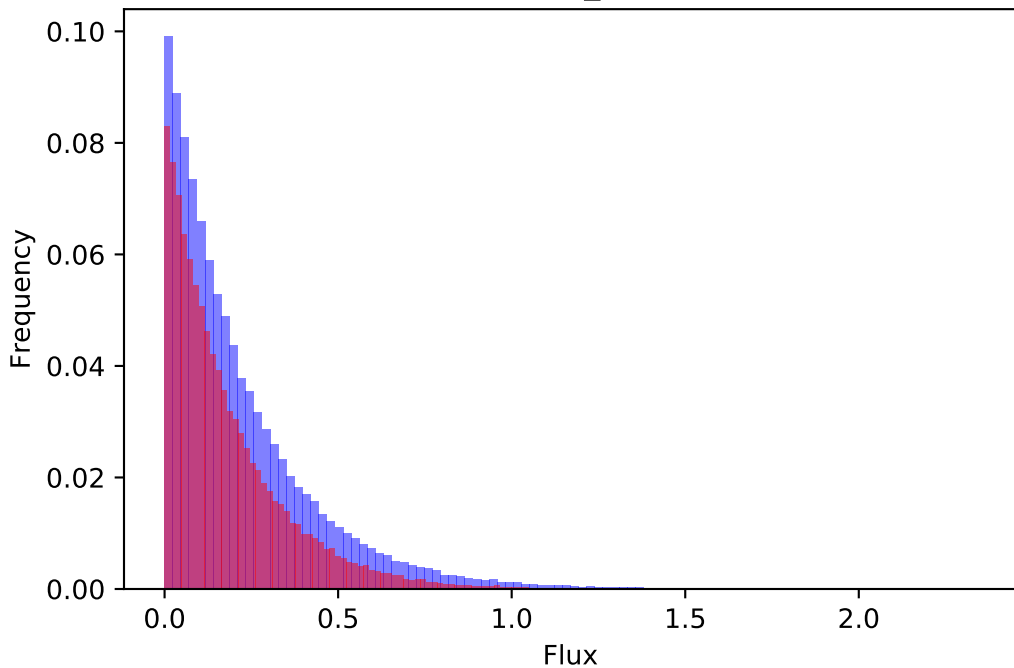
****518 : Thr_c --> ****



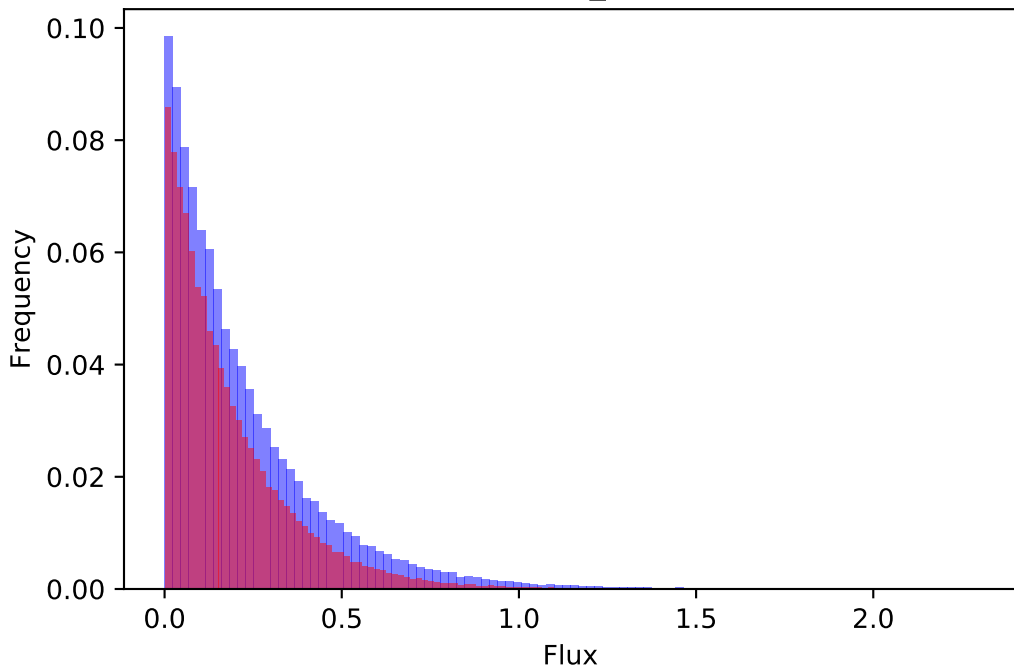
****519 : Thr_h --> ****



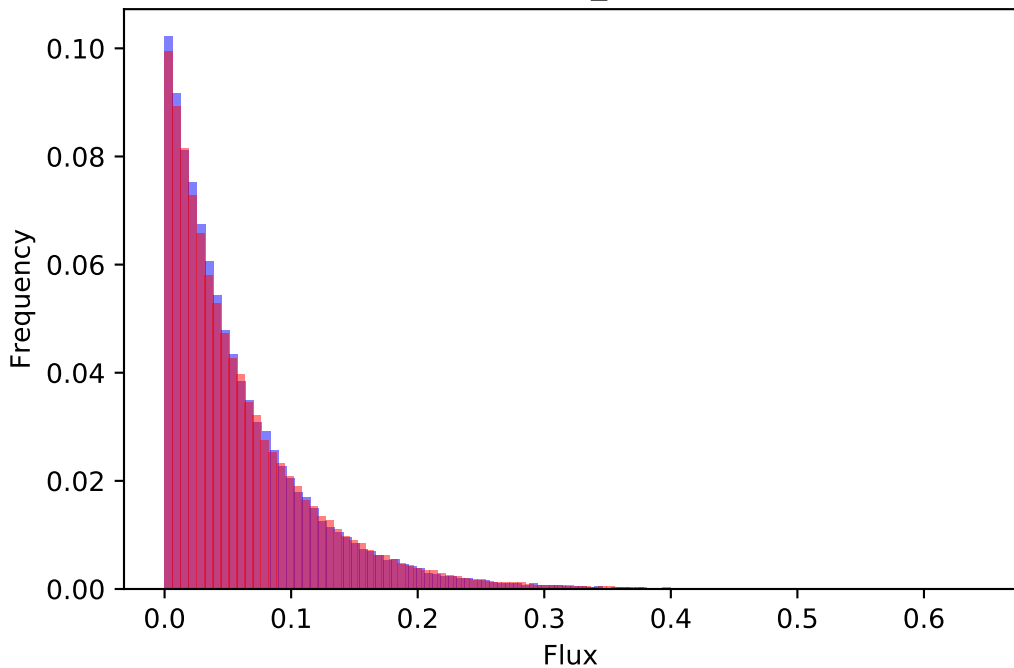
****520 : Thr_m --> ****



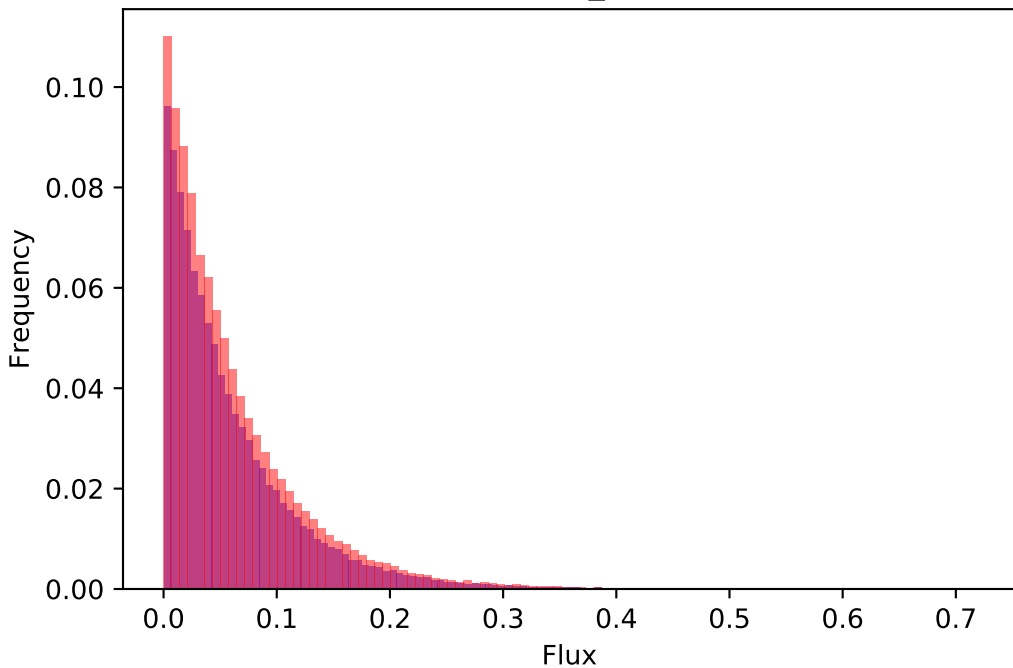
