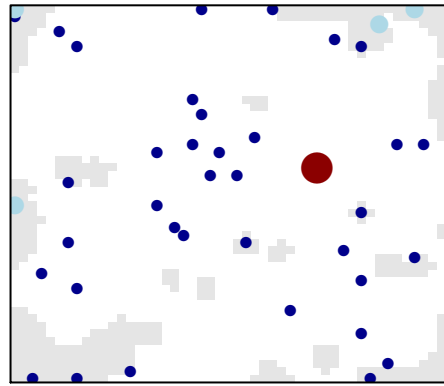
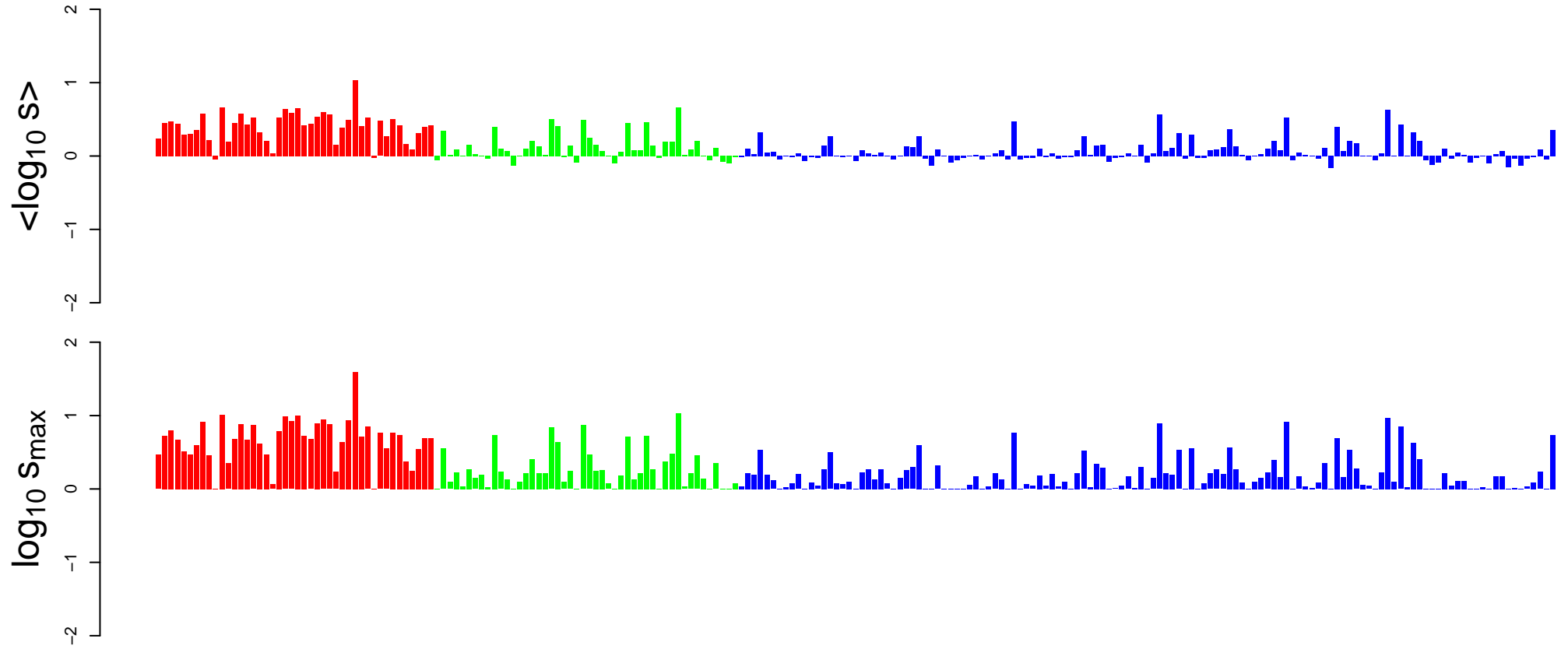