****521 : Thr_p --> ****



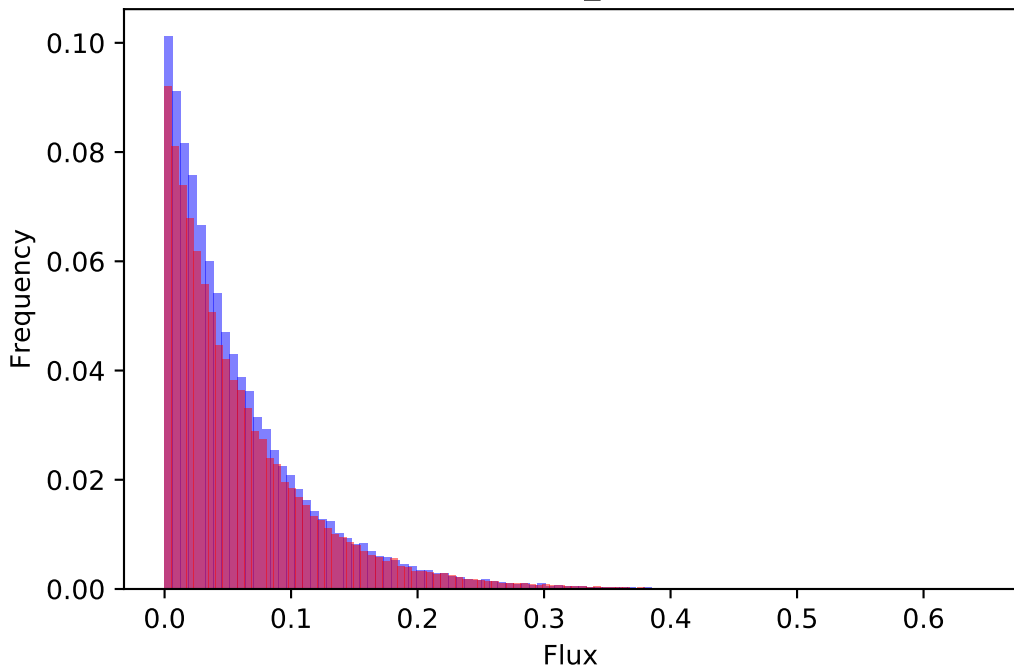
****522 : Trp_c --> ****



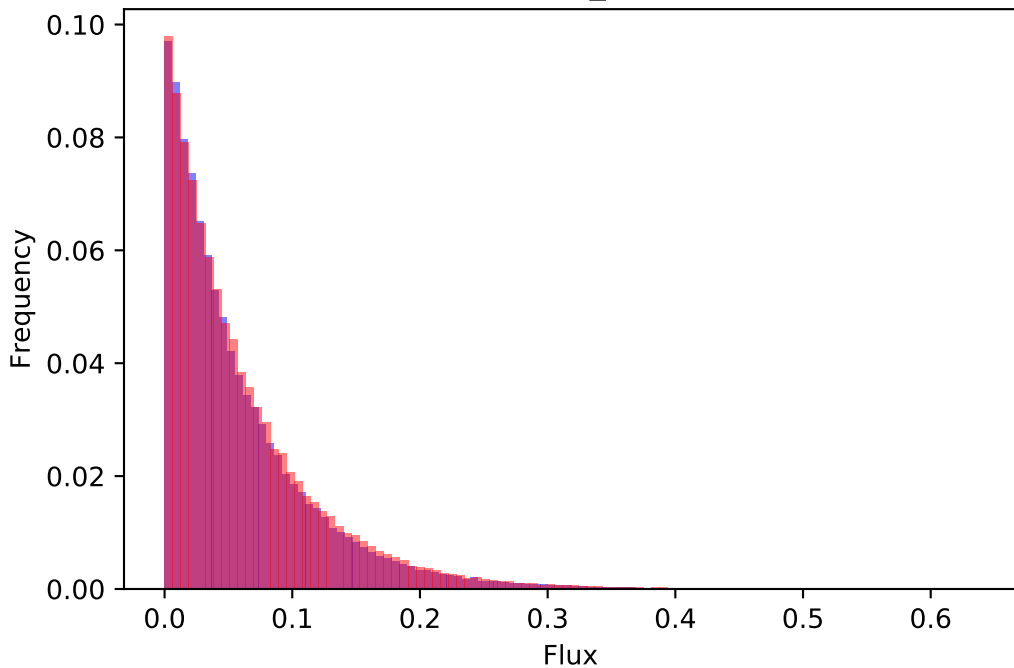
****523 : Trp_h --> ****



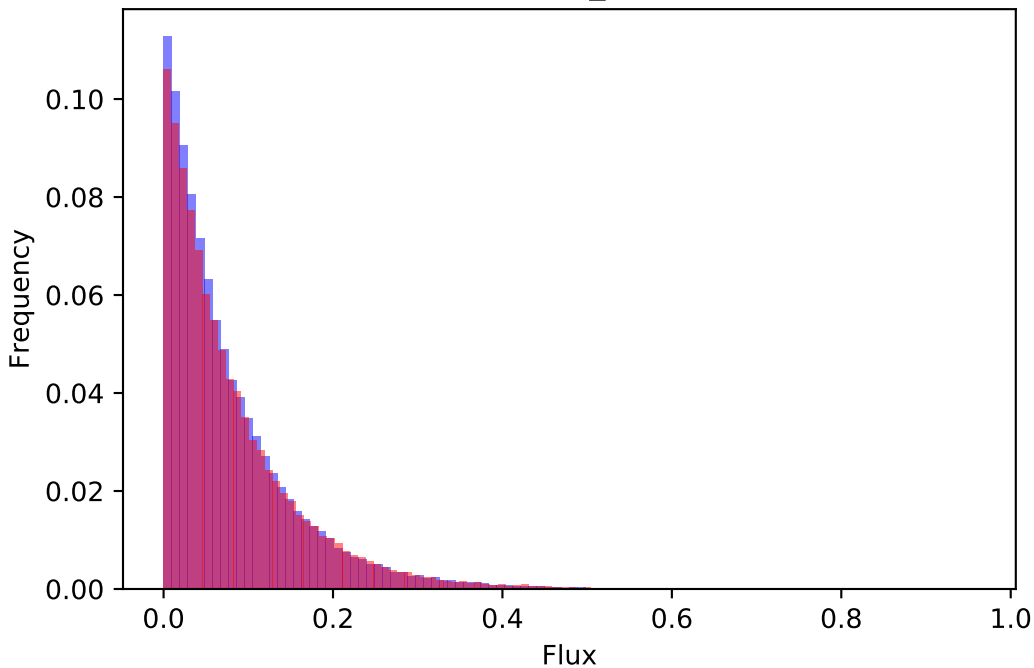
****524 : Trp_m --> ****



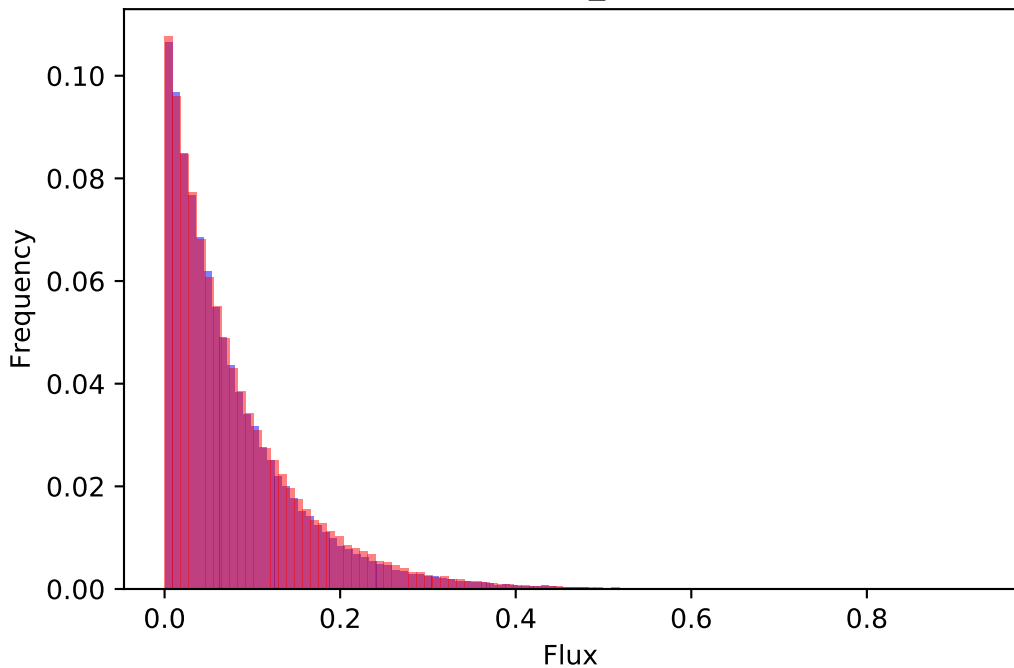
****525 : Trp_p --> ****



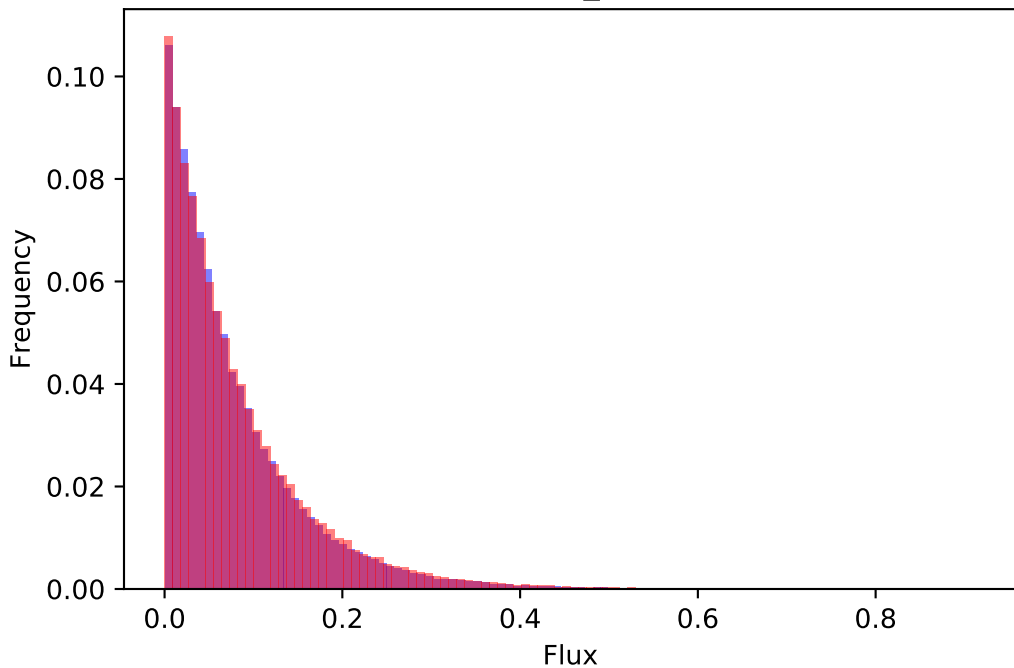
****526 : Tyr_c --> ****



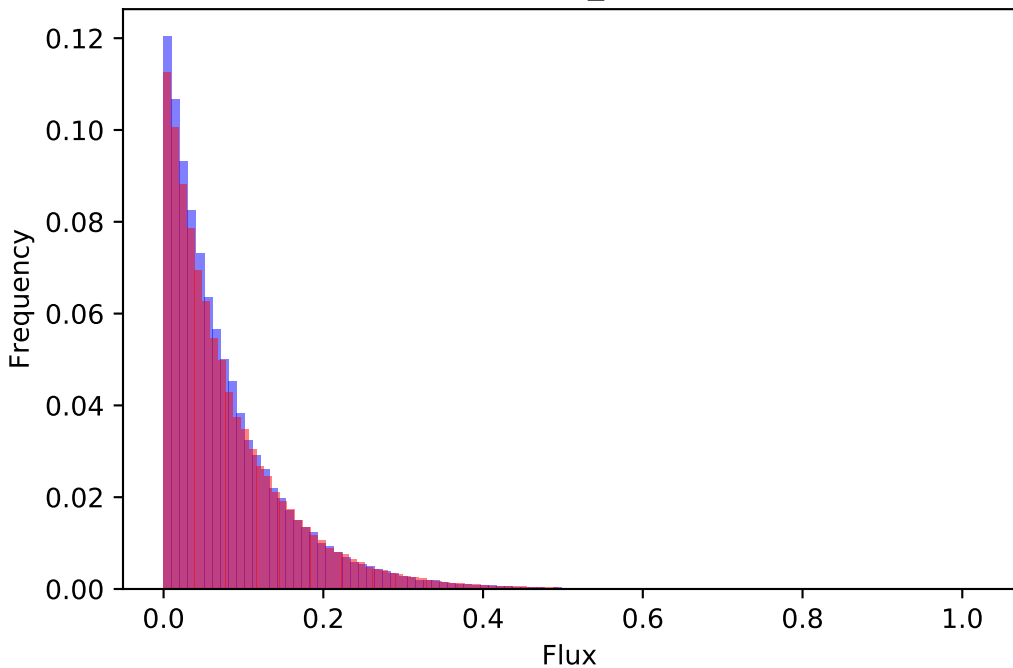
****527 : Tyr_h --> ****



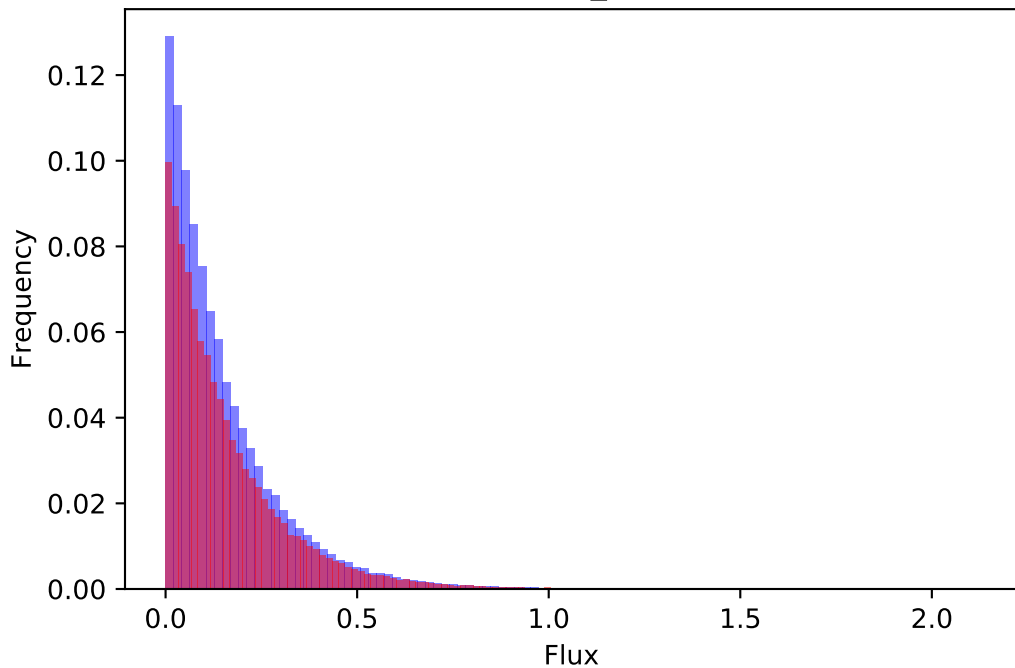
****528 : Tyr_m --> ****



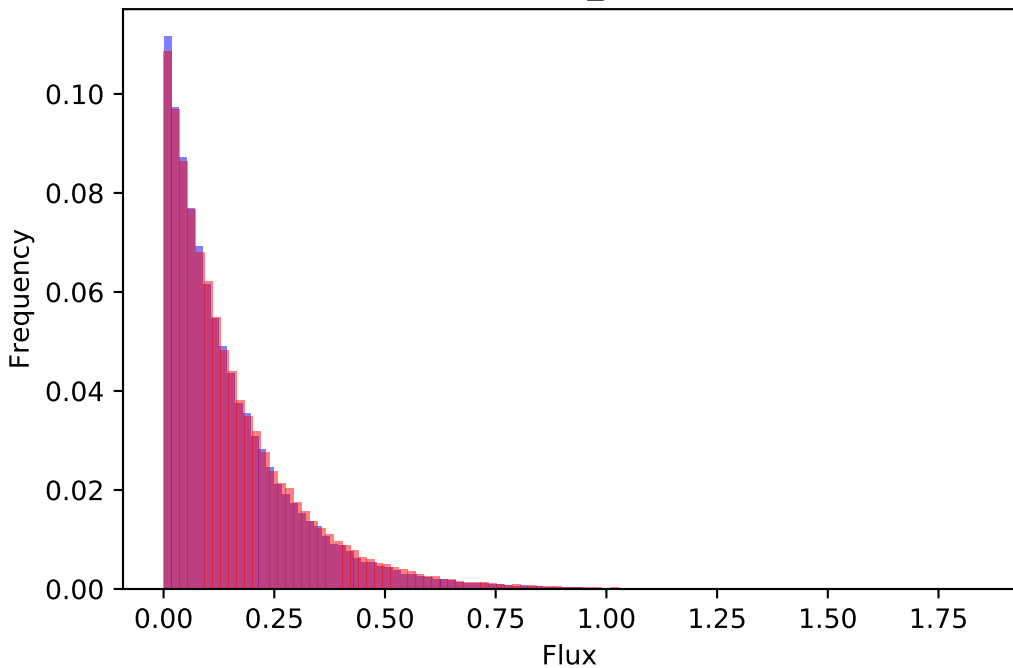