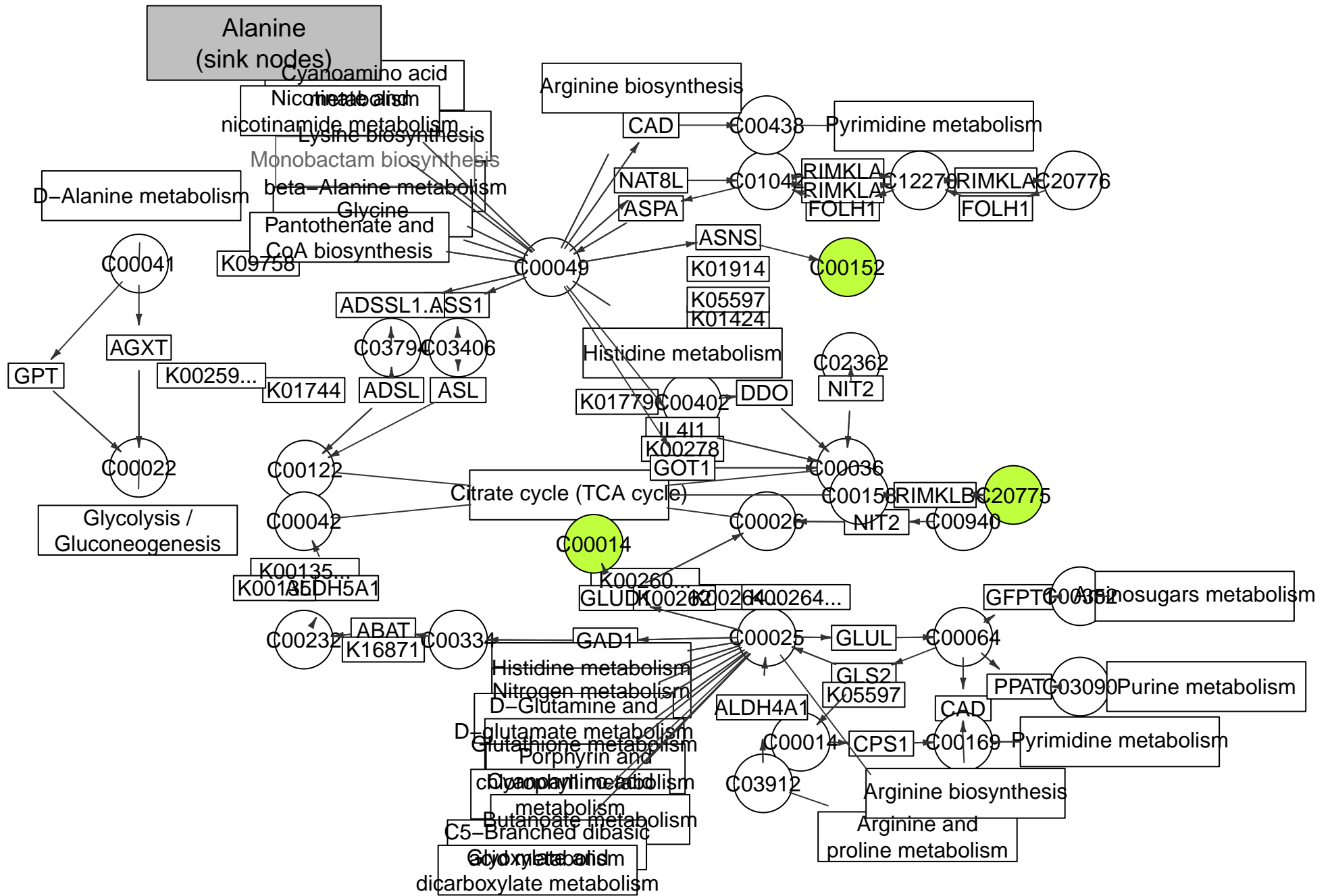
Alanine, aspartate and glutamate me

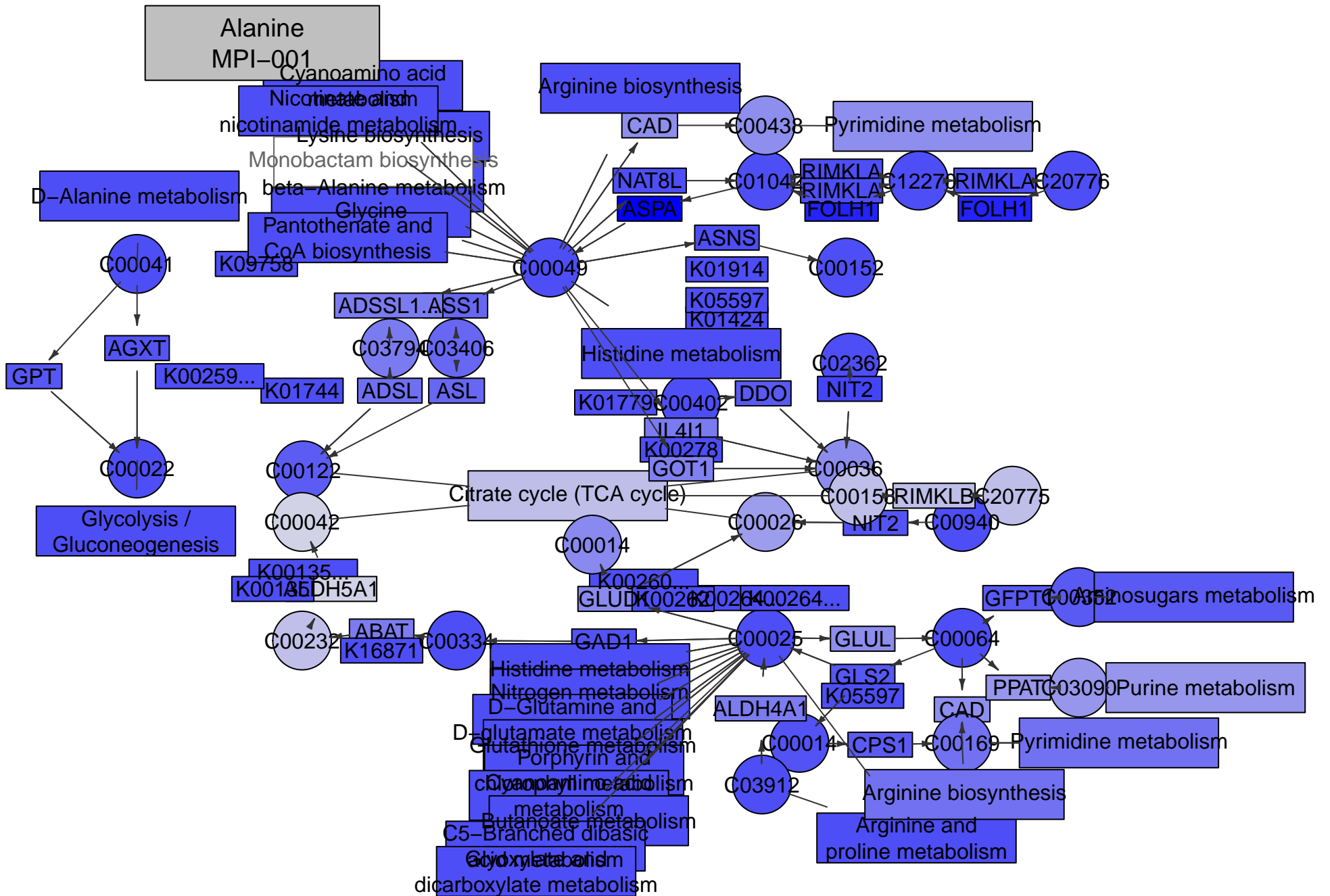
all genes

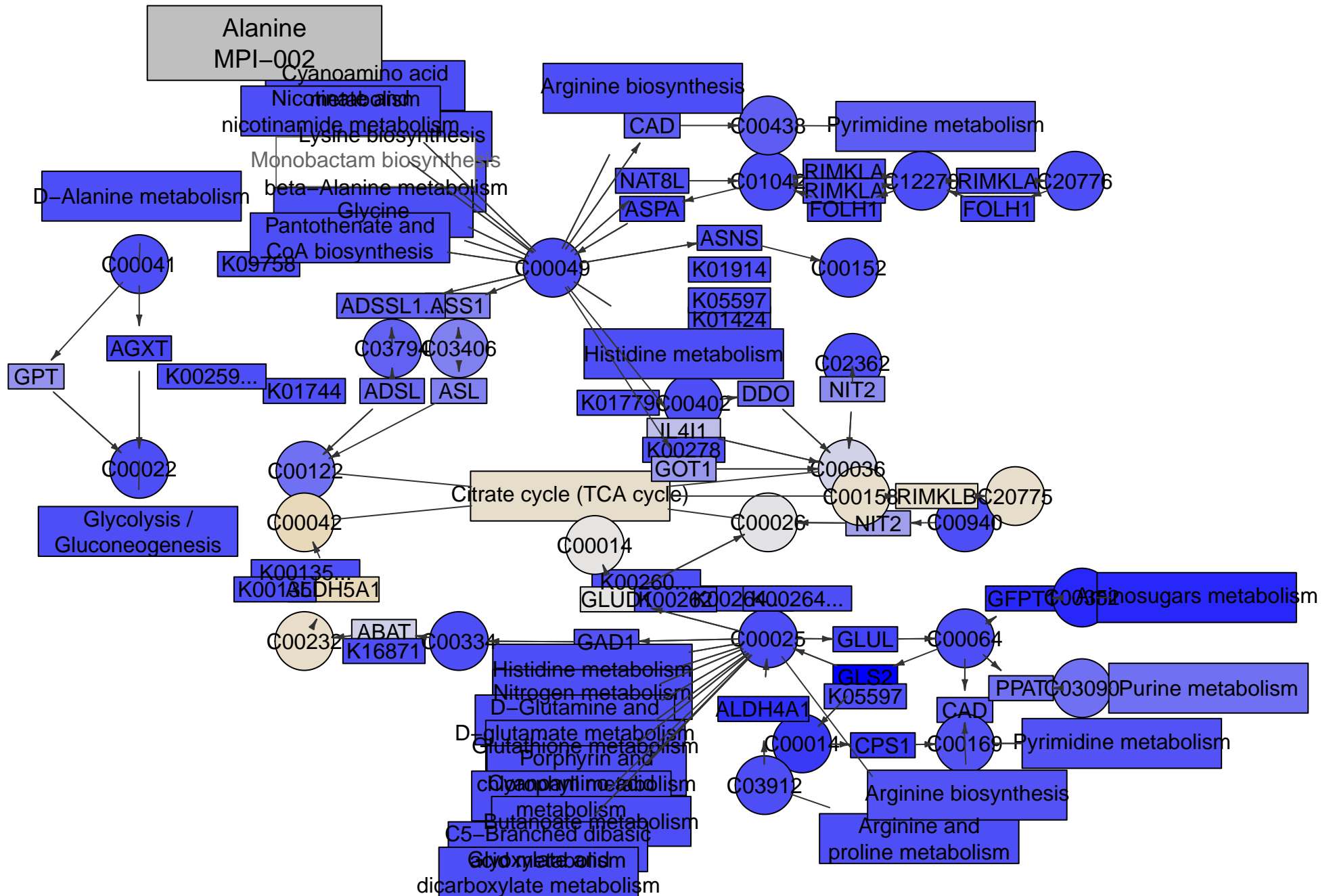


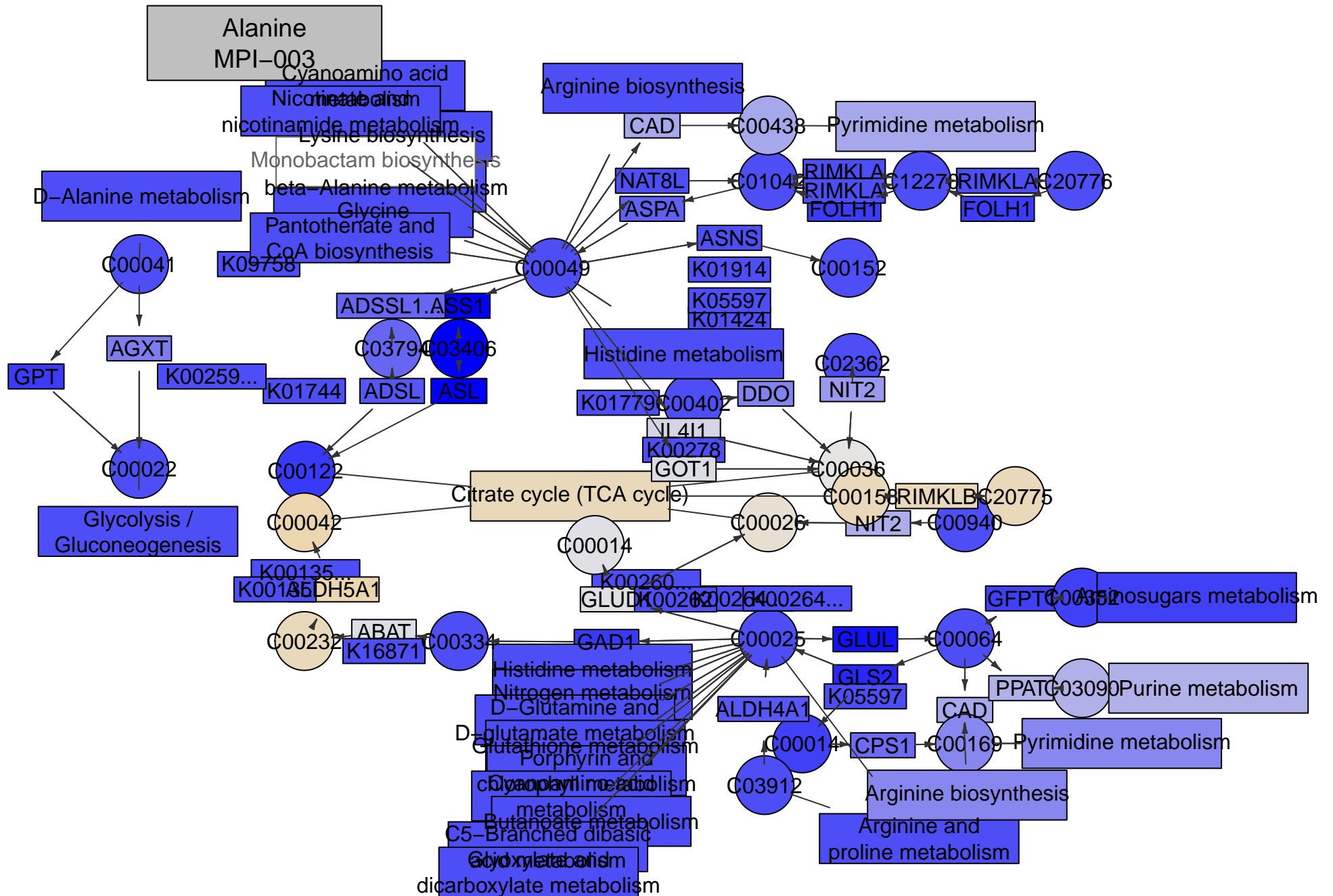
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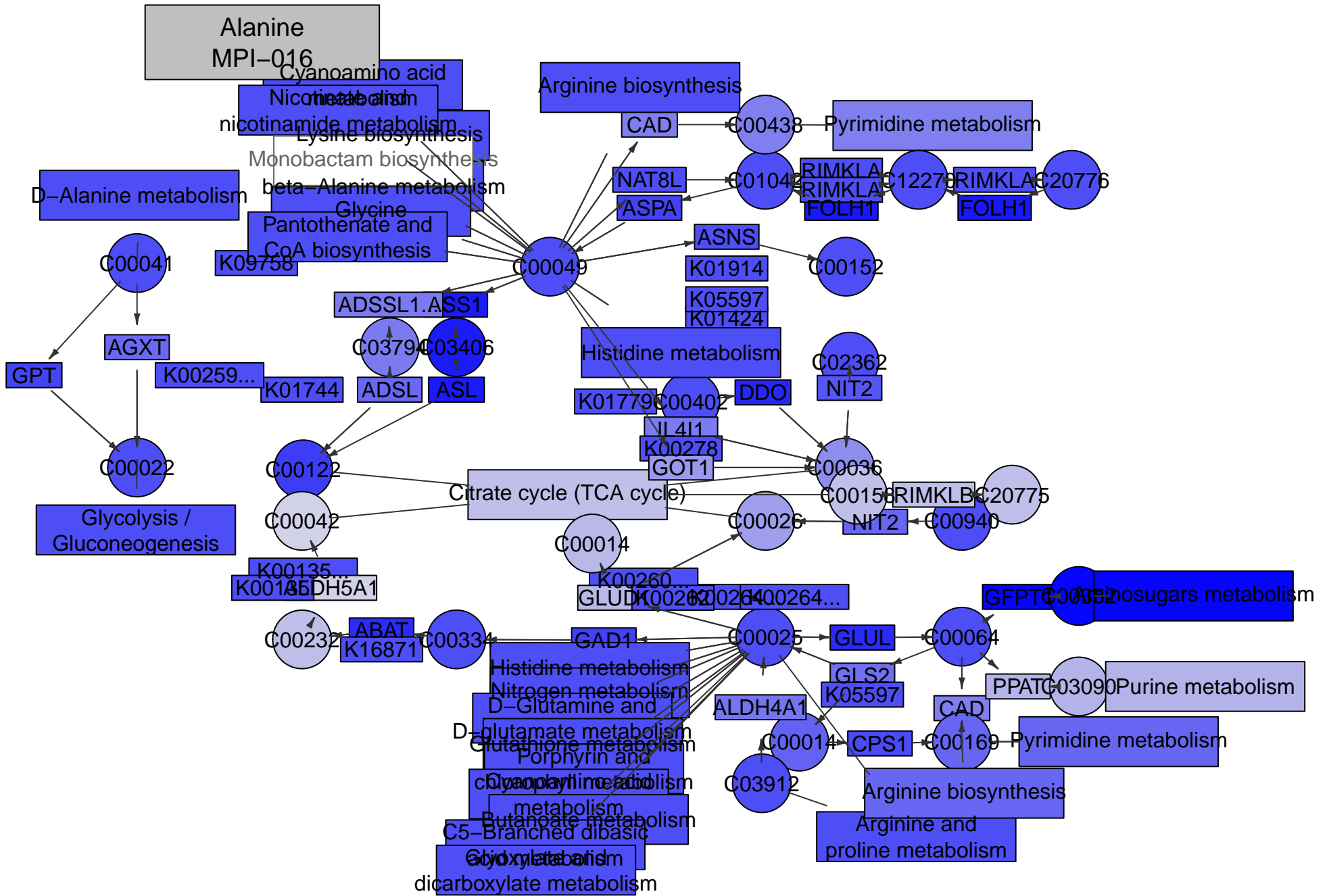