****529 : Tyr_p --> ****



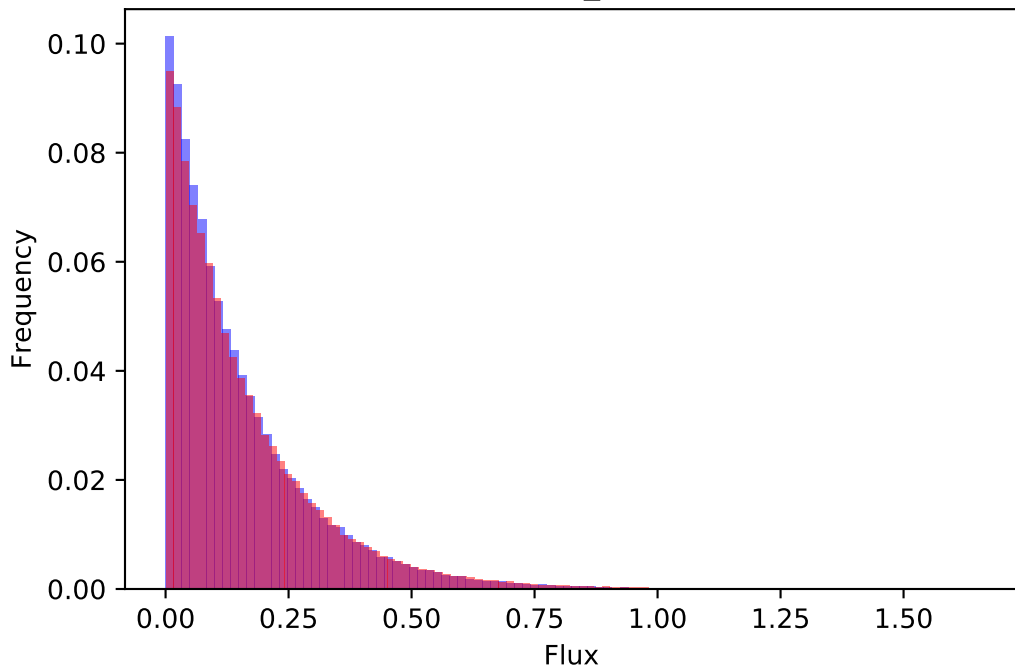
****530 : Val_c --> ****



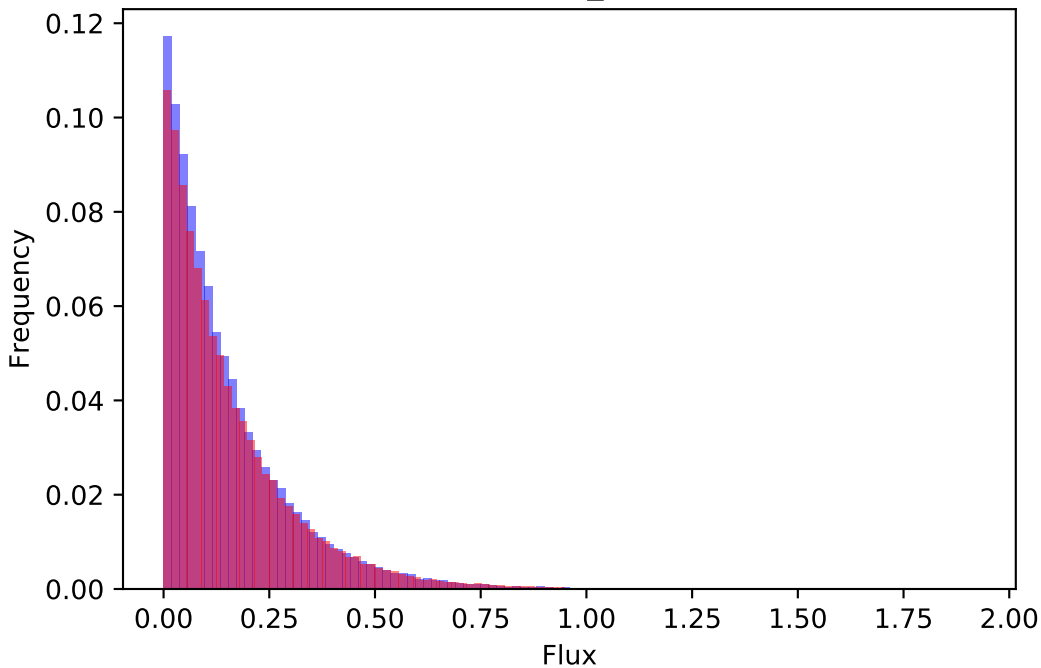
****531 : Val_h --> ****



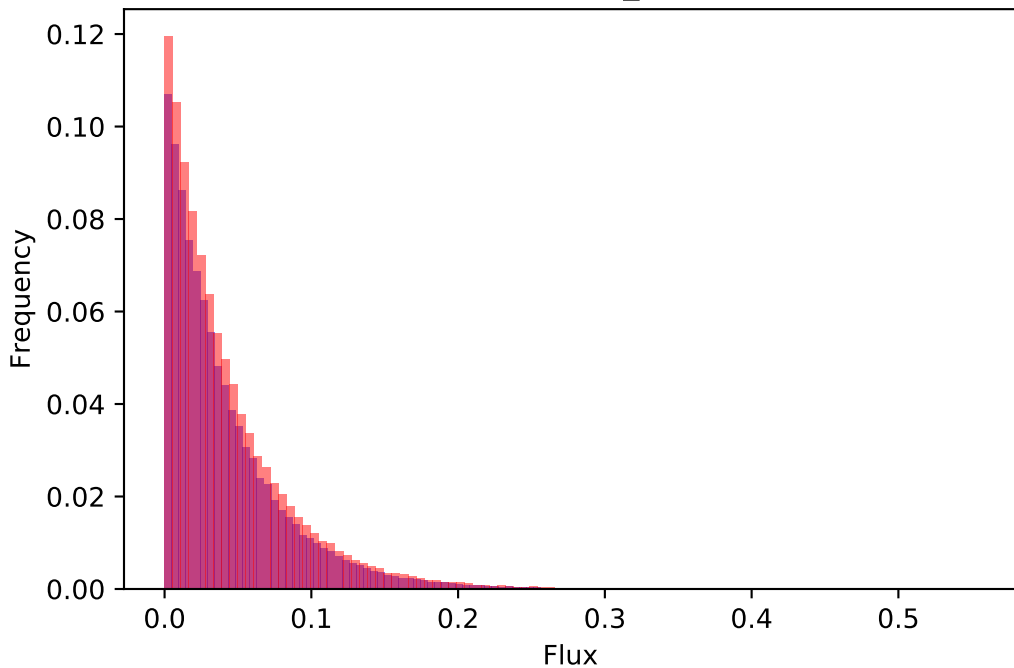
****532 : Val_m --> ****



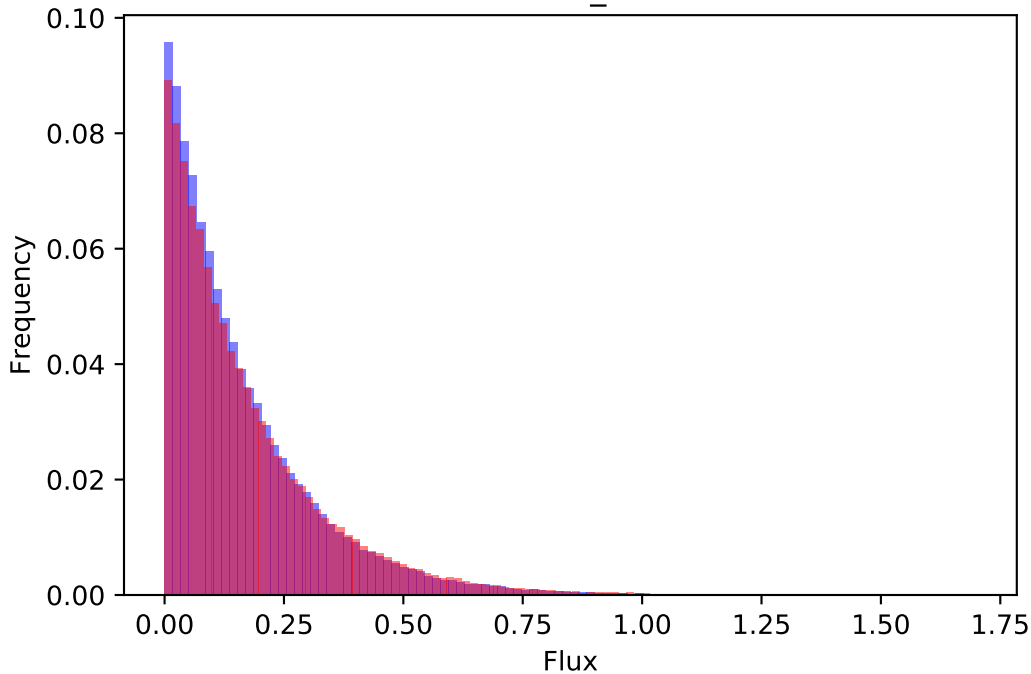
****533 : Val_p --> ****



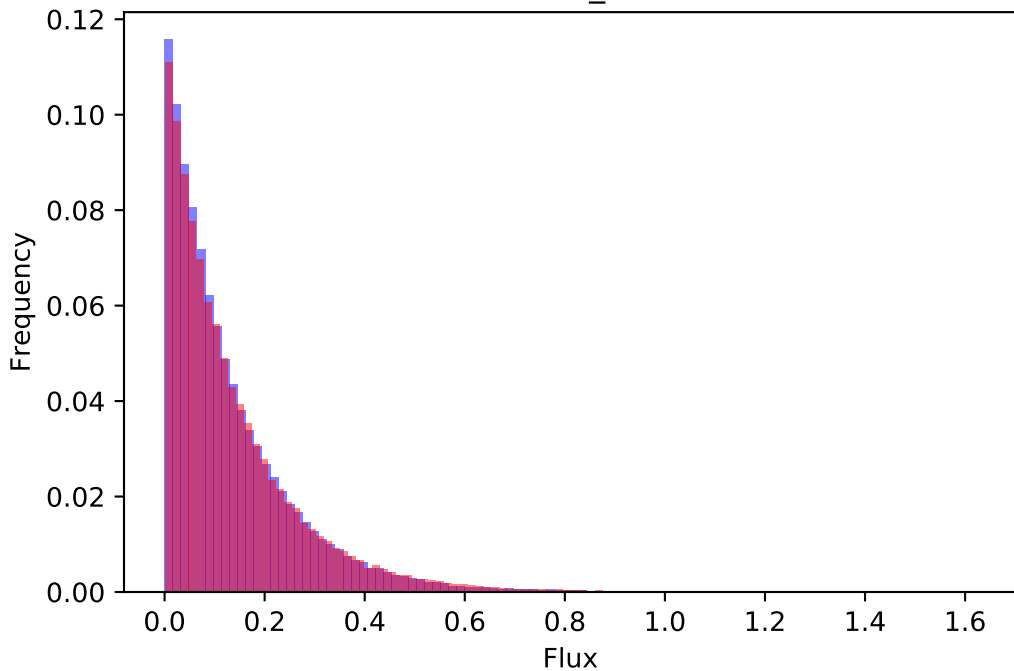
****534 : starch3_h --> ****



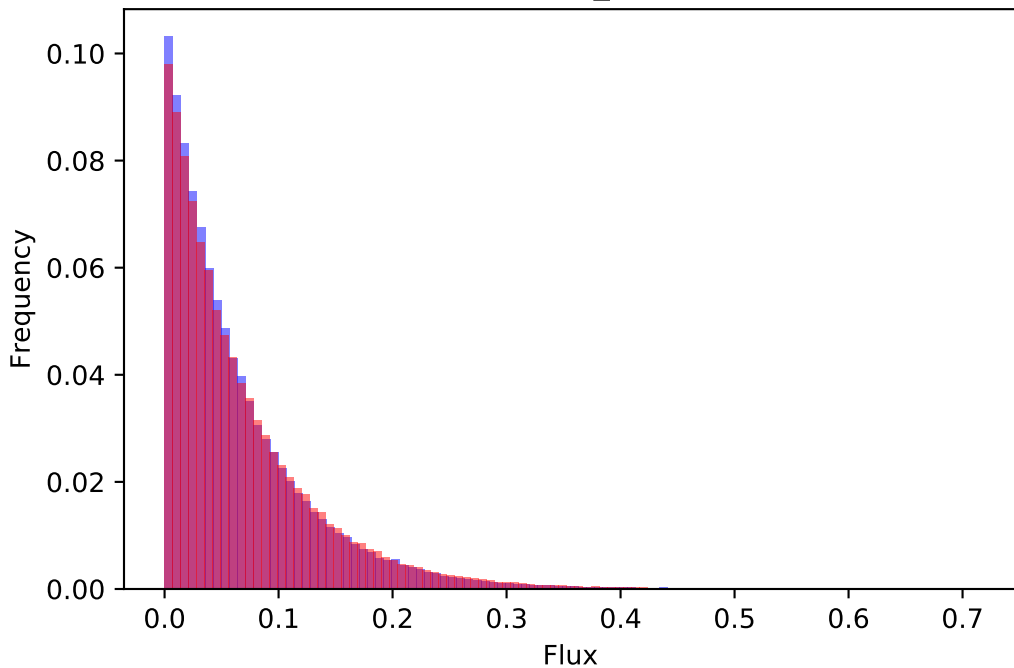
****535 : Glc_c --> ****



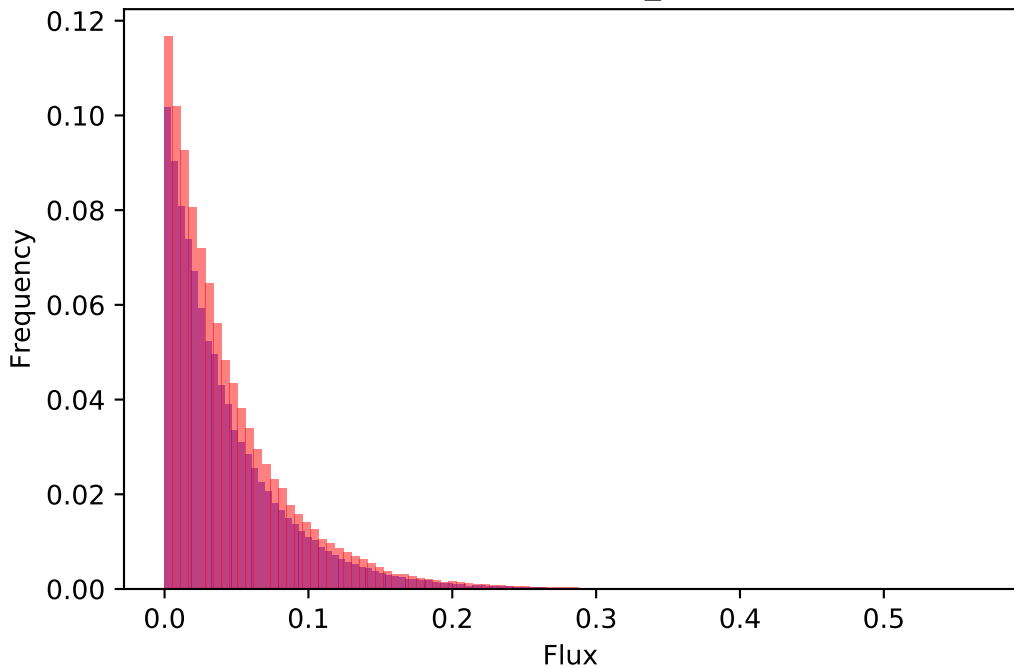
****536 : Frc_c --> ****



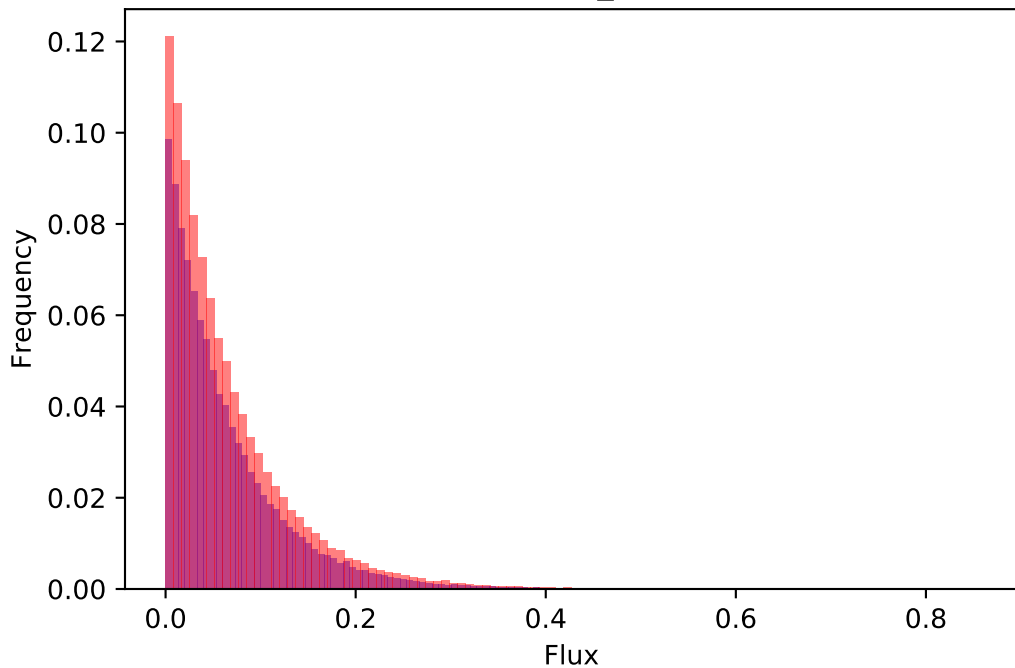