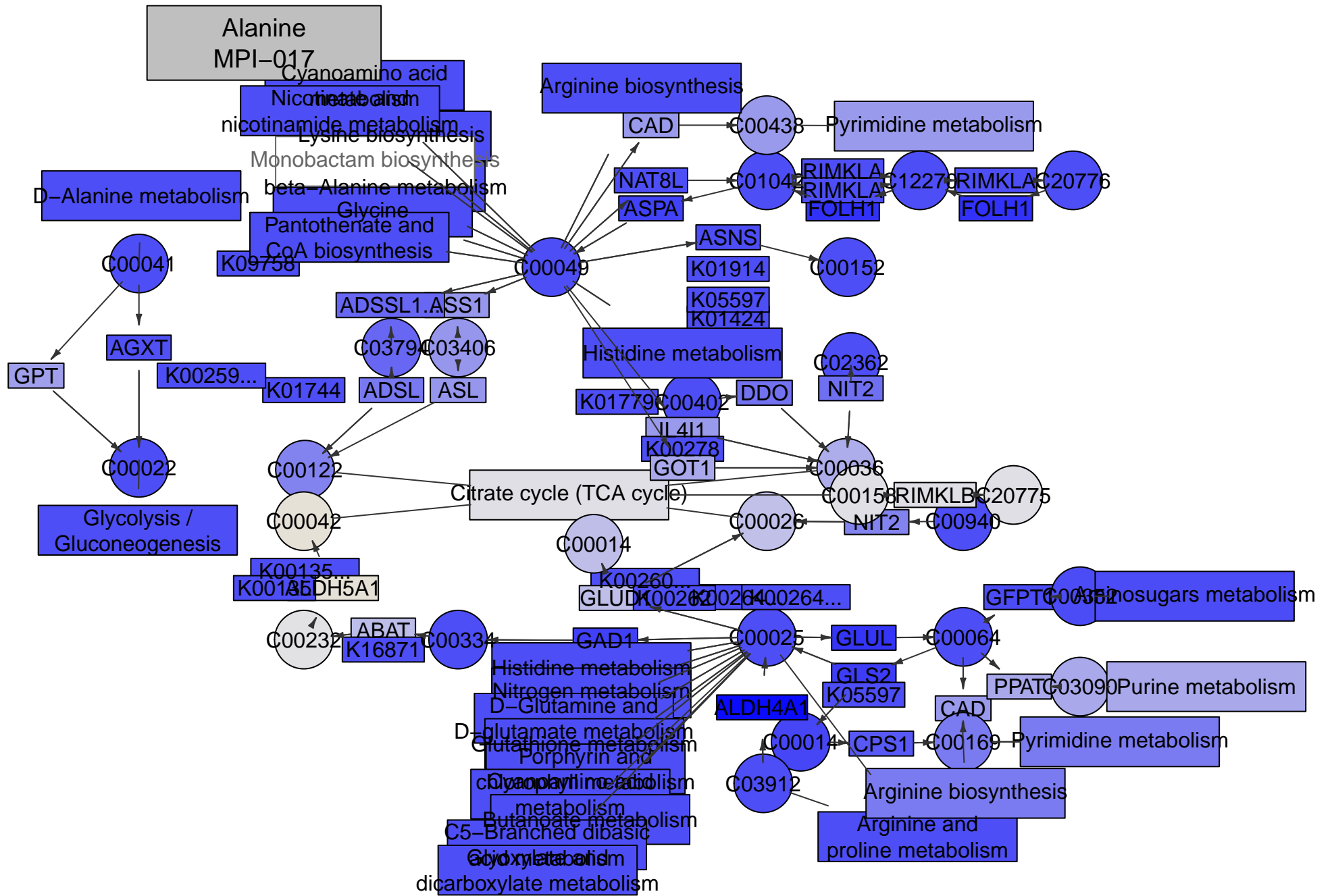


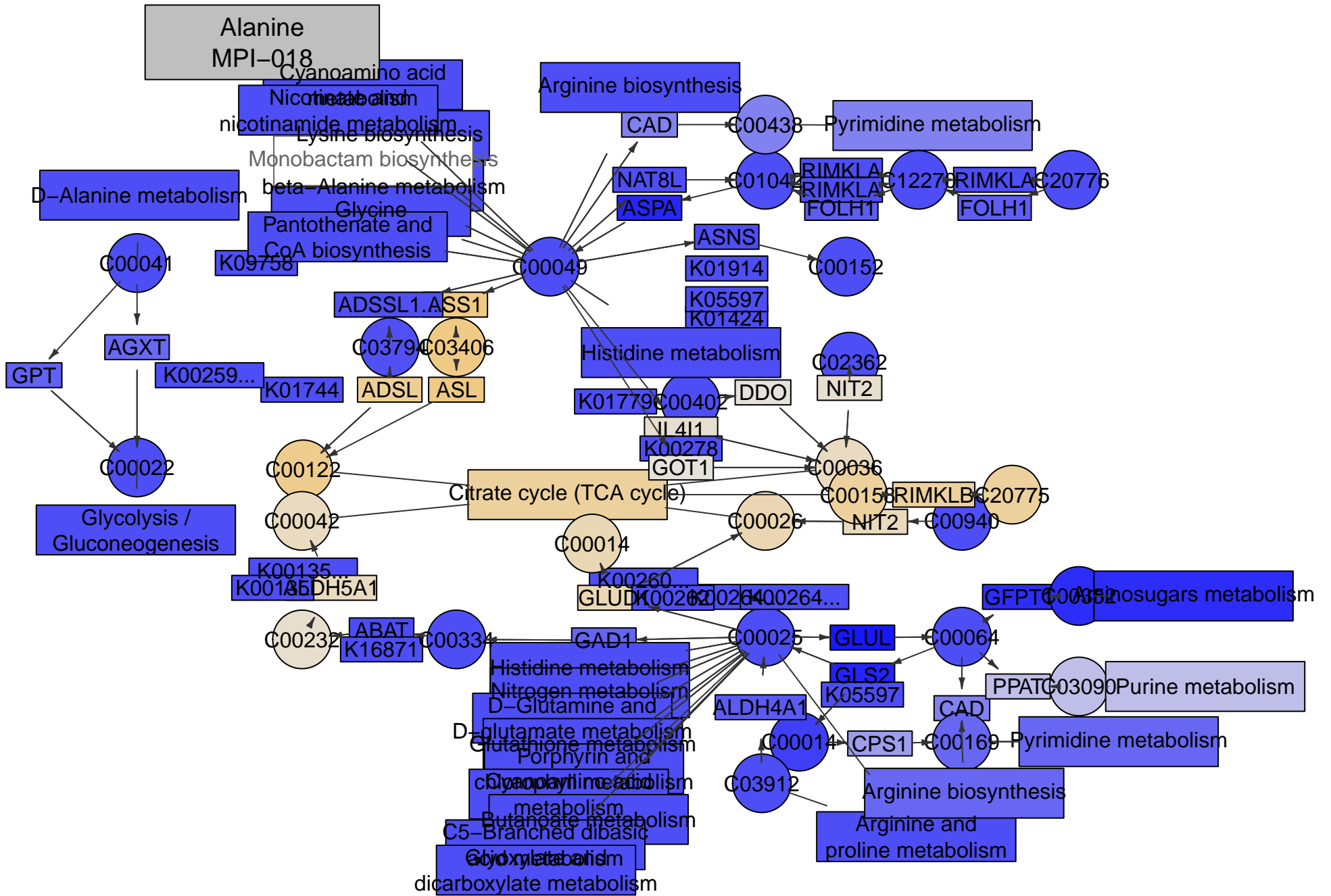


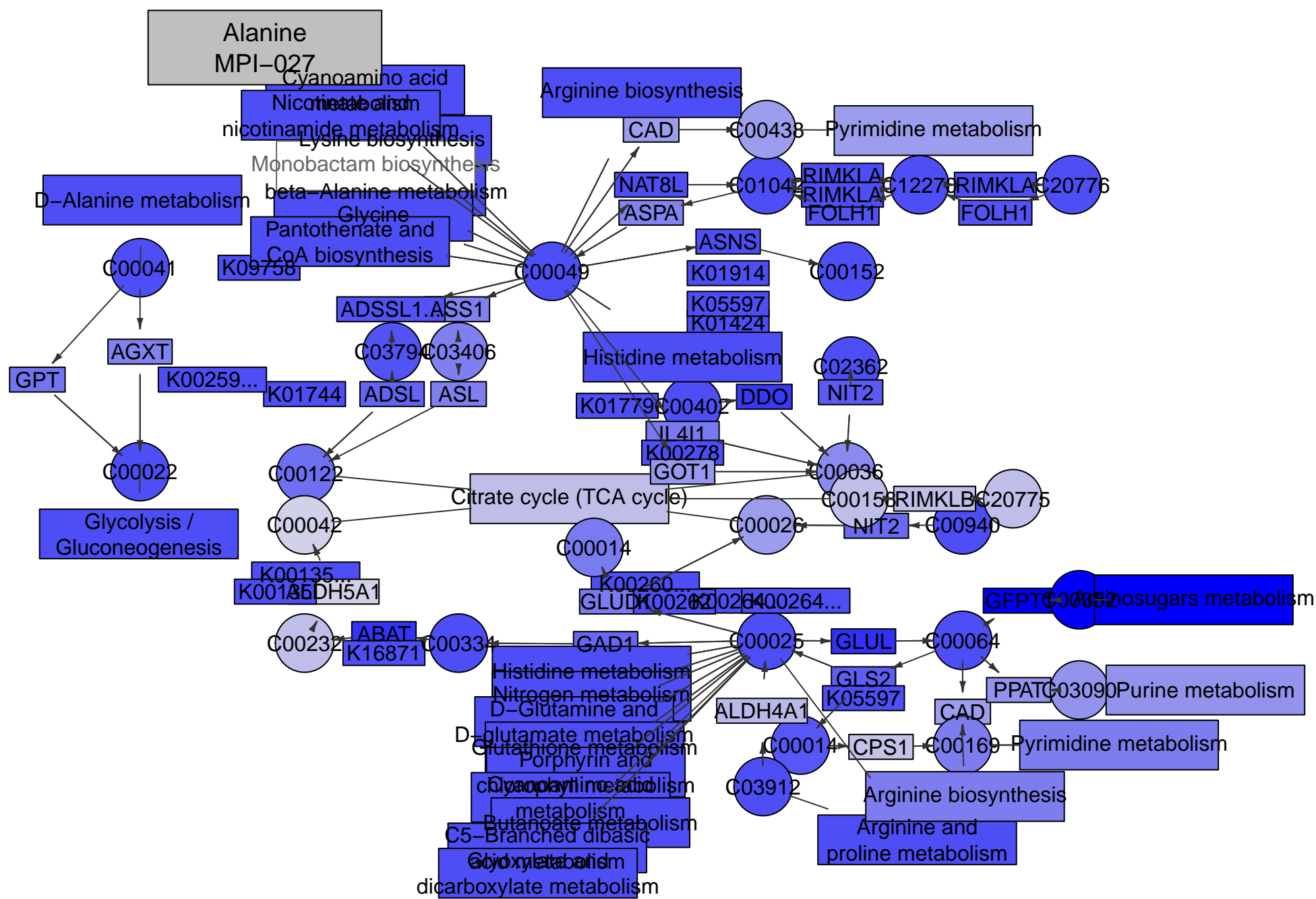


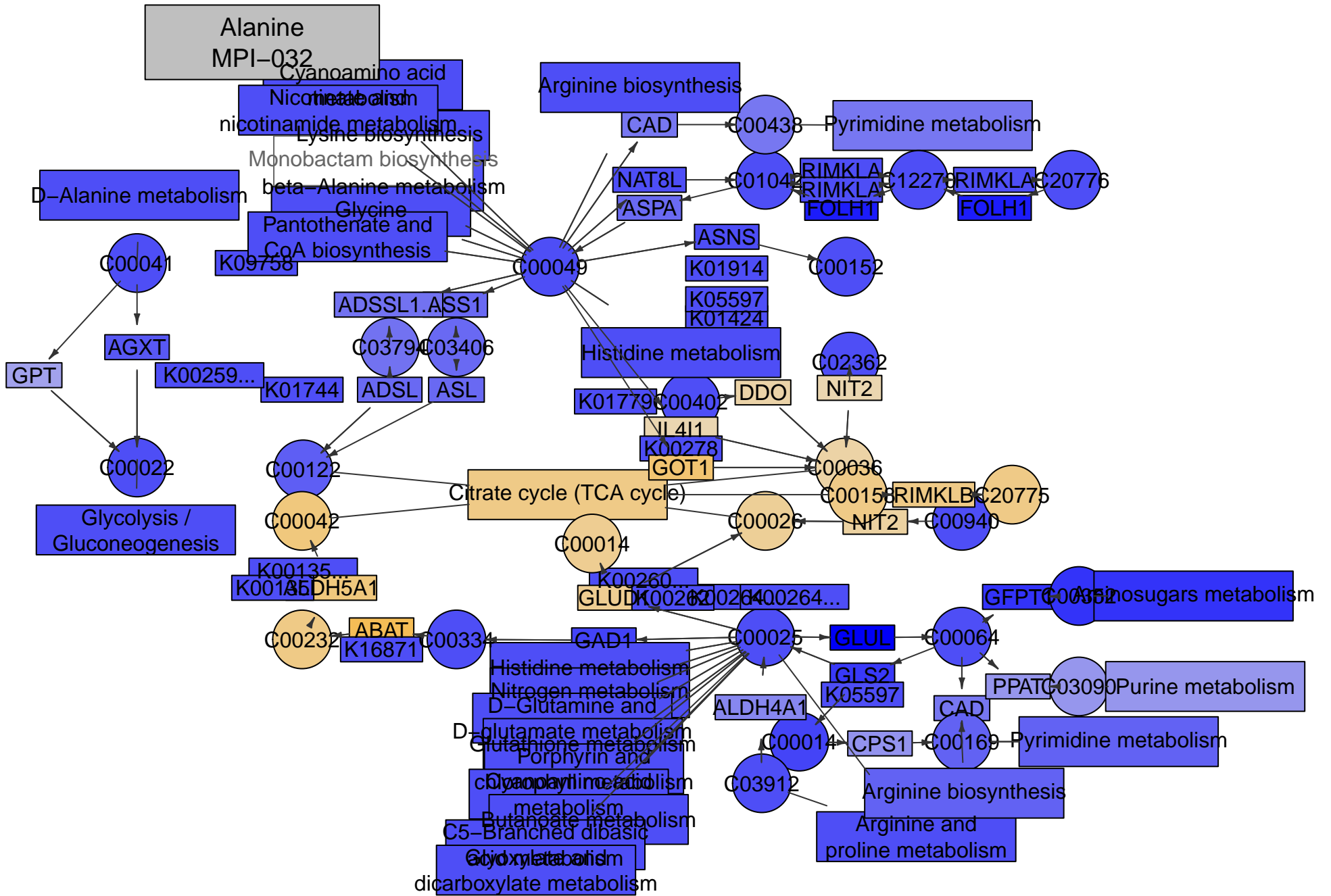


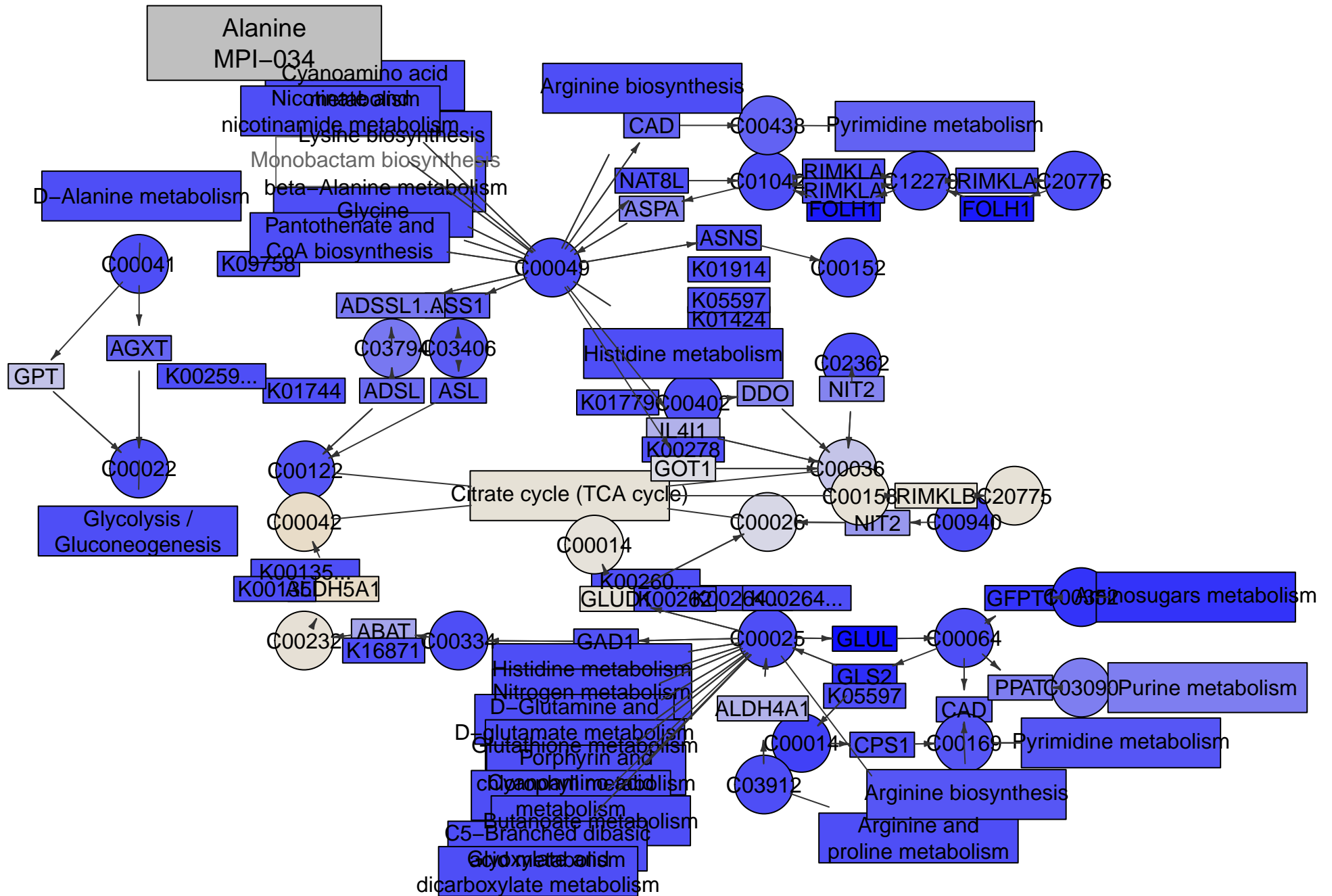


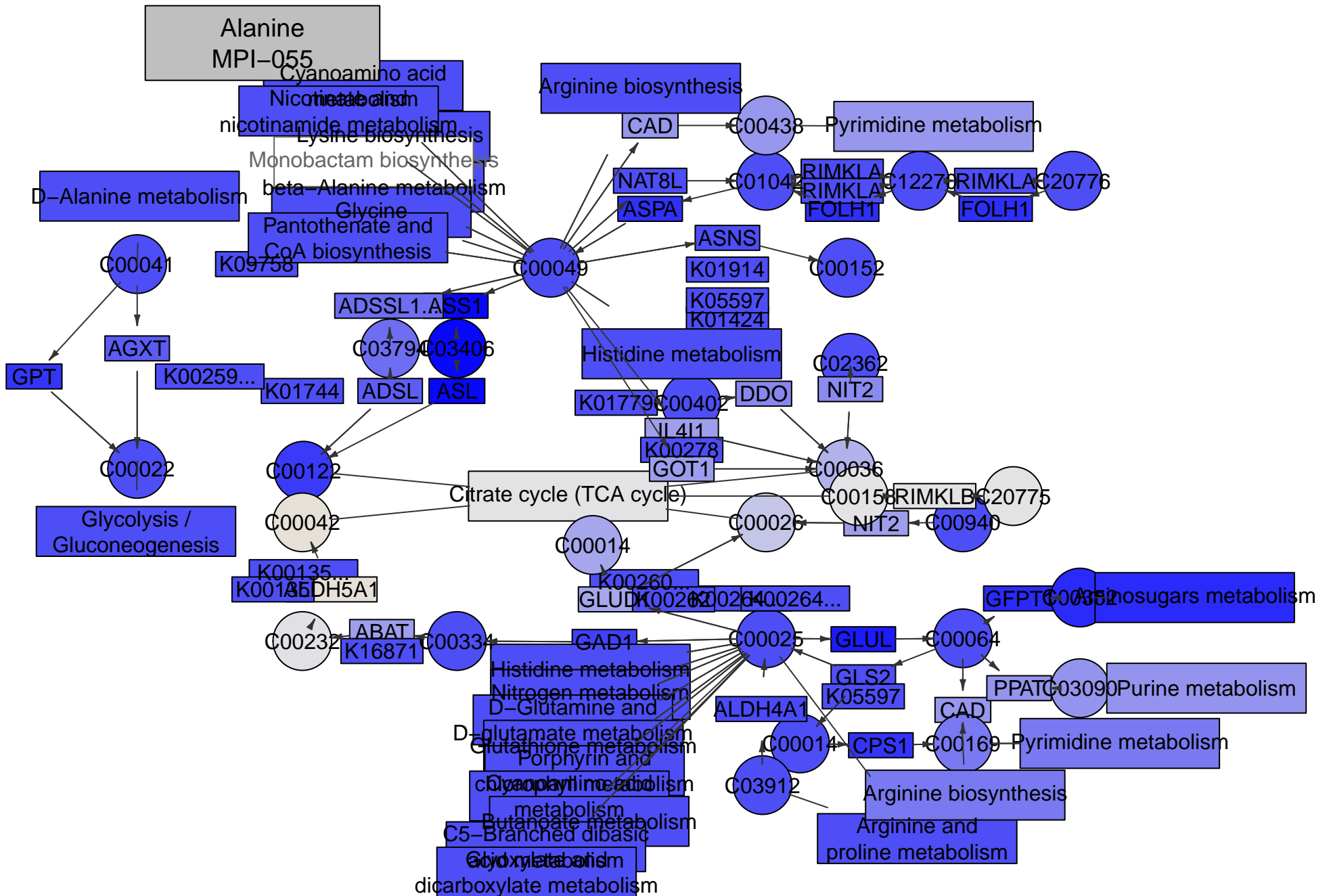


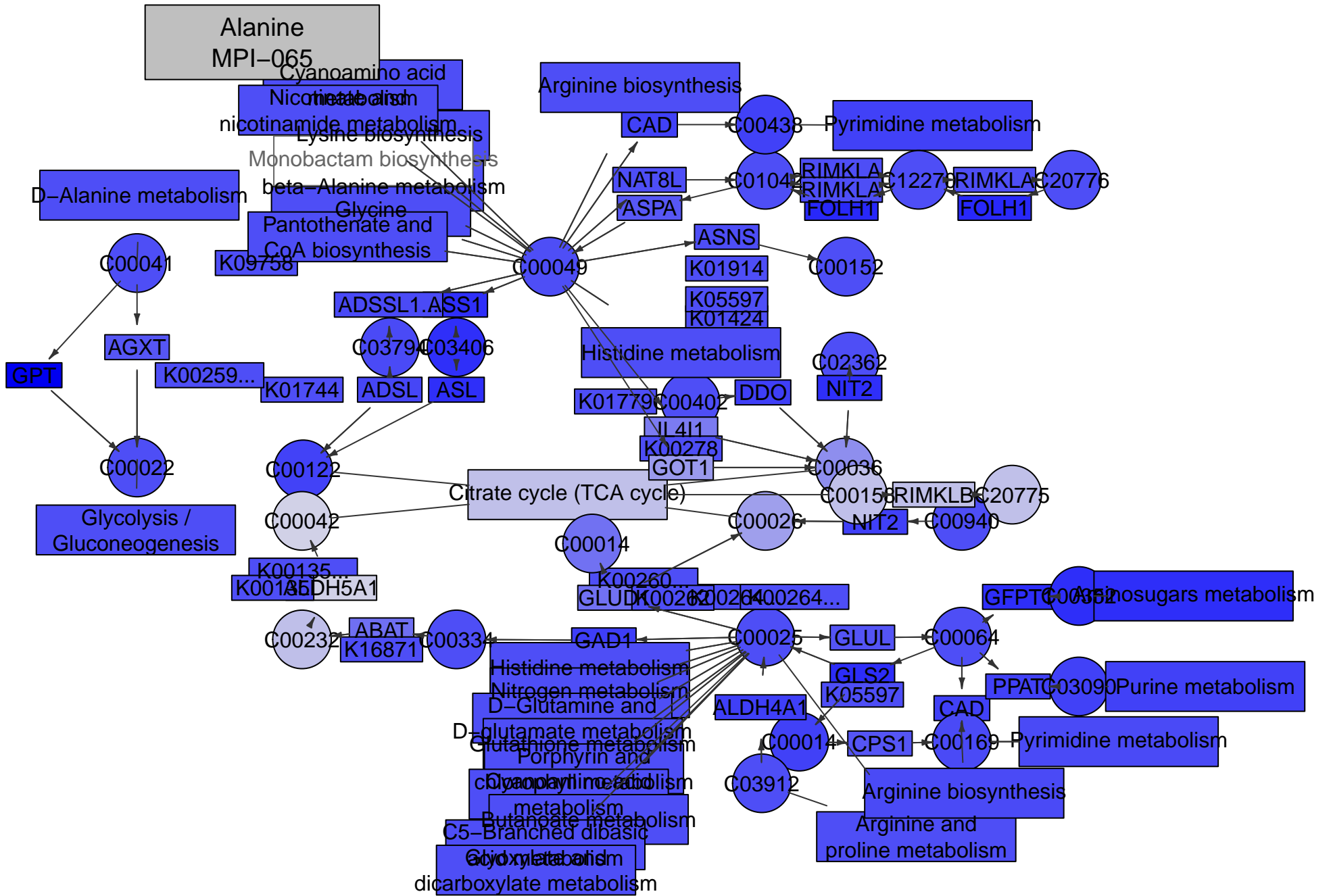


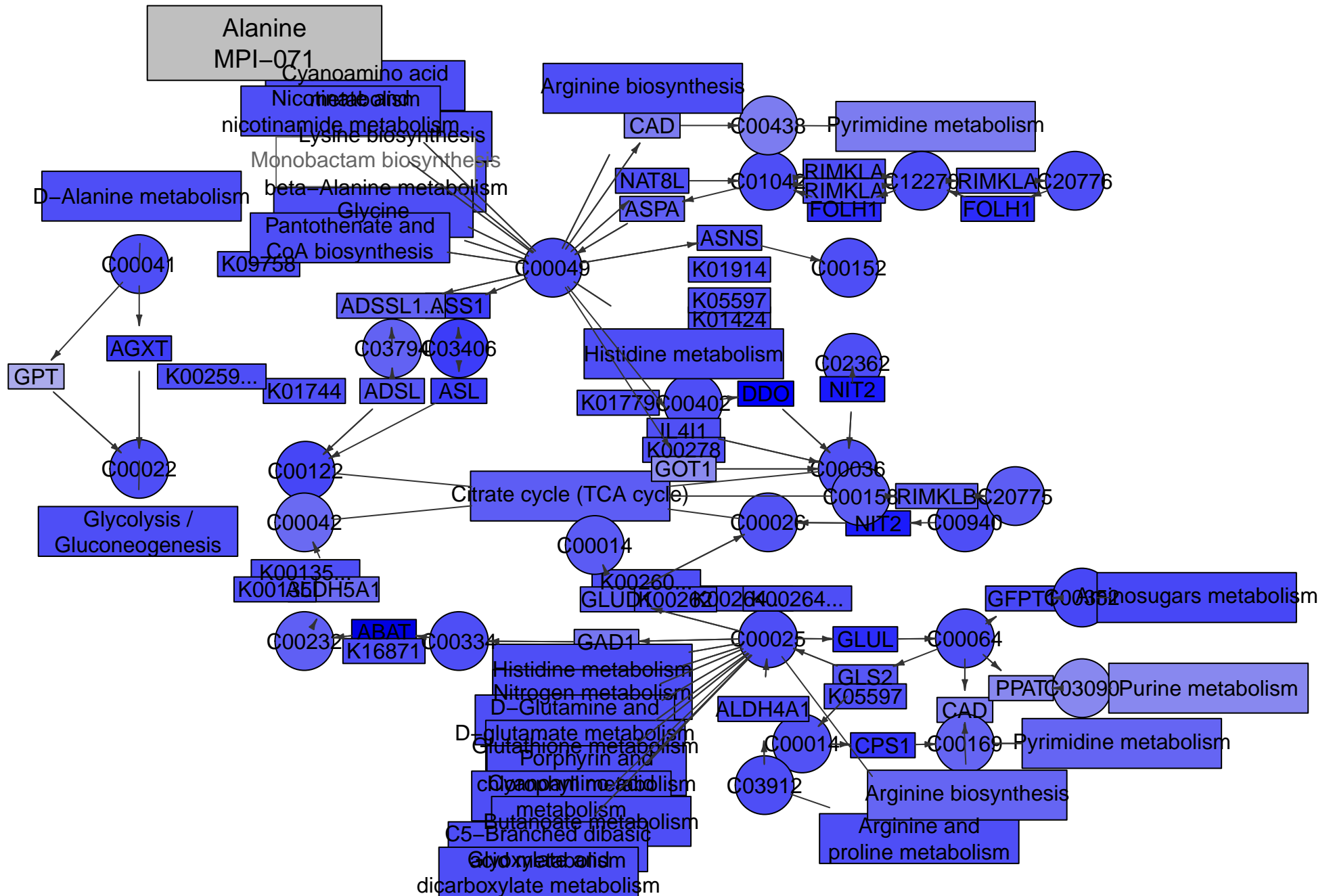


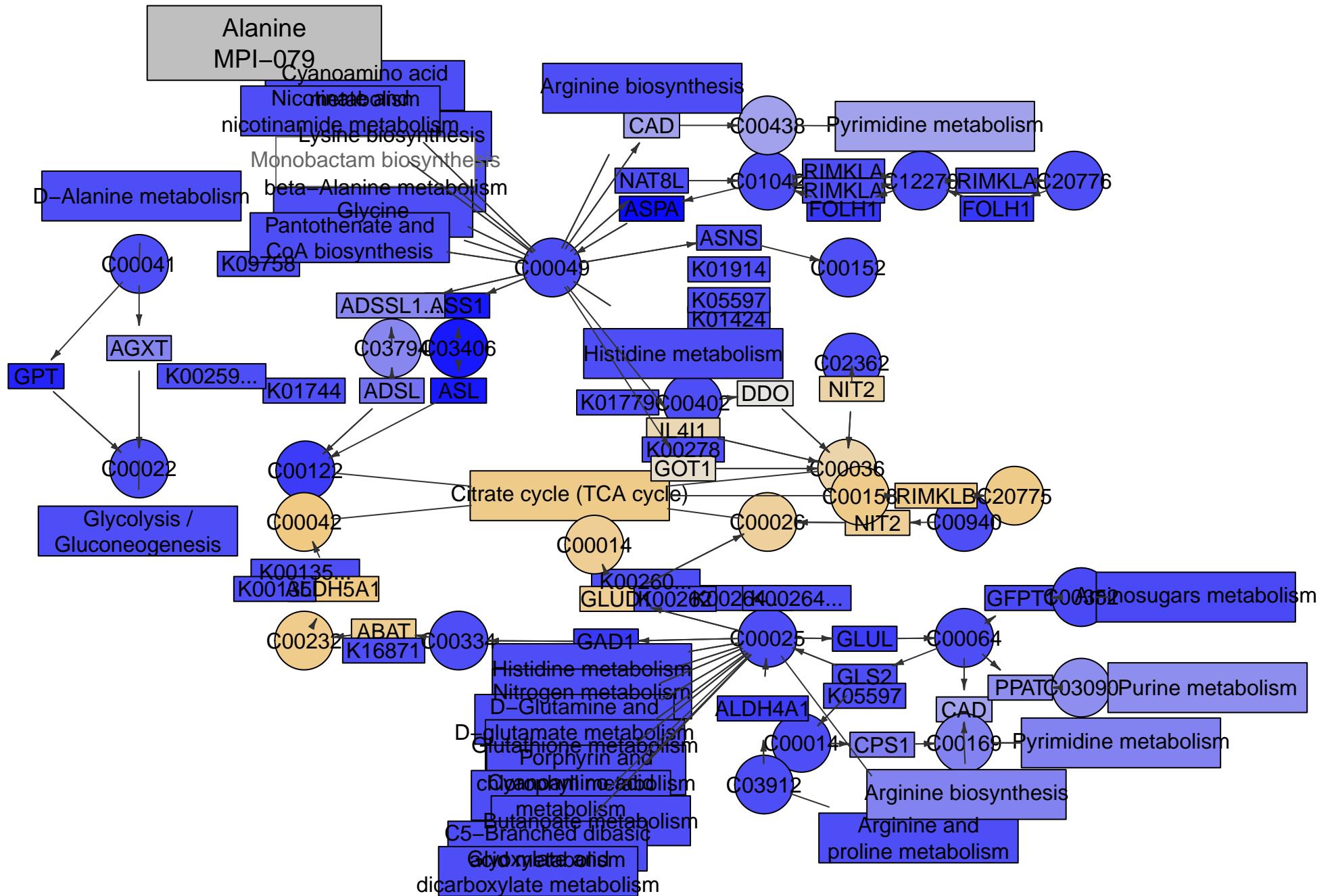


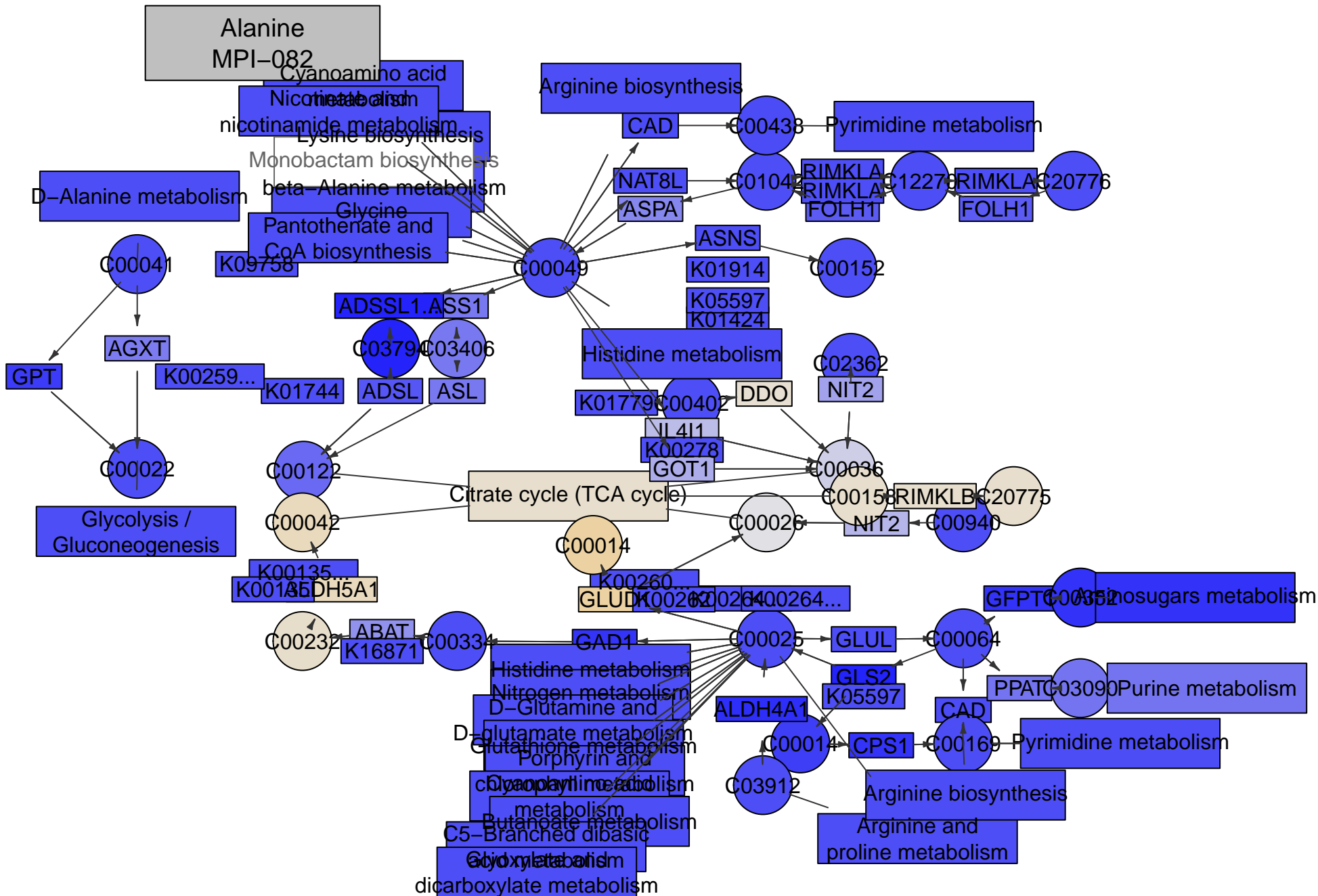


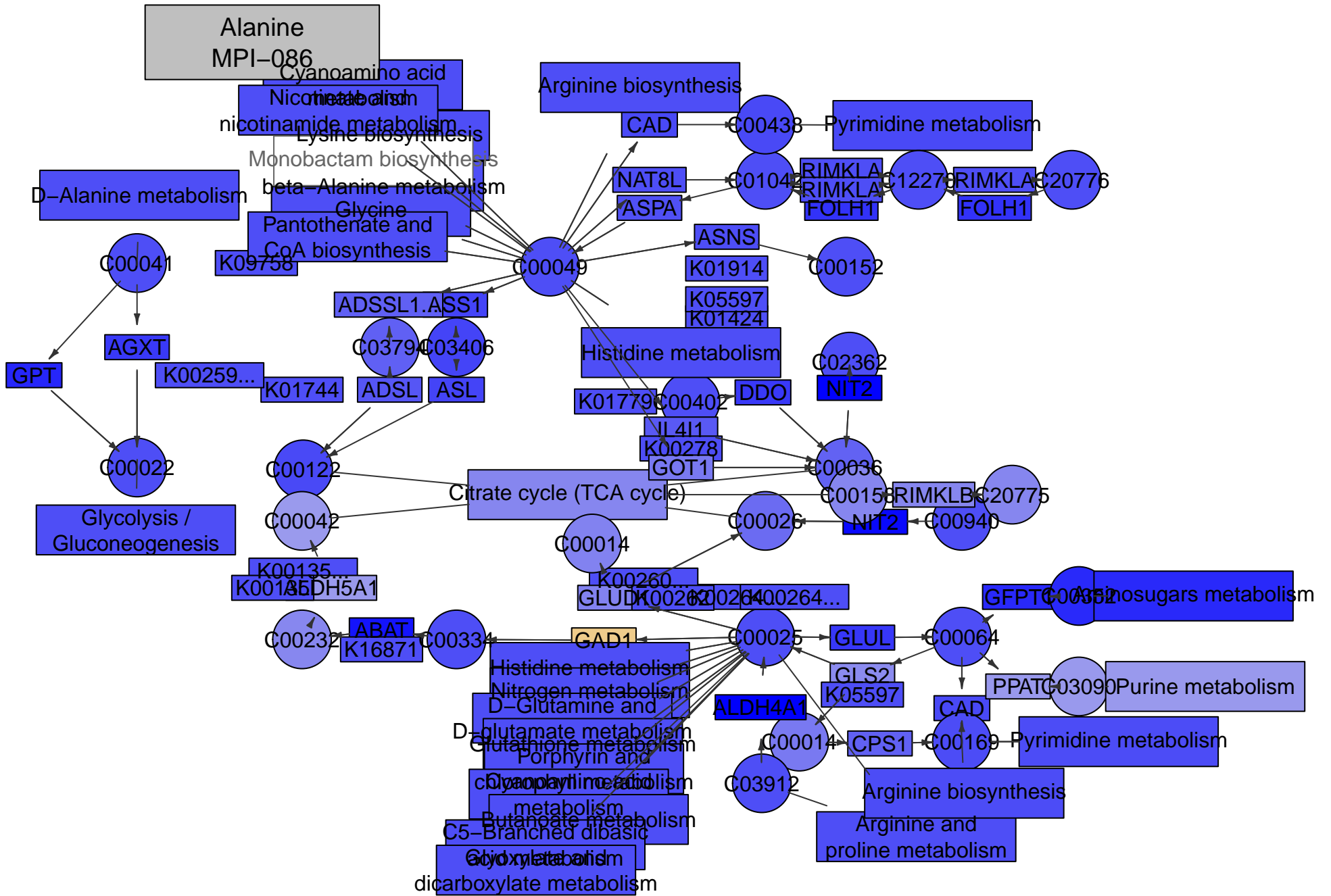


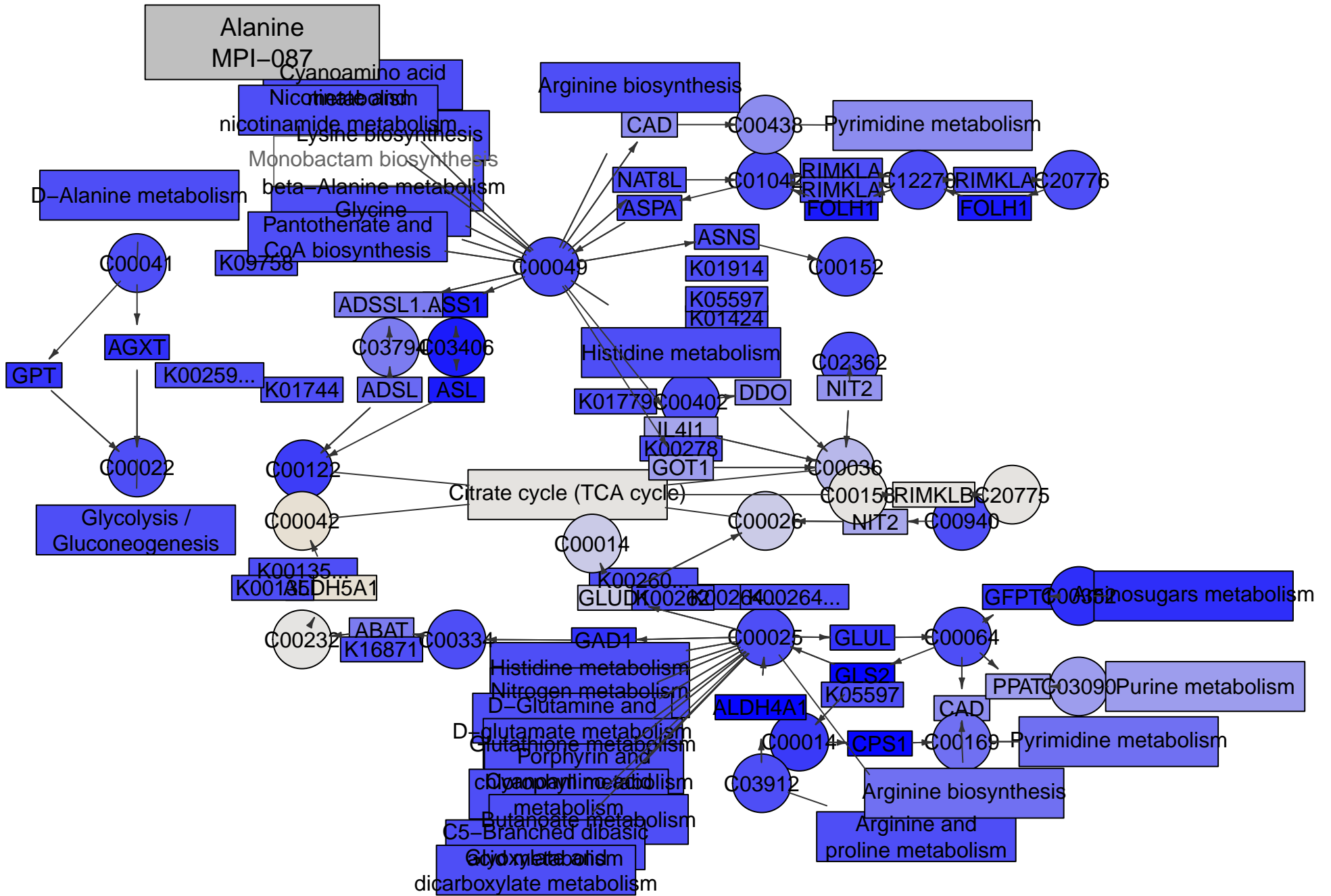


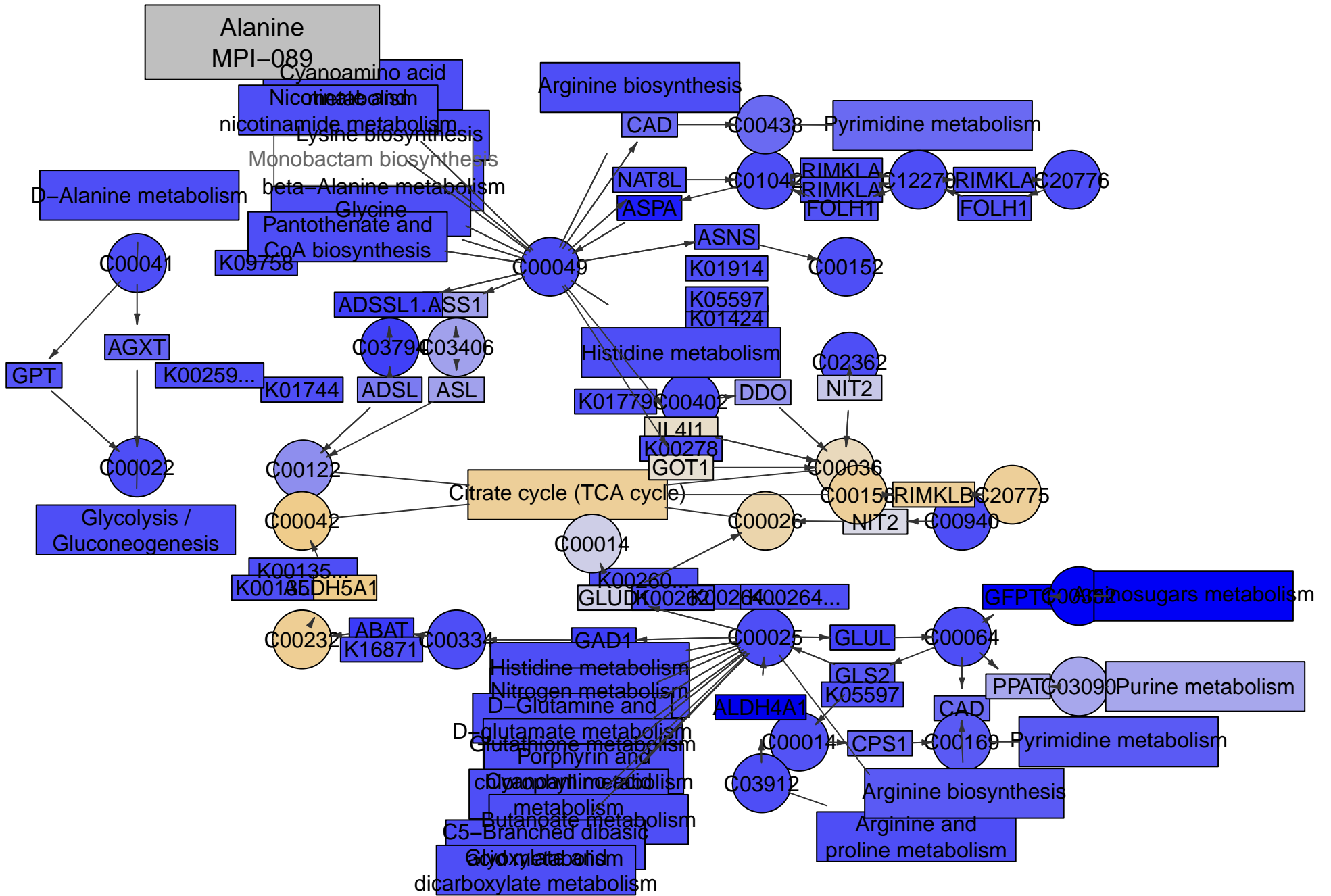


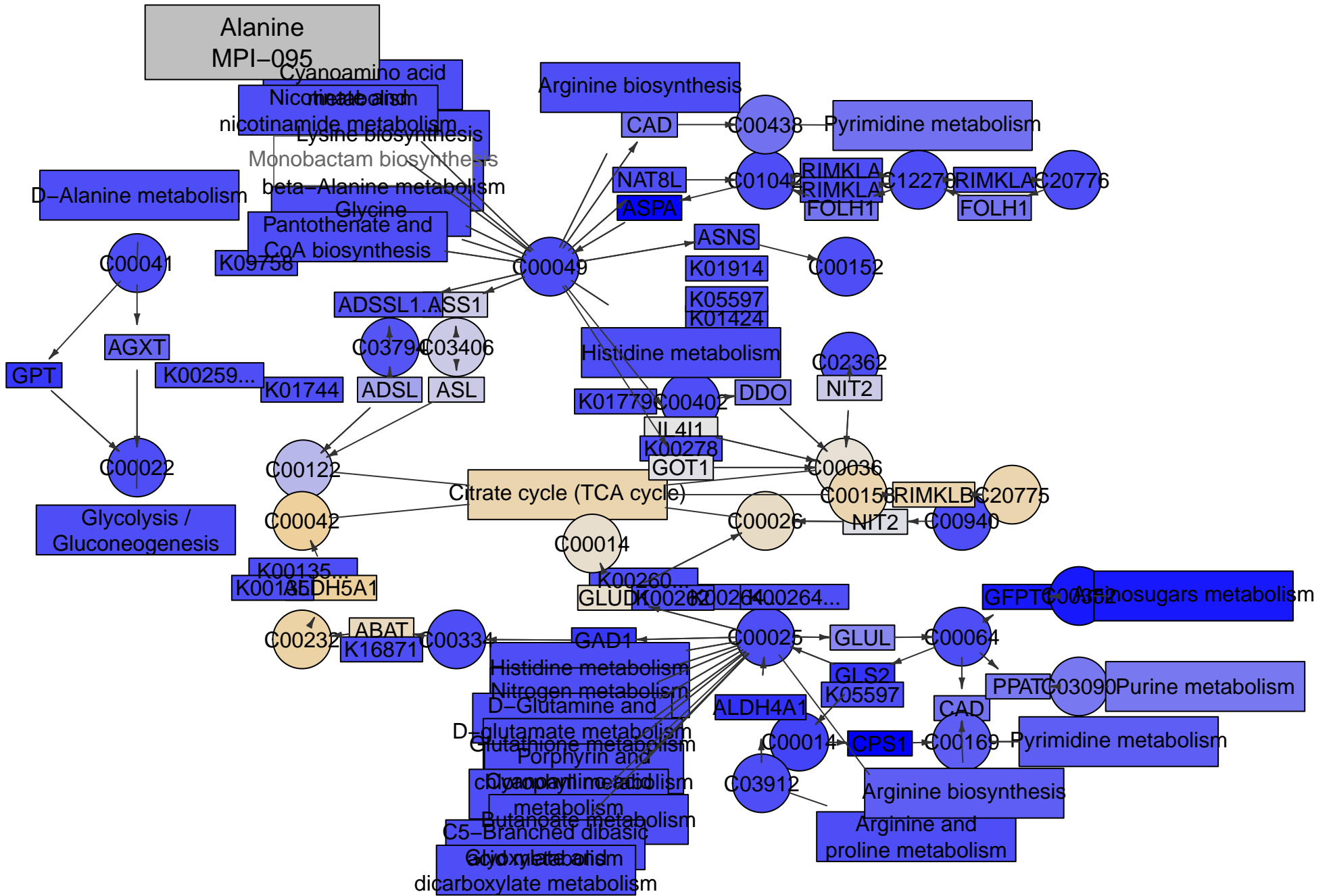


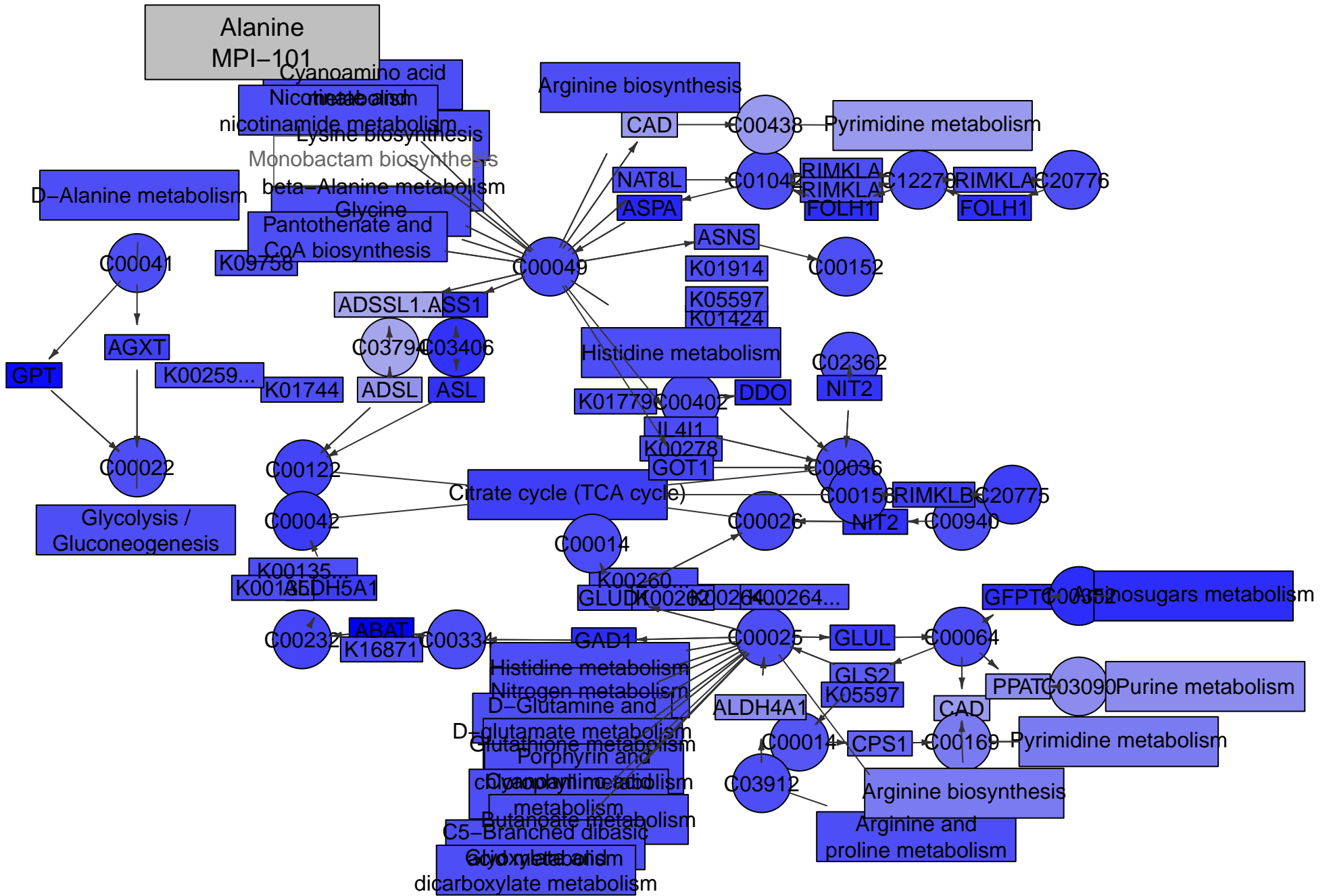












Alanine MPI-101

Cyanoamino acid metabolism

Nicotinamide metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Pantothenate and CoA biosynthesis

D-Alanine metabolism

Arginine biosynthesis

CAD

C00438

Pyrimidine metabolism

NAT8L

C01042

RIMKLA

C12276

RIMKLA

C20776

ASPA

FOLH1

FOLH1

ASNS

C00152

K09758

C00041

ADSSL1.ASS1

C00049

K01914

C00152

K05597

K01424

Histidine metabolism

C02362

GPT

AGXT

K00259...

C03790

C03406

ADSL

ASL

K01779

C00402

DDO

NIT2

C00022

Glycolysis / Gluconeogenesis

C00122

Citrate cycle (TCA cycle)

K01779

C00402

DDO

NIT2

C00042

Citrate cycle (TCA cycle)

K01779

C00402

DDO

NIT2

C00036

C00158

RIMKLB

C20775

C00042

Citrate cycle (TCA cycle)

K01779

C00402

DDO

NIT2

C00036

C00158

RIMKLB

C20775

C00042

Citrate cycle (TCA cycle)

K01779

C00402

DDO

NIT2

C00036

C00158

RIMKLB

C20775

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

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K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

K00135...

C00232

ABAT

K16871

C00334

GAD1

C00025

GLUL

C00064

GFPT

C00352

Disaccharides metabolism

Histidine metabolism

Nitrogen metabolism

D-Glutamine and

D-glutamate metabolism

Glutathione metabolism

Porphyrin and

heme metabolism

Cyanocobalamin metabolism

metabolism

Butanoate metabolism

C5-Branched dibasic

dicarboxylate metabolism

ALDH4A1

C00014

CPS1

C00169

CAD

C00169

PPATC

C03090

Purine metabolism

Pyrimidine metabolism

C03912

C00014

CPS1

C00169

CAD

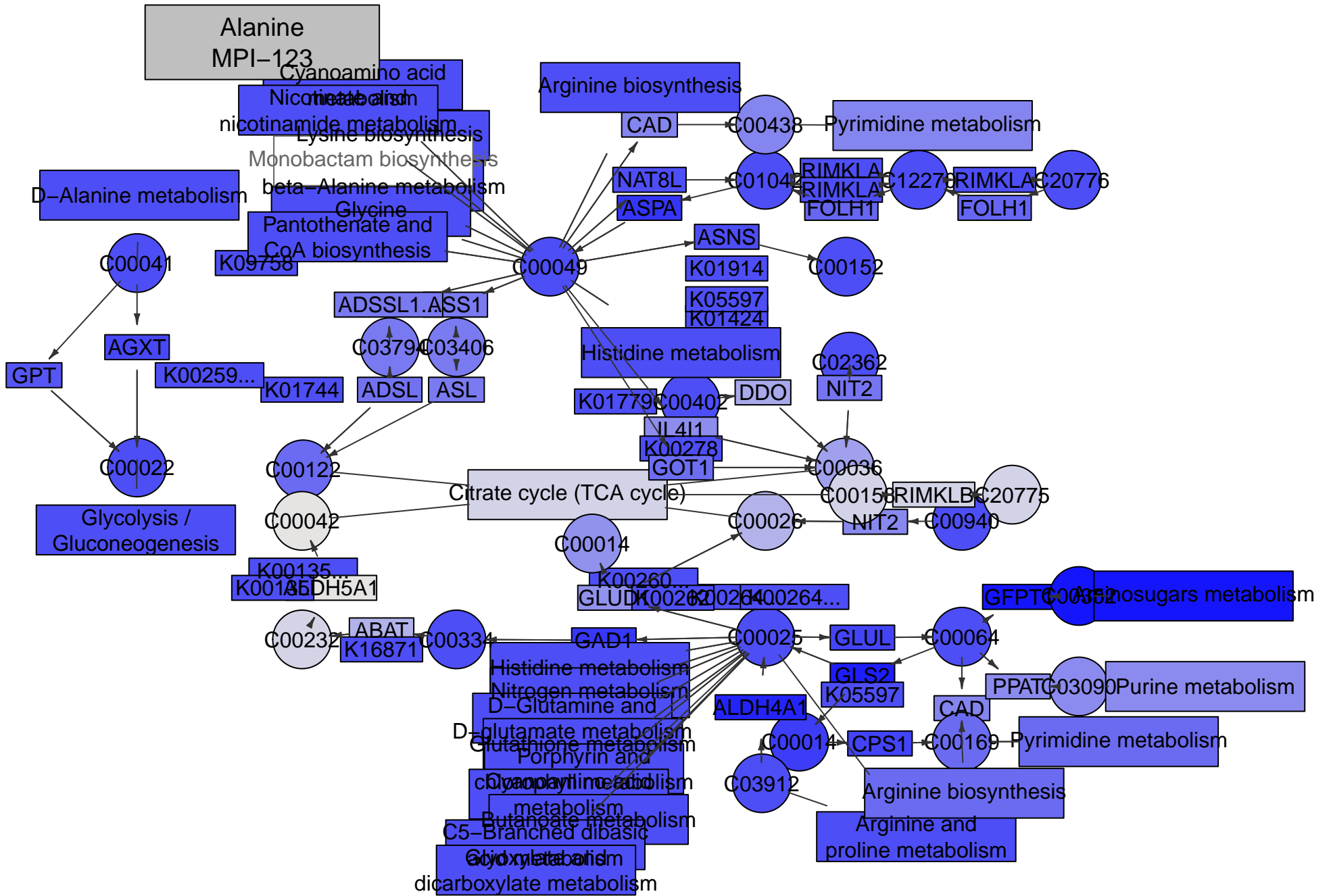
C00169

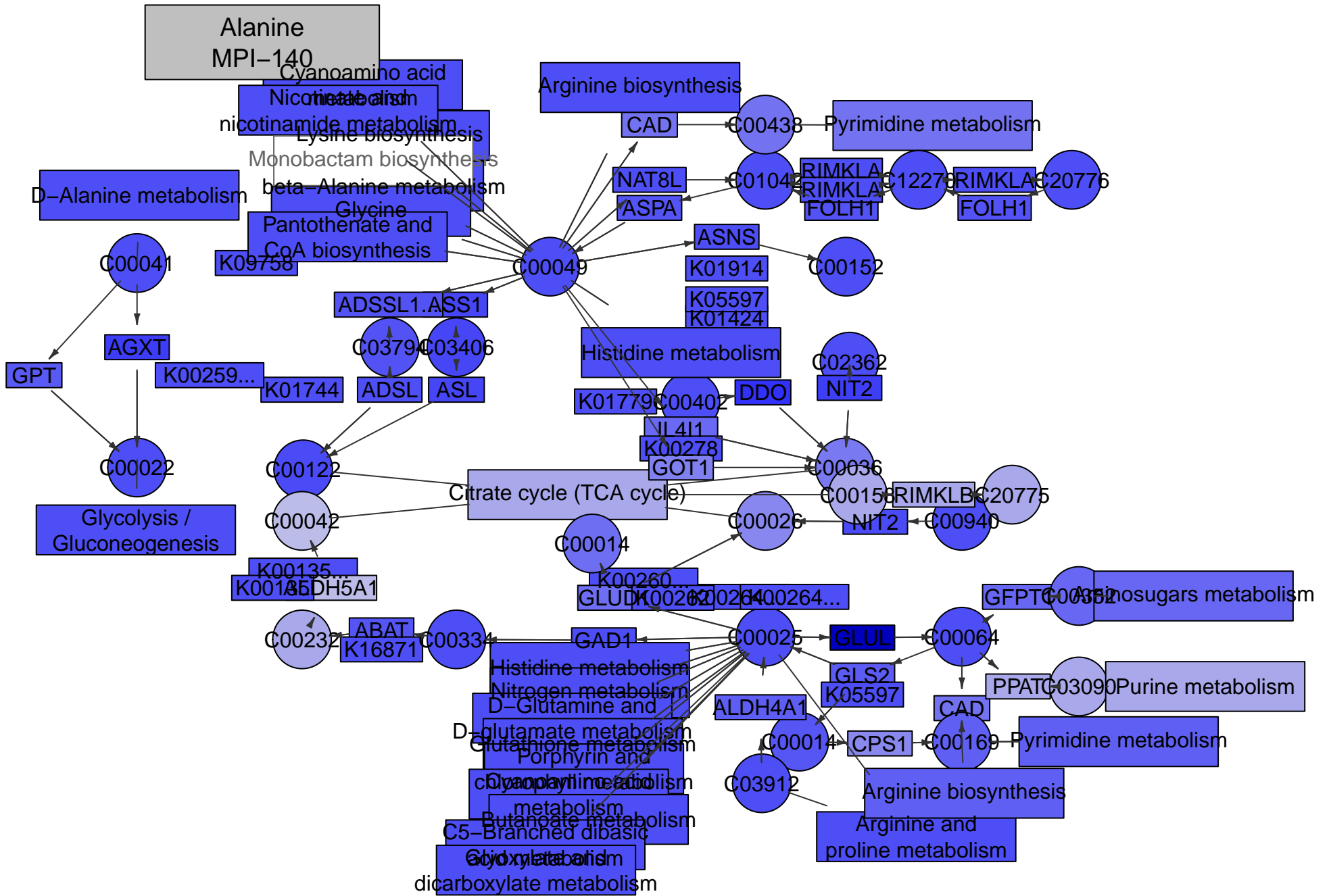
PPATC

C03090

Arginine biosynthesis

Arginine and proline metabolism





Alanine
MPI-140

Arginine biosynthesis

Pyrimidine metabolism

D-Alanine metabolism

Pantothenate and
CoA biosynthesis

Histidine metabolism

Glycolysis /
Gluconeogenesis

Citrate cycle (TCA cycle)

Disaccharides metabolism

Histidine metabolism

Purine metabolism

D-glutamate metabolism

Pyrimidine metabolism

Butanoate metabolism

Arginine biosynthesis

Glyoxylate
dicarboxylate metabolism

Arginine and
proline metabolism

C00041

C00049

C00438

C12276

C20776

C00022

C00122

C03790

C03406

C00402

C02362

C00036

C00042

C00014

C00026

C00158

C20775

C00940

C00232

C00334

C00025

C00064

C03090

C00014

C00169

C03912

K00135...

K00135...
DH5A1

ADSL

ASL

NI 411

K00278

GOT1

K00260...