****537 : Suc_c --> ****



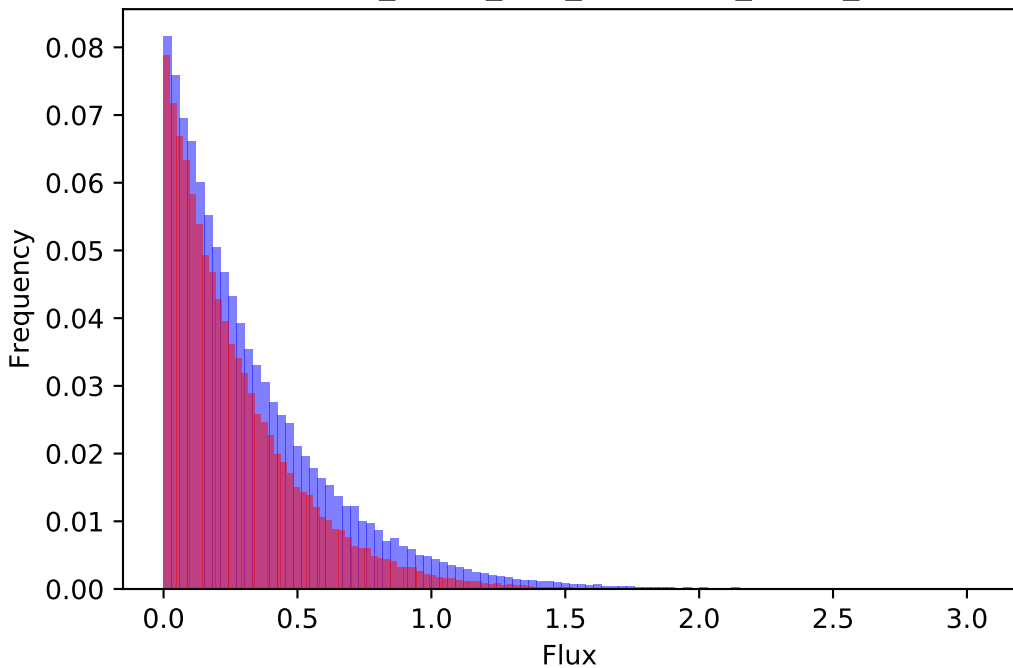
****538 : cellulose3_c --> ****



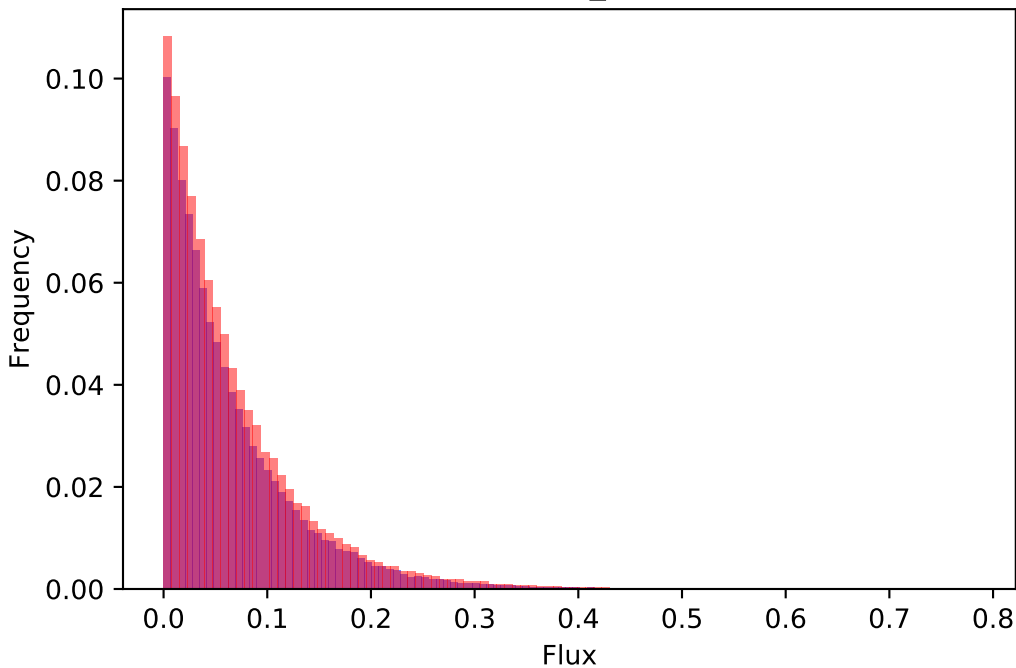
****539 : Mas_c --> ****

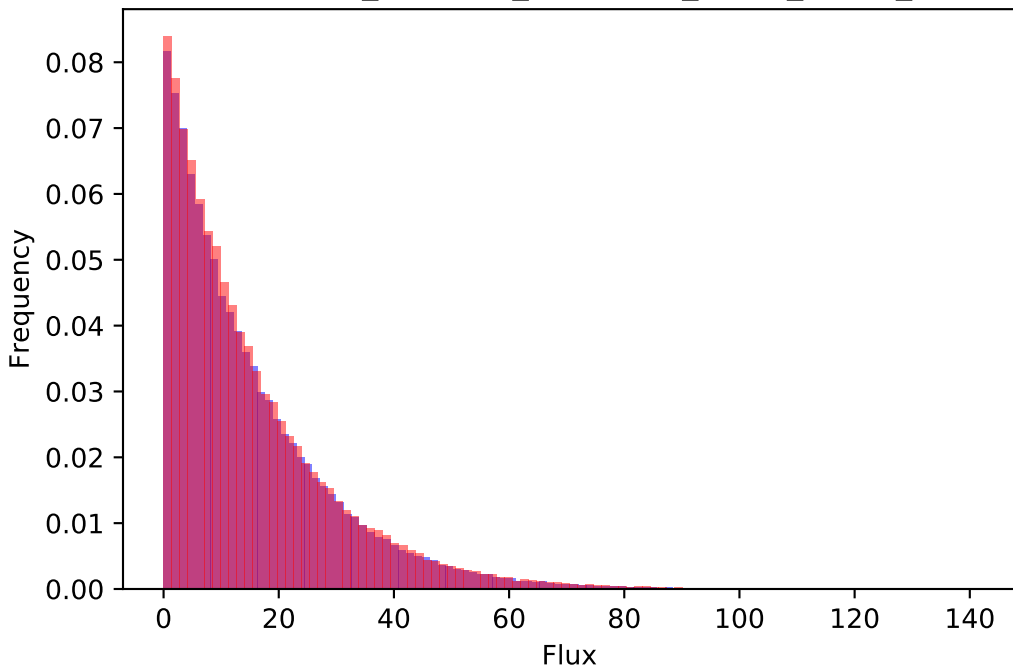
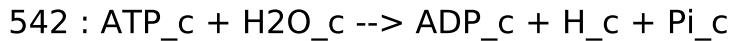