GLUDK

K00262

K00264

K00264...

ADSSL1.ASS1

ASNS

K01914

K05597

K01424

DDO

NIT2

RIMKLB

C20775

GFPT

C00352

GLS2

K05597

CAD

PPATC

C03090

CPS1

C00169

CAD

C00169

CAD

NAT8L

ASPA

RIMKLA

RIMKLA

RIMKLA

RIMKLA

FOLH1

FOLH1

AGXT

K00259...

K01744

K01744

K01744

K01779

K01779

K01779

K01779

K01779

K01779

K01779

K01779

K01779

K01779

GPT

K09758

K09758

K09758

K09758

K09758

K09758

K09758

K09758

Nicotinate metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Cyanoamino acid

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

Arginine biosynthesis

Pyrimidine metabolism

D-Alanine metabolism

Pantothenate and
CoA biosynthesis

Histidine metabolism

Glycolysis /
Gluconeogenesis

Citrate cycle (TCA cycle)

Disaccharides metabolism

Histidine metabolism

Purine metabolism

D-glutamate metabolism

Pyrimidine metabolism

Butanoate metabolism

Arginine biosynthesis

Glyoxylate
dicarboxylate metabolism

Arginine and
proline metabolism

C00041

C00049

C00438

C12276

C20776

C00022

C00122

C03790

C03406

C00402

C02362

C00036

C00042

C00014

C00026

C00158

C20775

C00940

C00232

C00334

C00025

C00064

C03090

C00014

C00169

C03912

K00135...

K00135...
DH5A1

ADSL

ASL

NI 411

K00278

GOT1

K00260...

GLUDK

K00262

K00264

K00264...

ADSSL1.ASS1

ASNS

K01914

K05597

K01424

DDO

NIT2

RIMKLB

C20775

GFPT

C00352

GLS2

K05597

CAD

PPATC

C03090

CPS1

C00169

CAD

C00169

CAD

NAT8L

ASPA

RIMKLA

RIMKLA

RIMKLA

RIMKLA

FOLH1

FOLH1

AGXT

K00259...