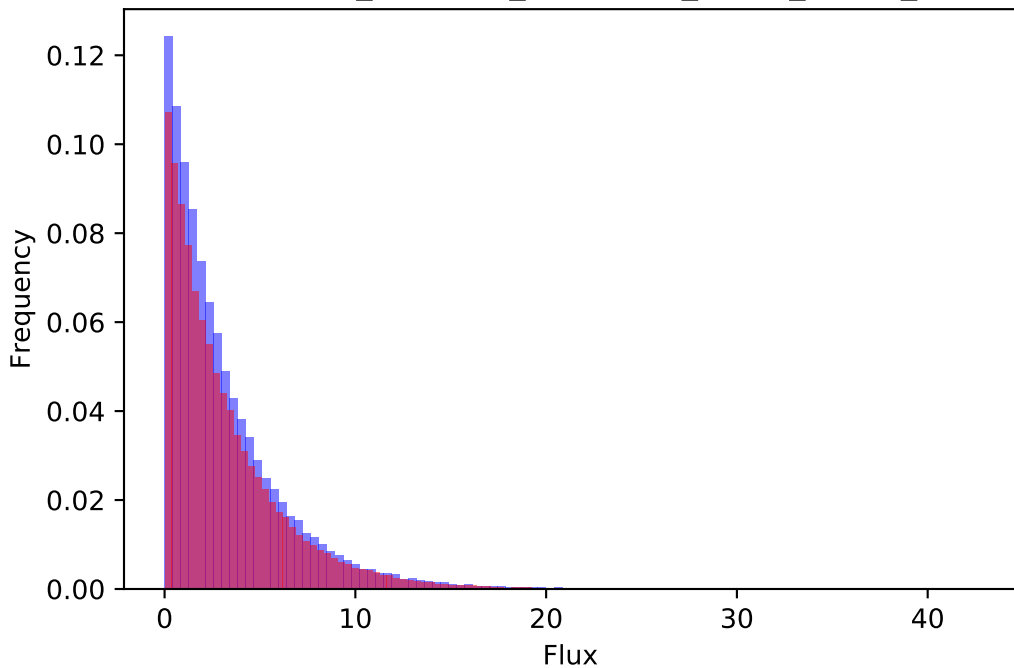
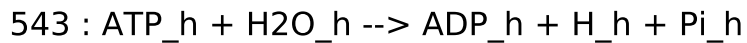
****540 : M_DASH_ACP_h --> ACP_h + H_h****



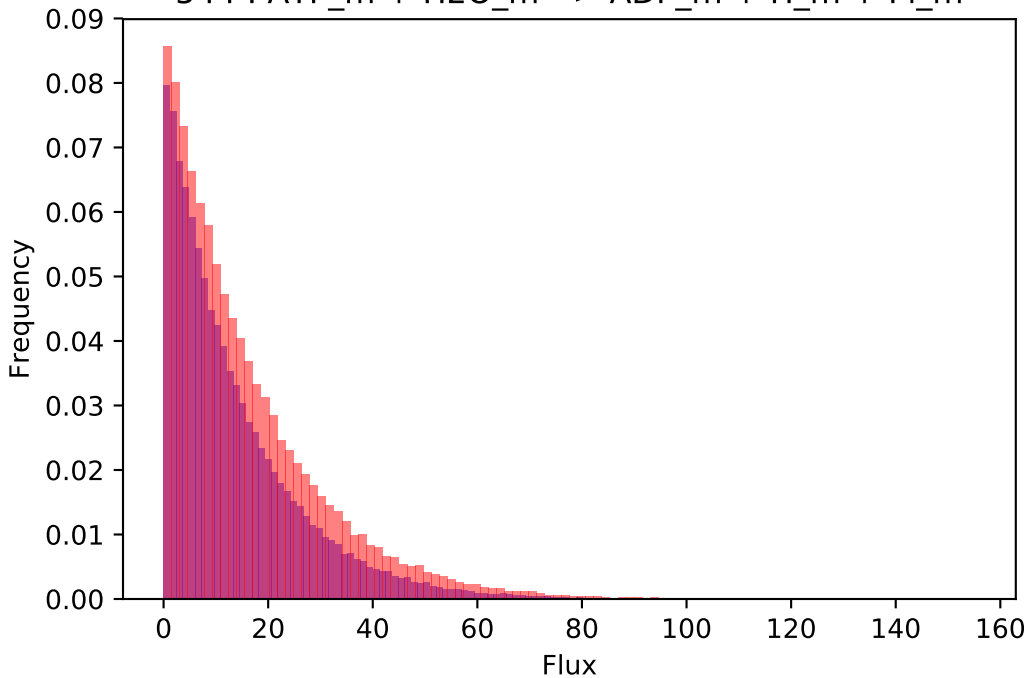
****541 : Tre_c --> ****



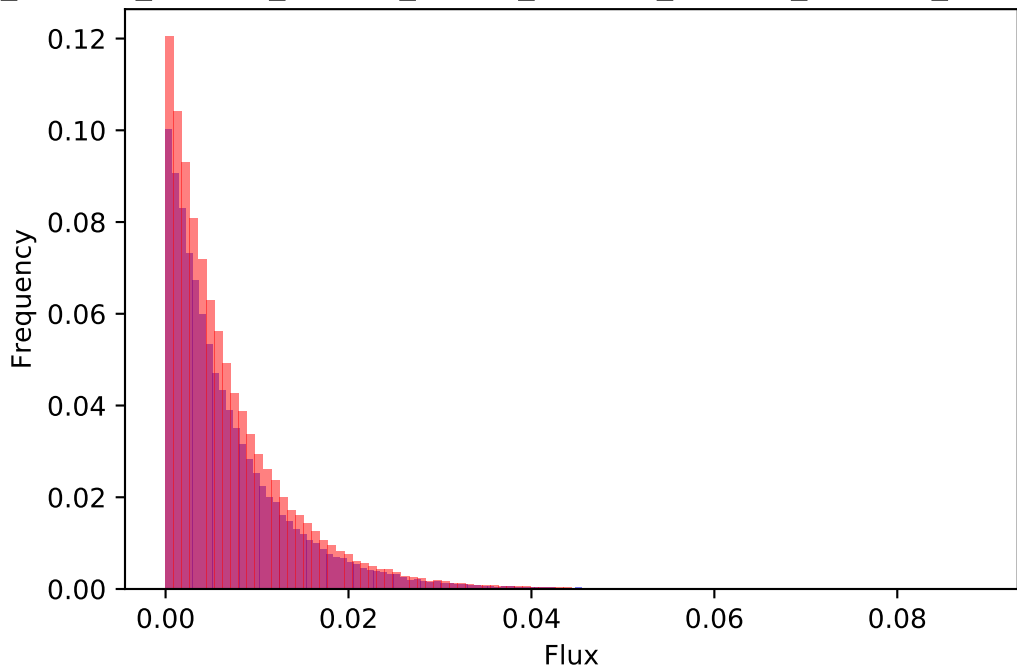




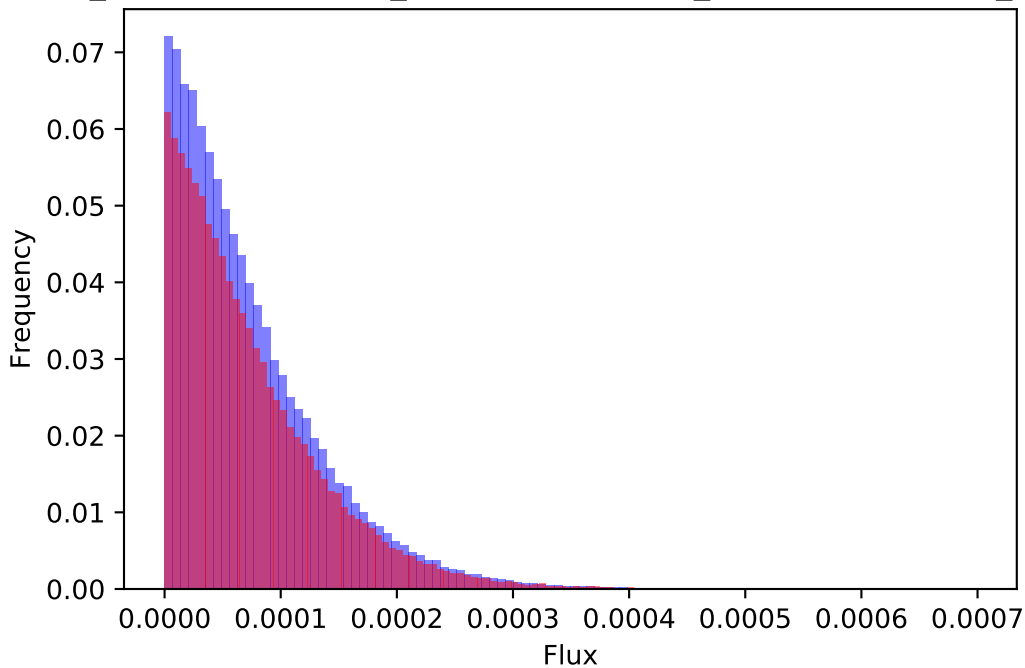
****544 : ATP_m + H2O_m --> ADP_m + H_m + Pi_m****



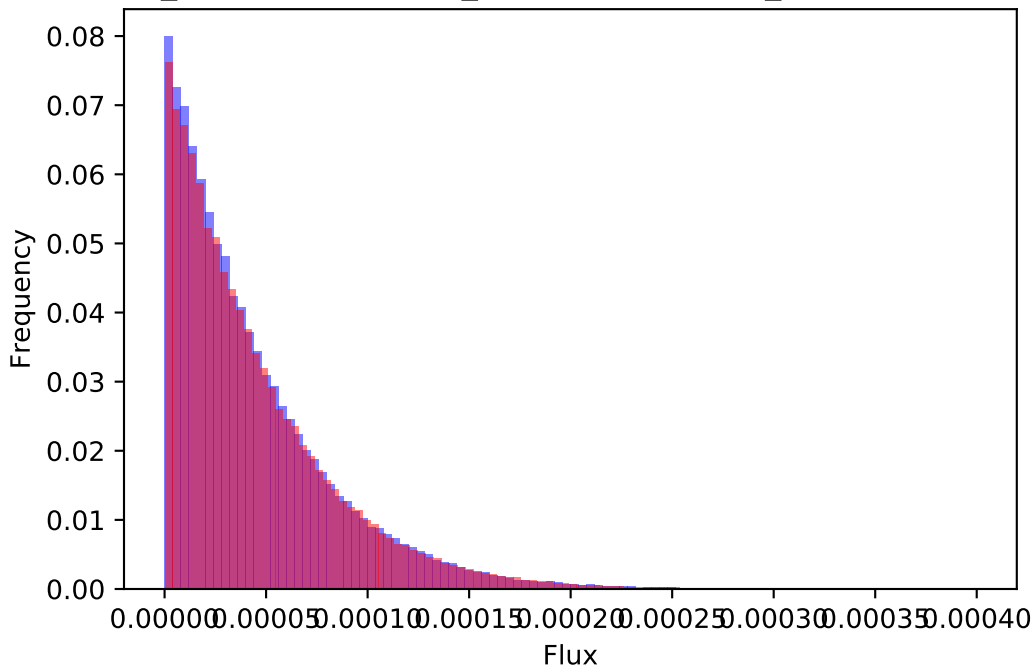
n_c + Glu_c + Gly_c + His_c + Ile_c + Leu_c + Lys_c + Met_c + Phe_c +



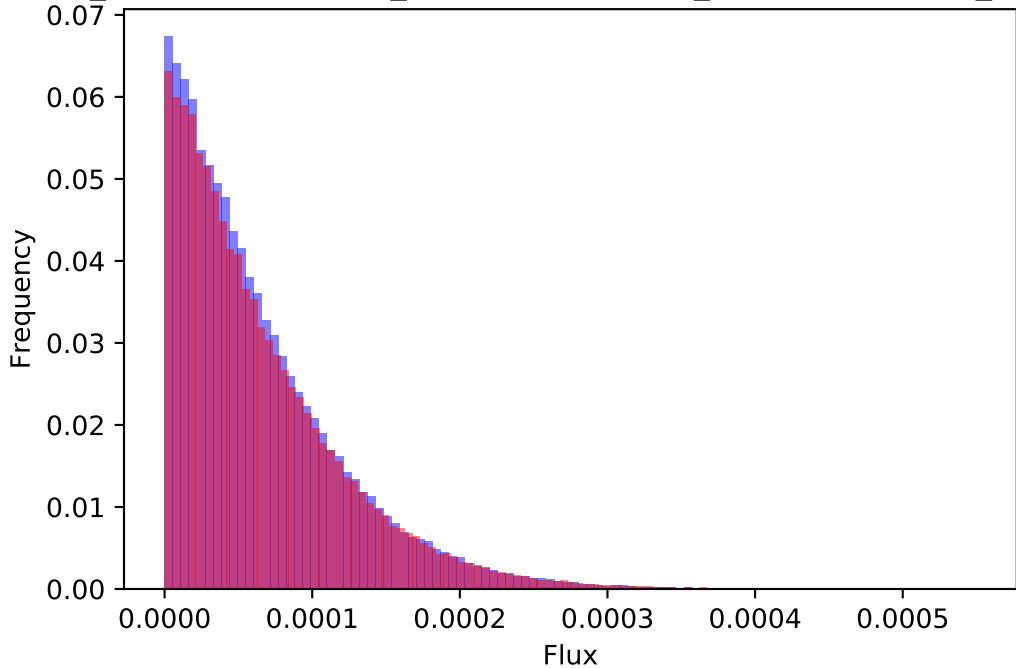
99 Mal_m + 2.27742 Mas_c + 30.37981 Met_c + 14.60727 Orn_h + 59.



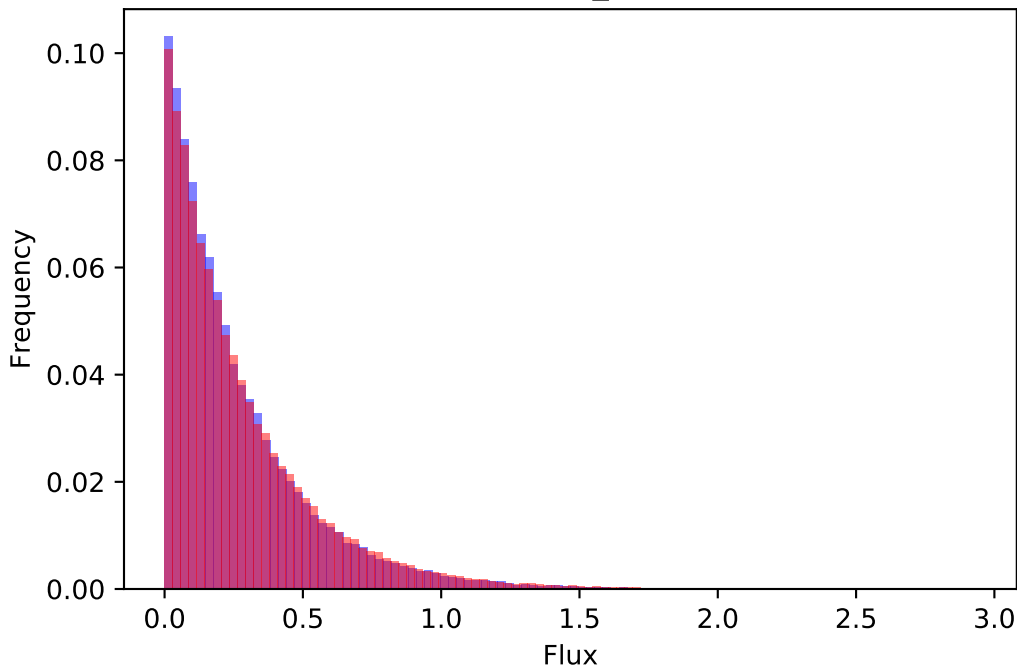
$$.89856 \text{ Mal_m} + 5.37965 \text{ Mas_c} + 51.81818 \text{ Met_c} + 9.64682 \text{ Orn_h} +$$



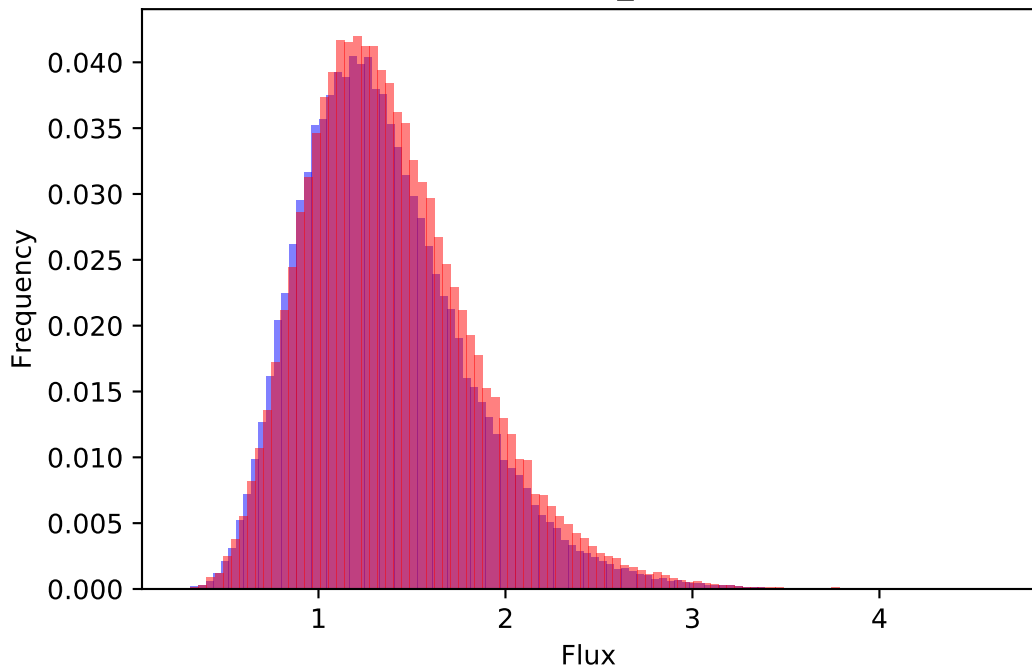
$$41 \text{ Mal_m} + 2.60958 \text{ Mas_c} + 33.61497 \text{ Met_c} + 1.58654 \text{ Orn_h} + 66.6$$



****549 : Mal_c --> ****



****550 : Fum_c --> ****



****551 : starch1_h --> ****