K01744

K01744

K01744

K01779

K01779

K01779

K01779

K01779

K01779

K01779

K01779

K01779

K01779

GPT

K09758

K09758

K09758

K09758

K09758

K09758

K09758

K09758

Nicotinate metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Cyanoamino acid

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

metabolism

Arginine biosynthesis

Pyrimidine metabolism

D-Alanine metabolism

Pantothenate and
CoA biosynthesis

Histidine metabolism

Glycolysis /
Gluconeogenesis

Citrate cycle (TCA cycle)

Disaccharides metabolism

Histidine metabolism

Purine metabolism

D-glutamate metabolism

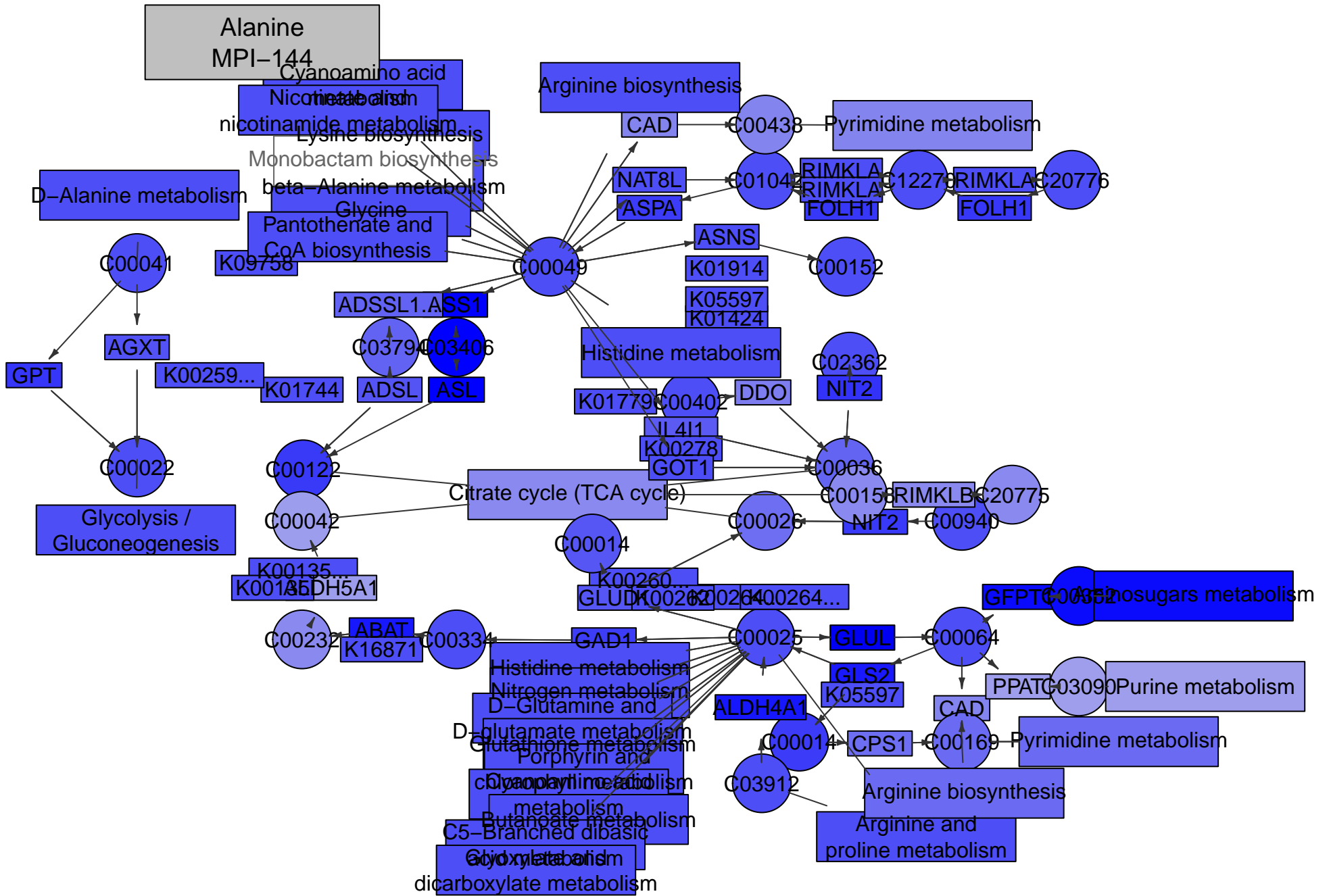
Pyrimidine metabolism

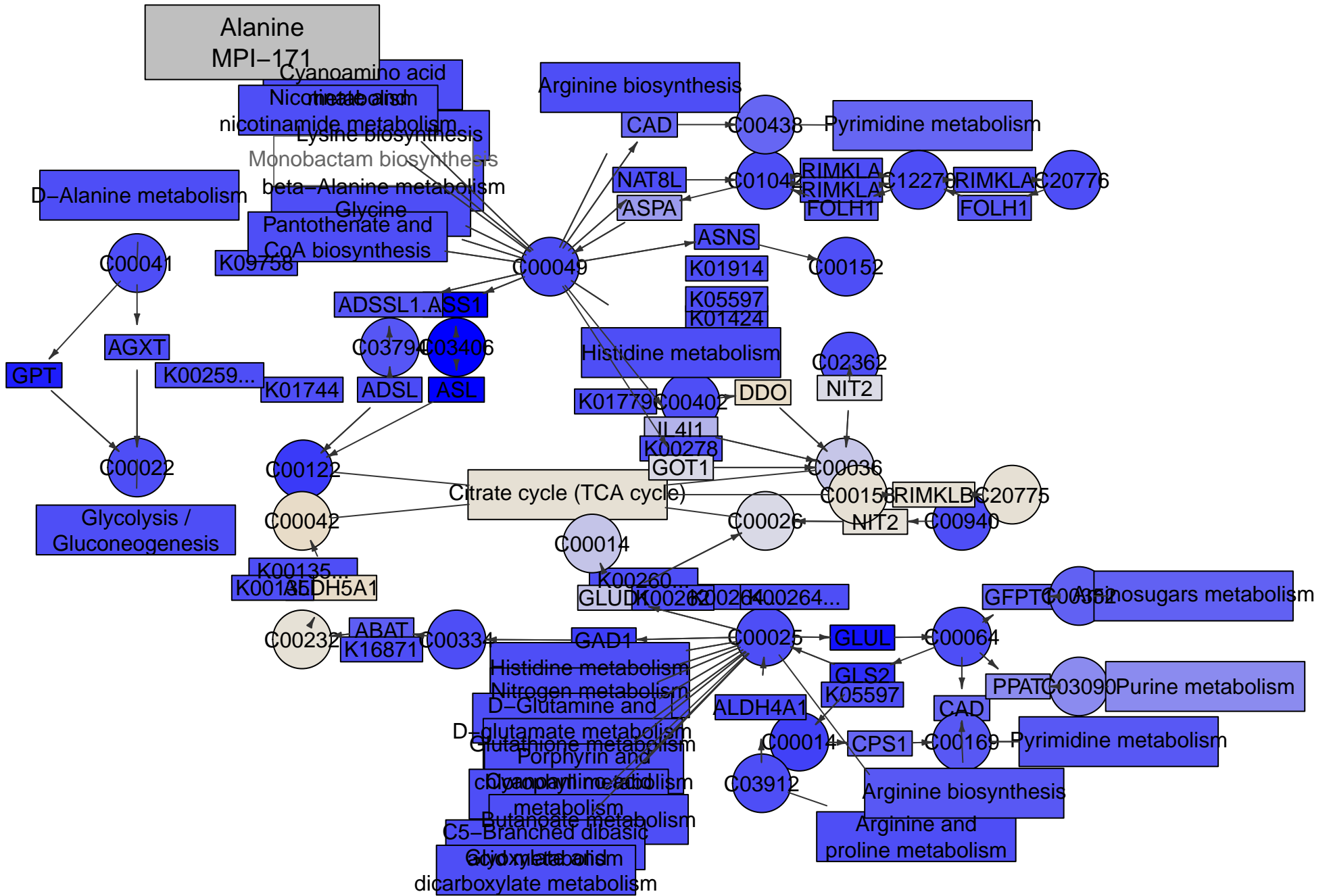
Butanoate metabolism

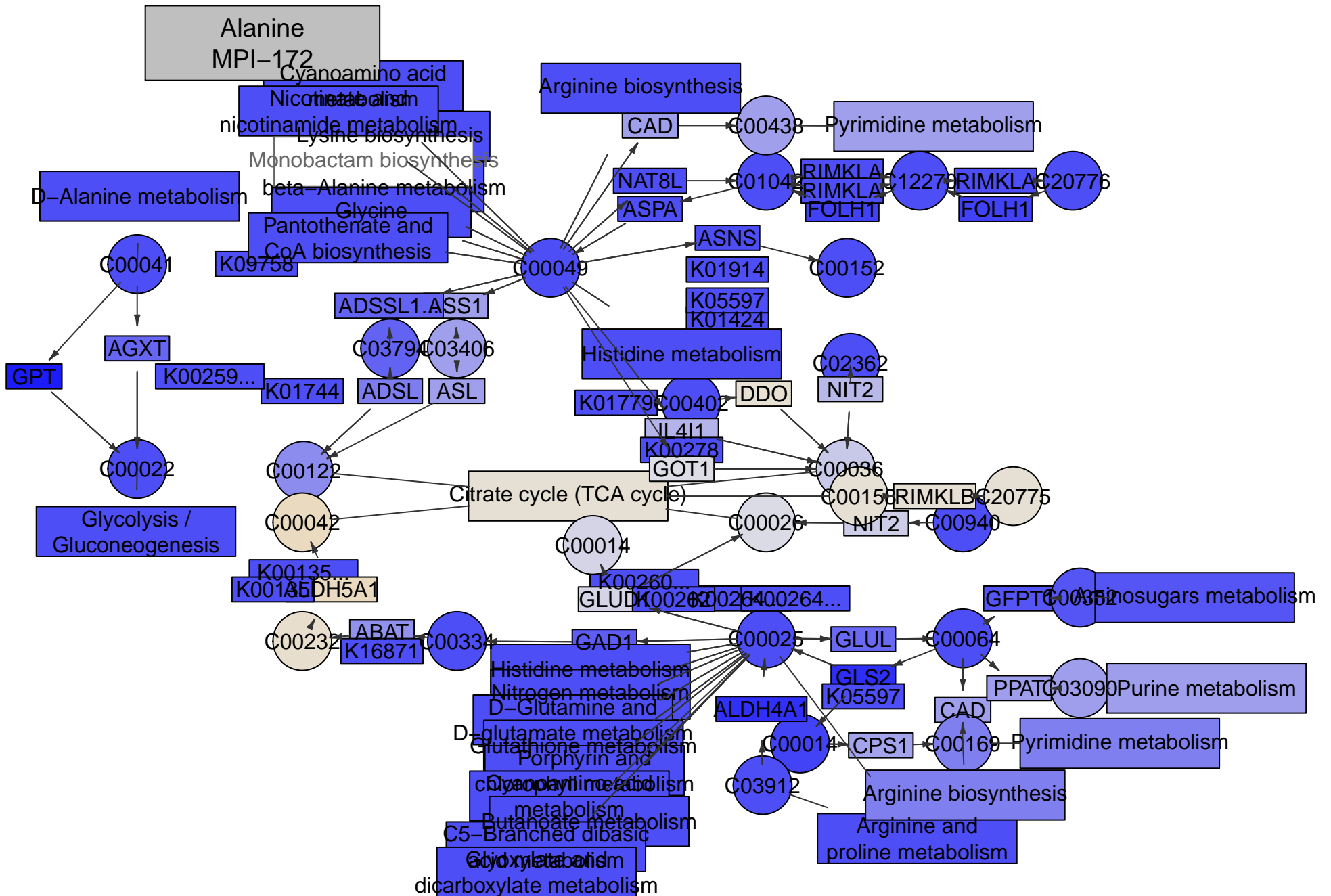
Arginine biosynthesis

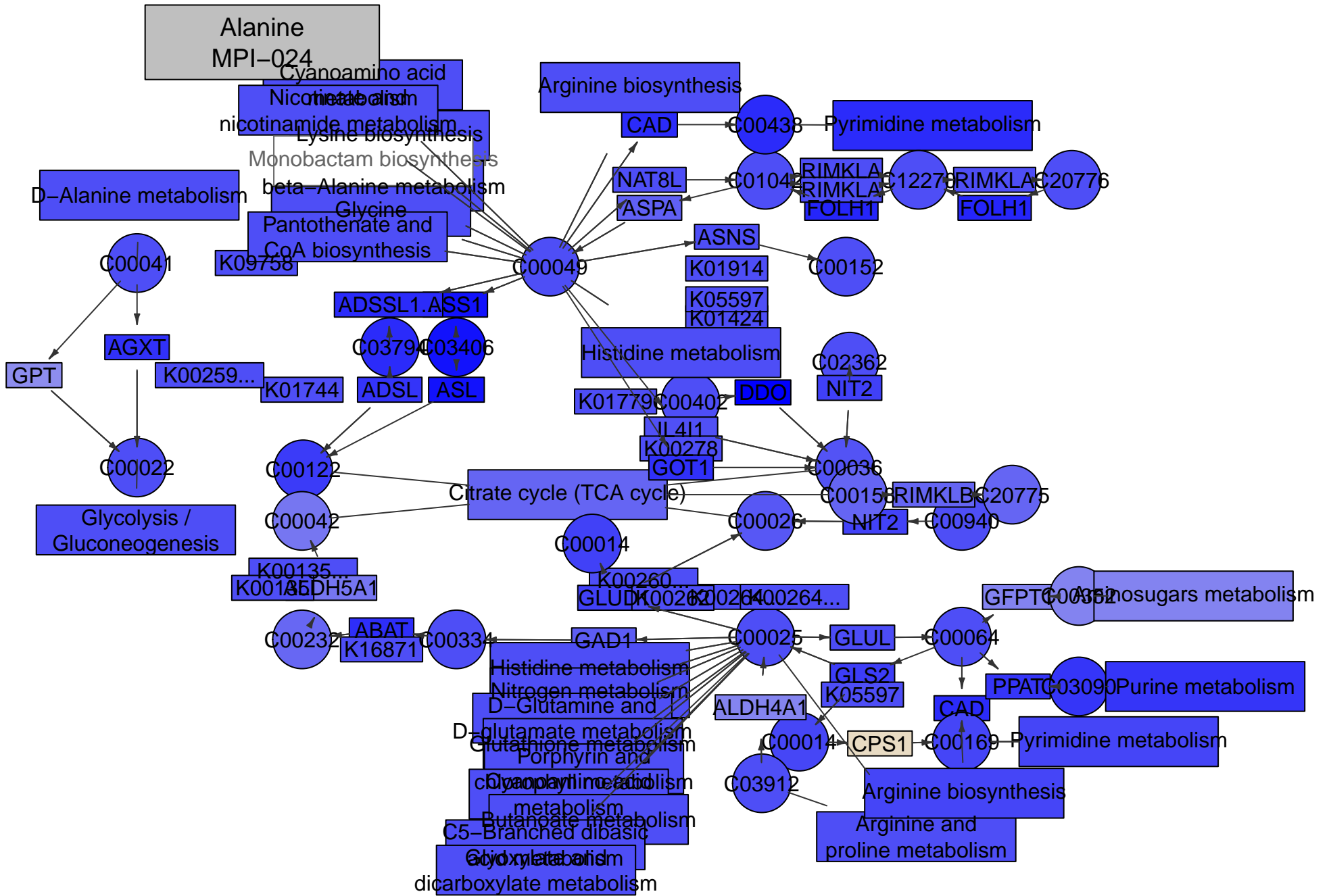
Glyoxylate
dicarboxylate metabolism

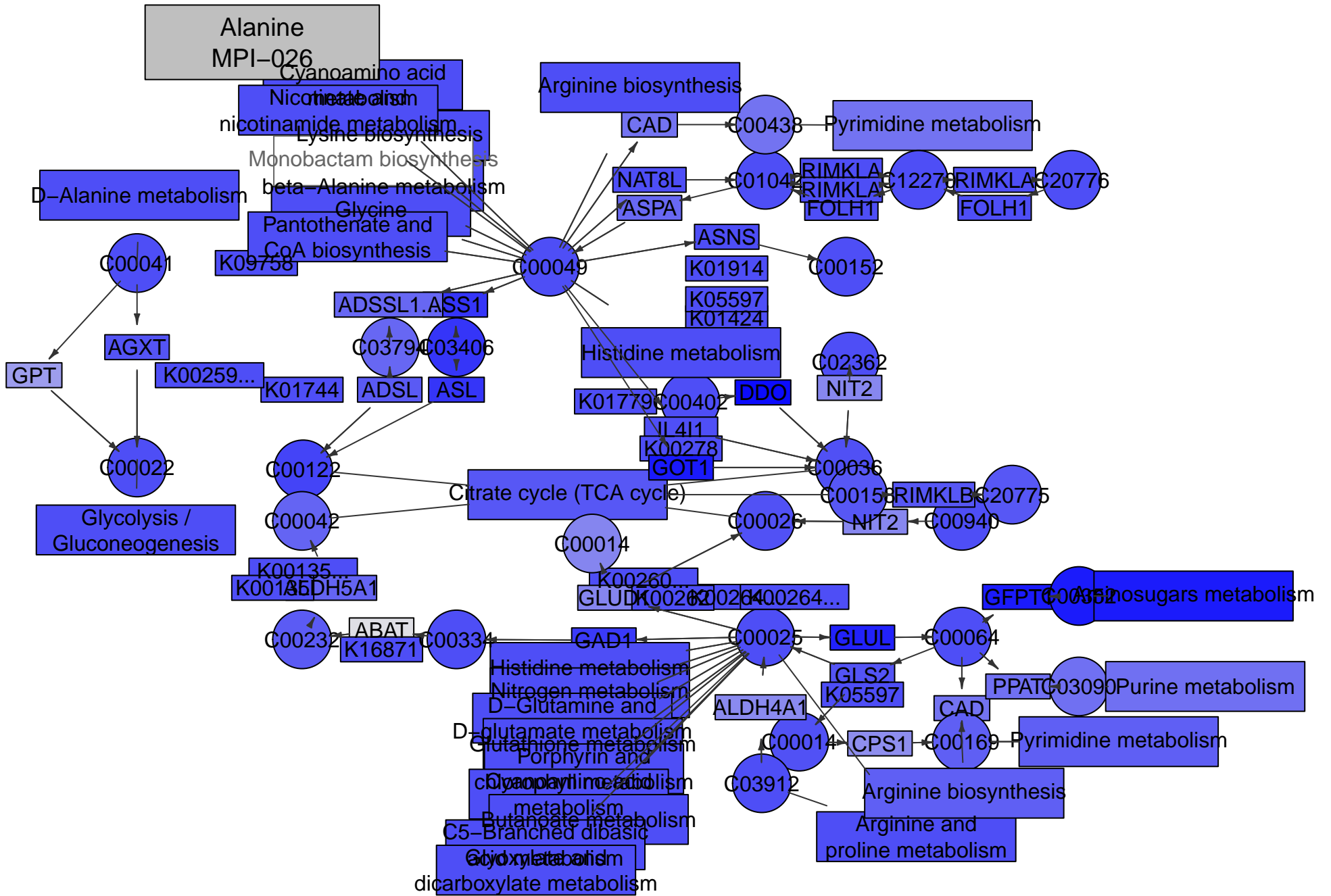
Arginine and
proline metabolism











Alanine
MPI-026

Cyanoamino acid

metabolism

Nicotinamide

metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Pantothenate and

CoA biosynthesis

Arginine biosynthesis

Pyrimidine metabolism

D-Alanine metabolism

beta-Alanine metabolism

Pantothenate and
CoA biosynthesis

ADSSL1.ASS1

Histidine metabolism

Glycolysis /
Gluconeogenesis

Citrate cycle (TCA cycle)

Disaccharides metabolism

Histidine metabolism

Nitrogen metabolism

D-Glutamine and

D-glutamate metabolism

Glutathione metabolism

Porphyrin and

heme metabolism

Cyanocobalamin metabolism

Butanoate metabolism

C5-Branched dibasic

amino acid metabolism

Glyoxylate

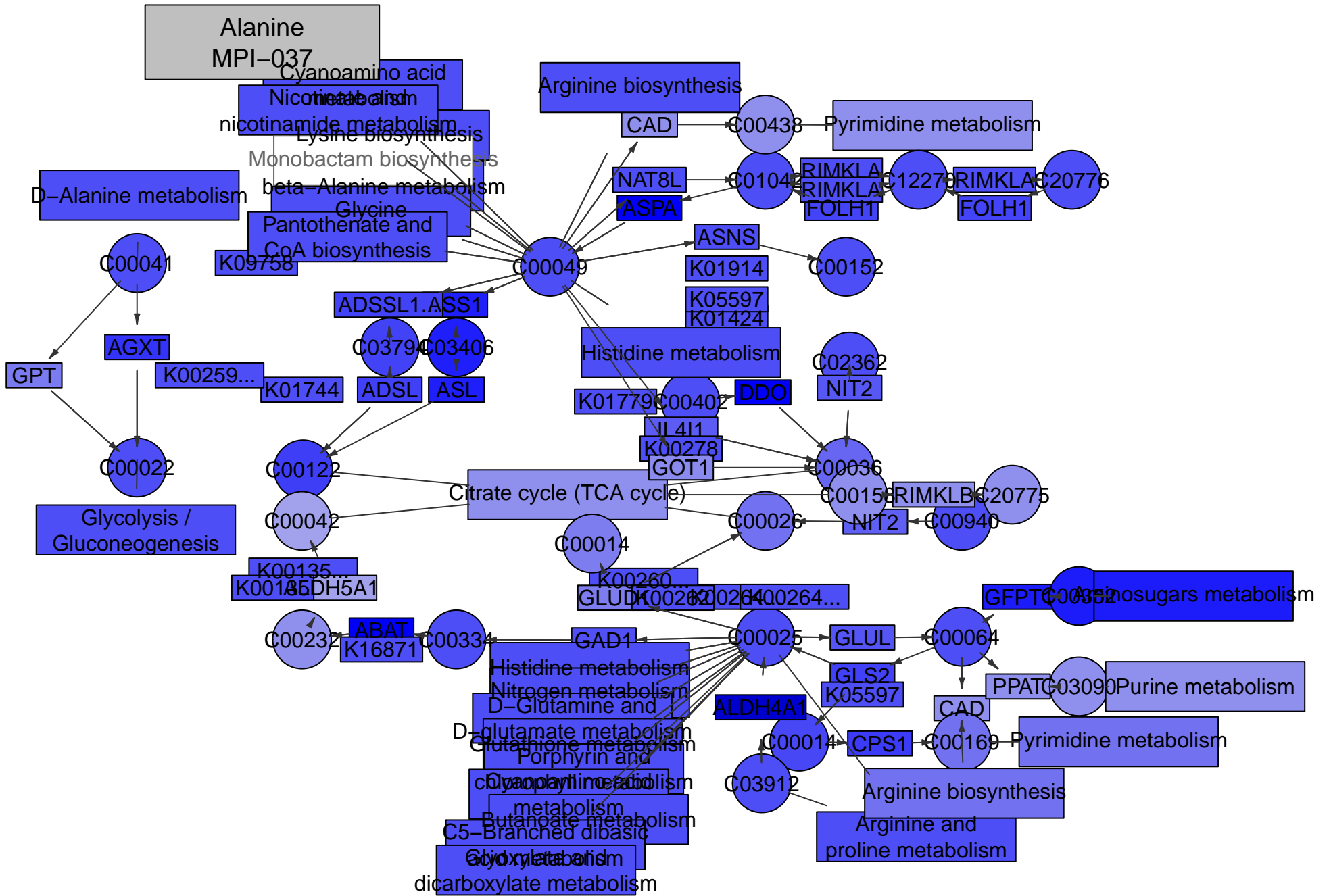
dicarboxylate metabolism

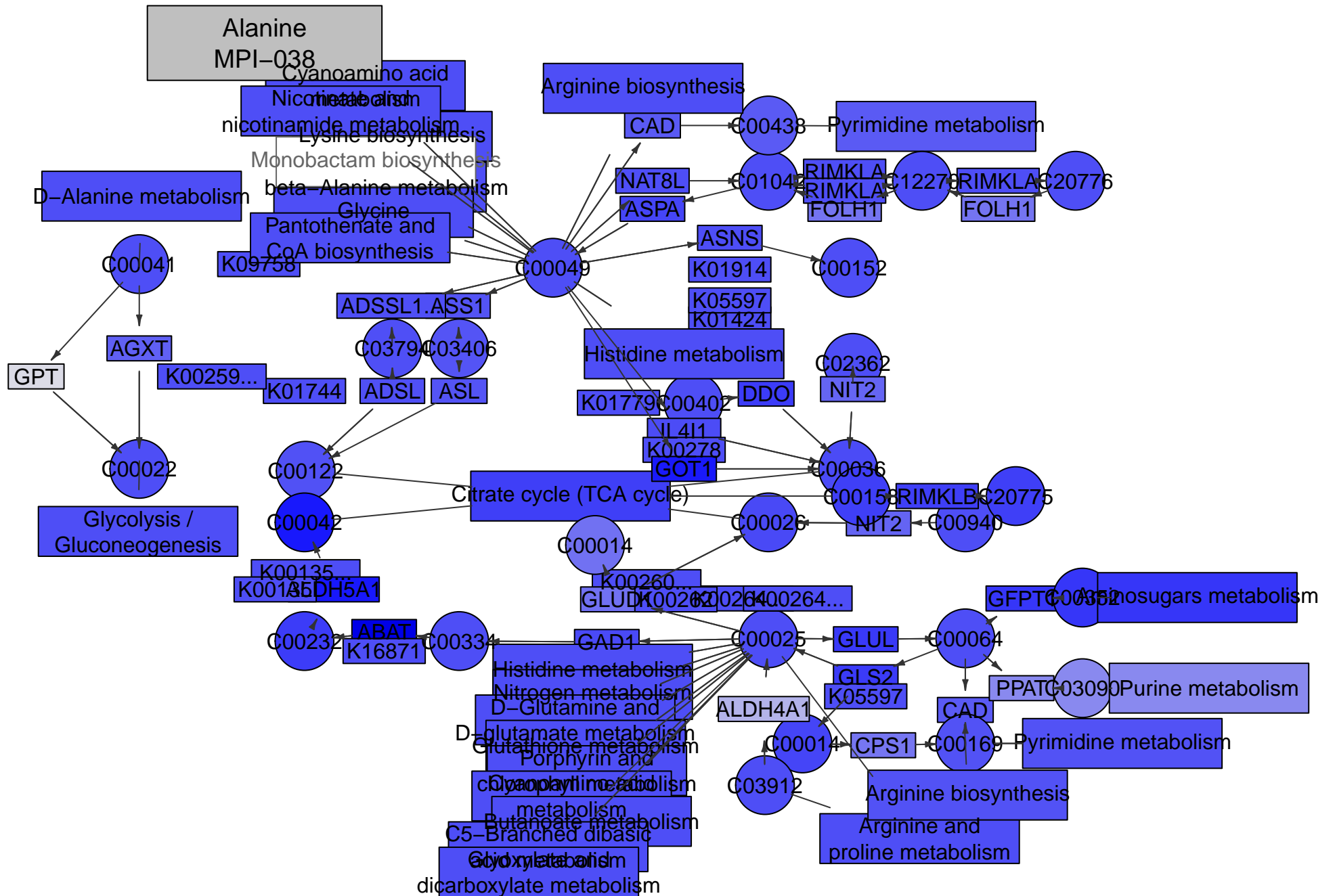
Purine metabolism

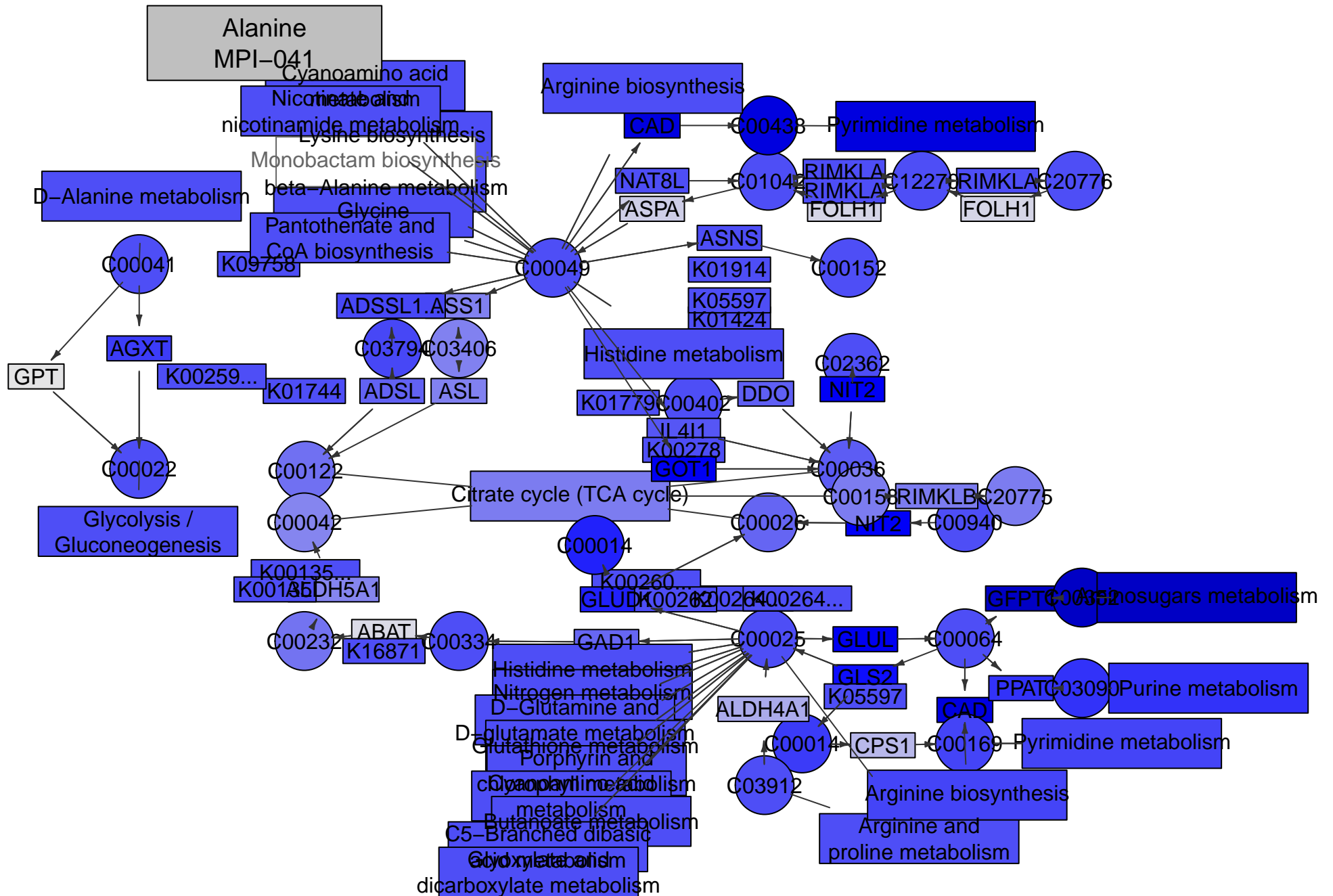
Pyrimidine metabolism

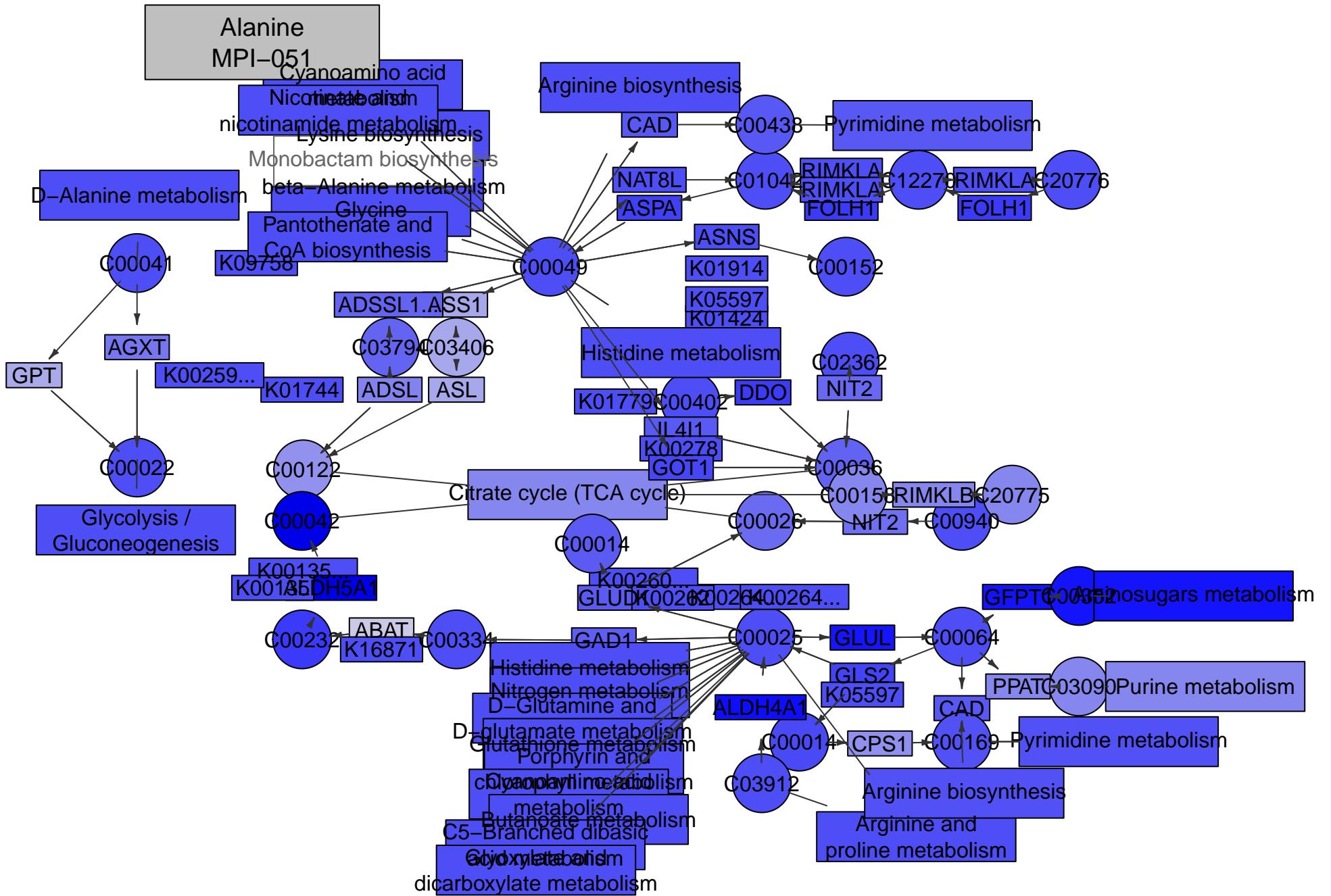
Arginine biosynthesis

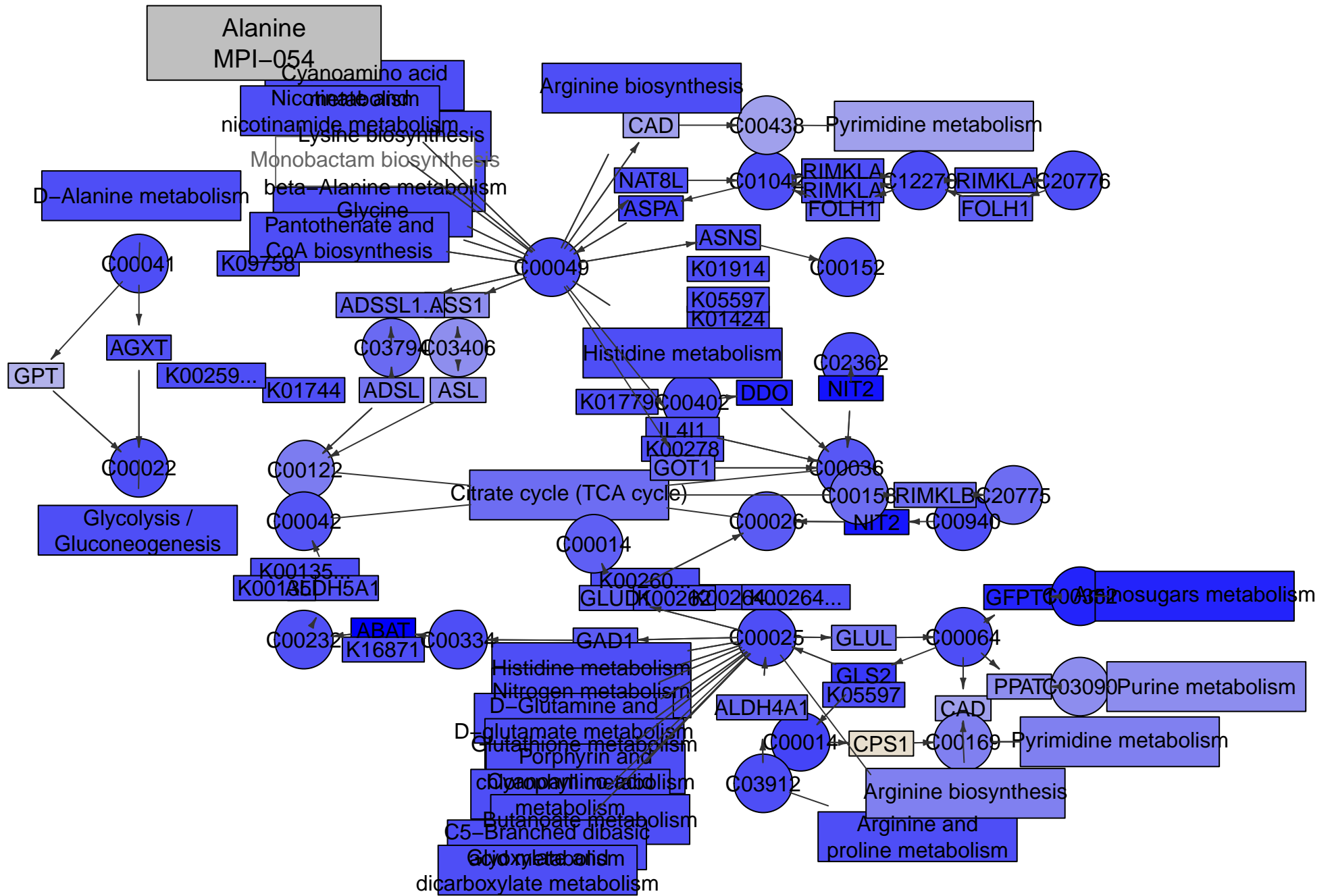
Arginine and
proline metabolism

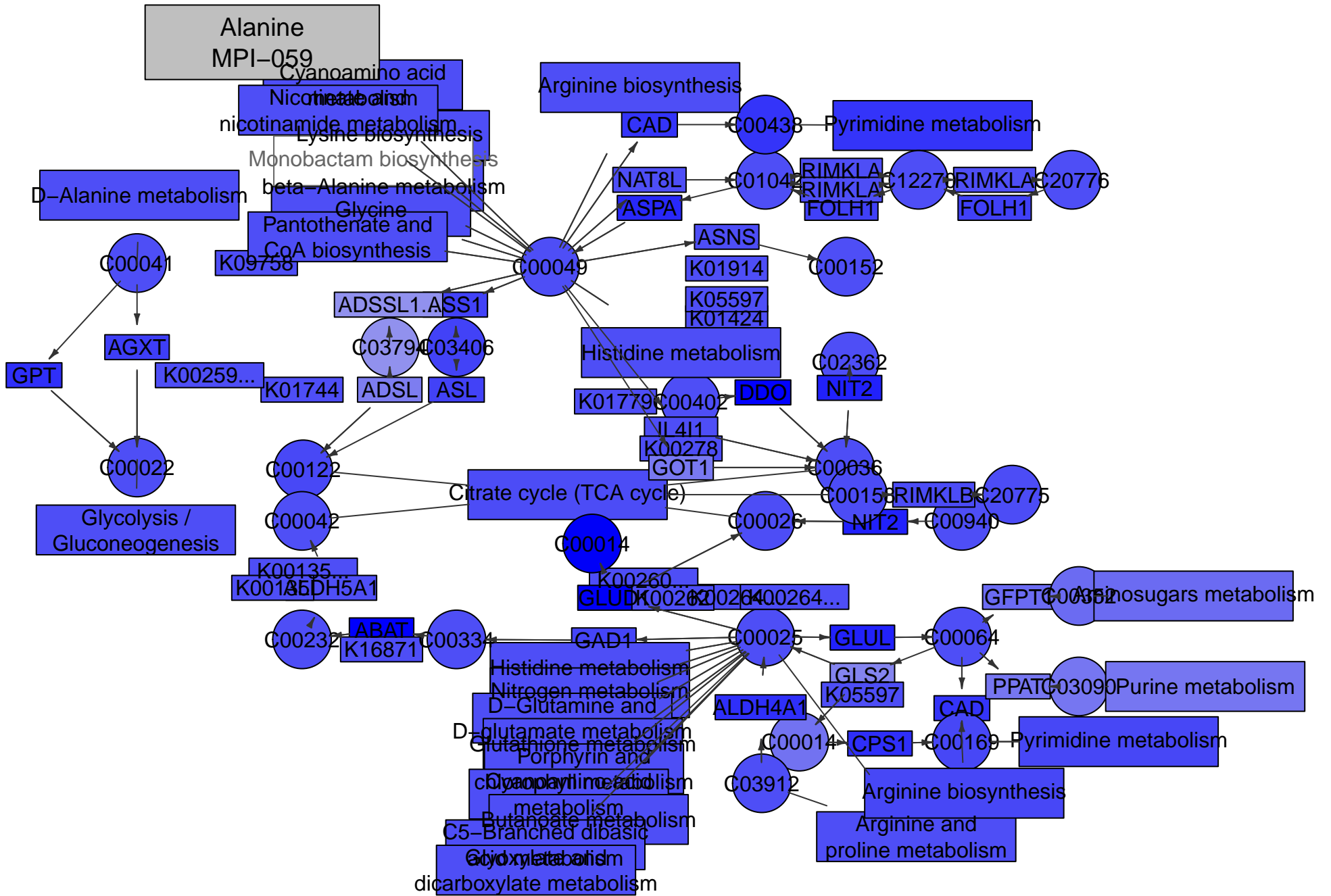


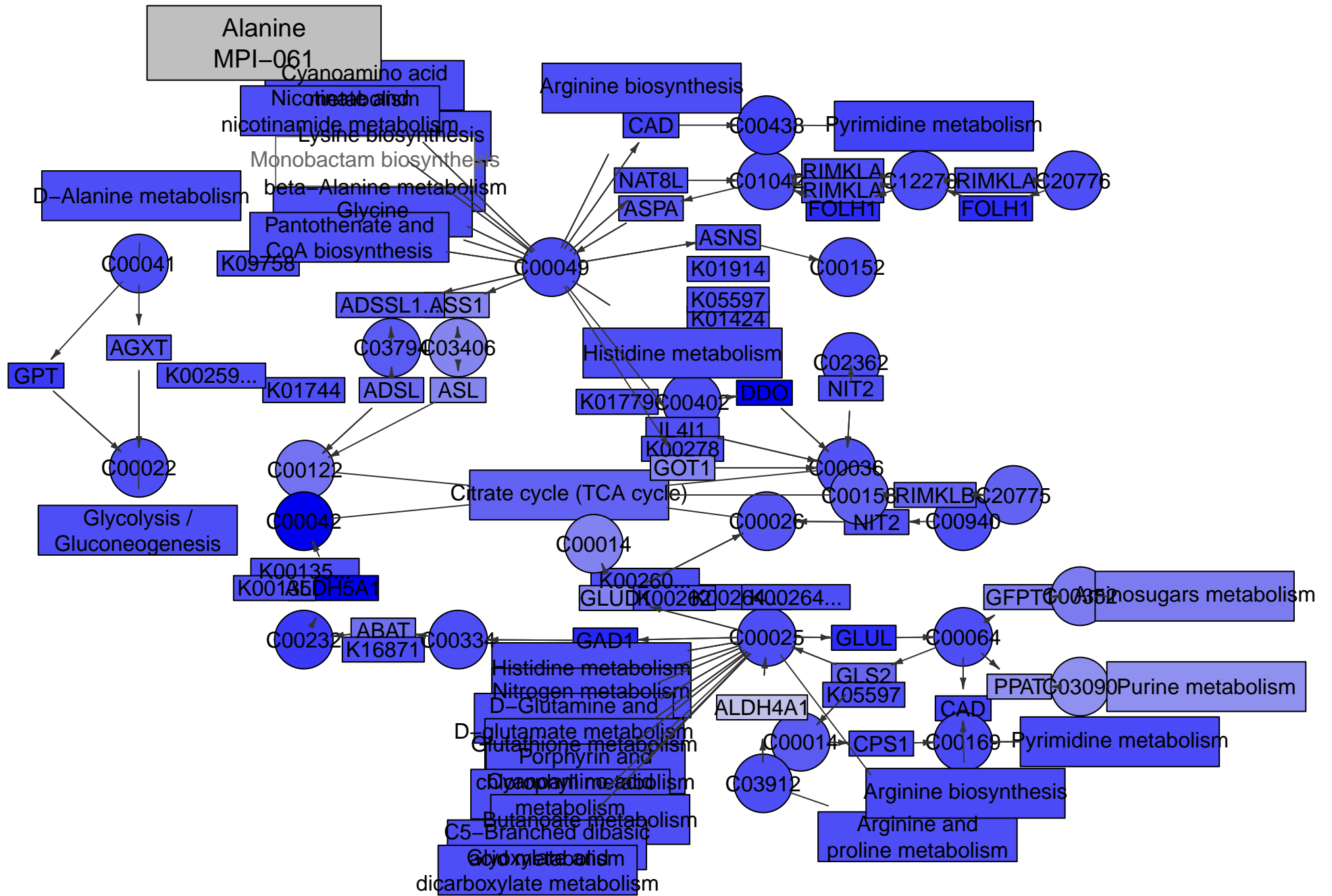


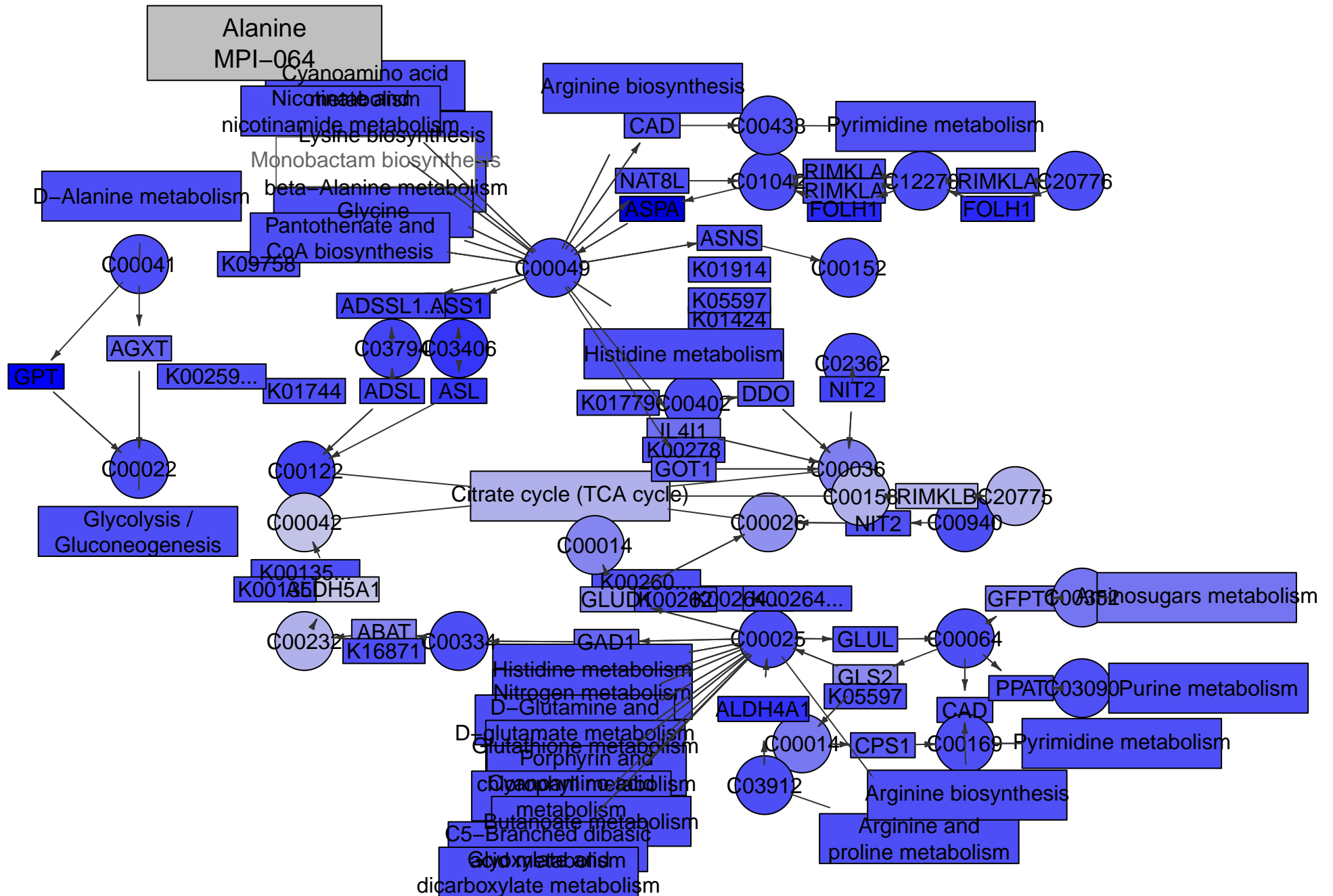


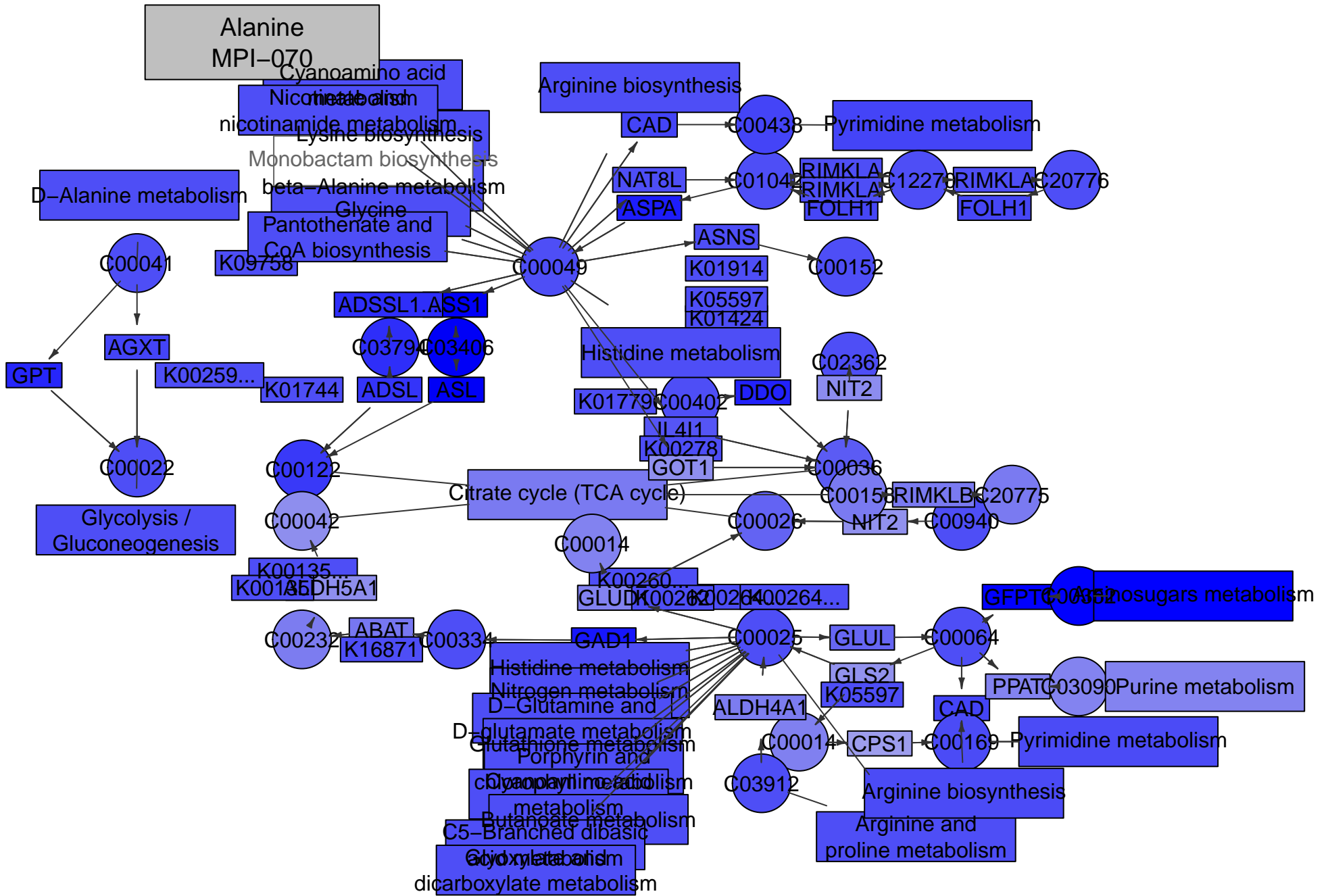


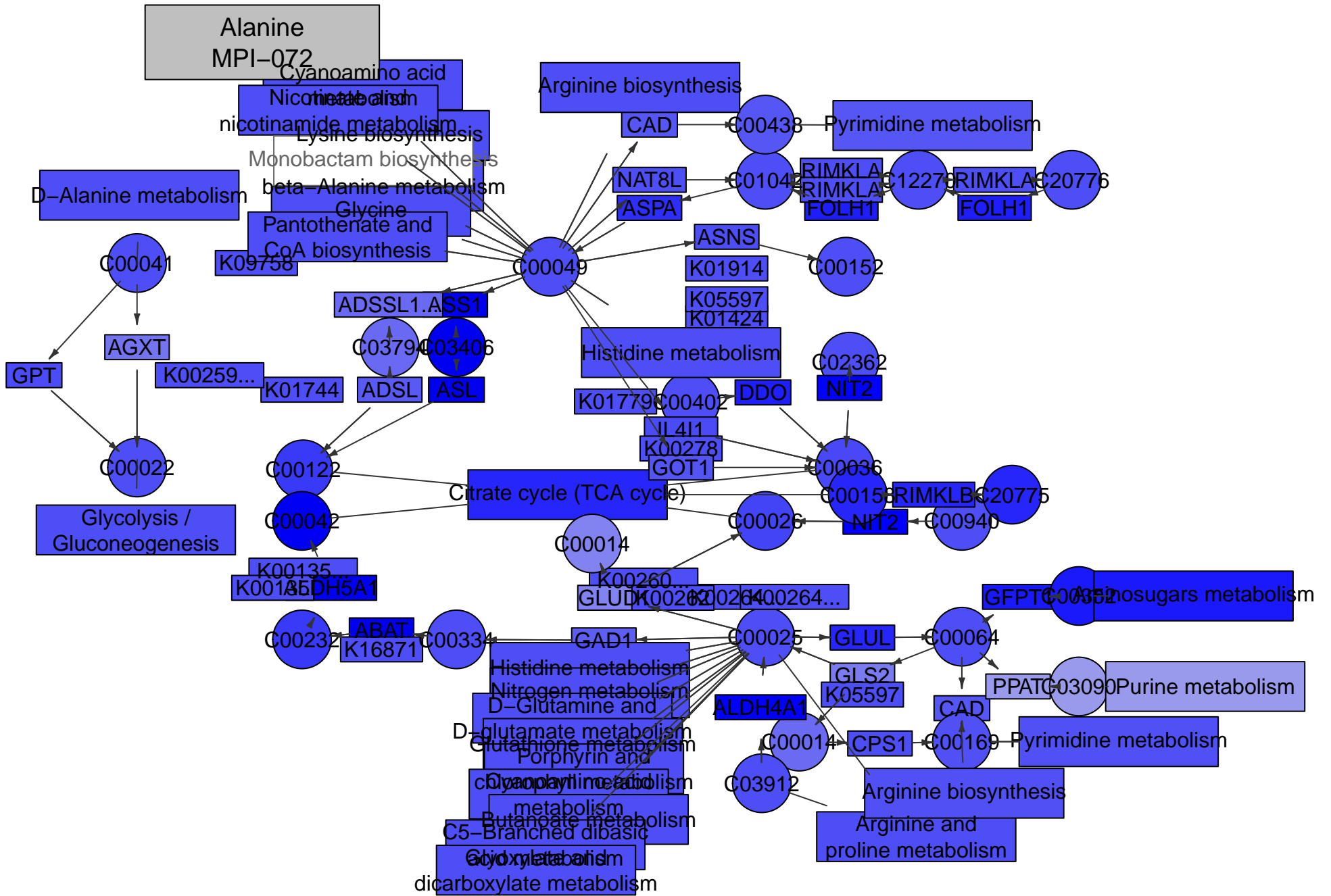


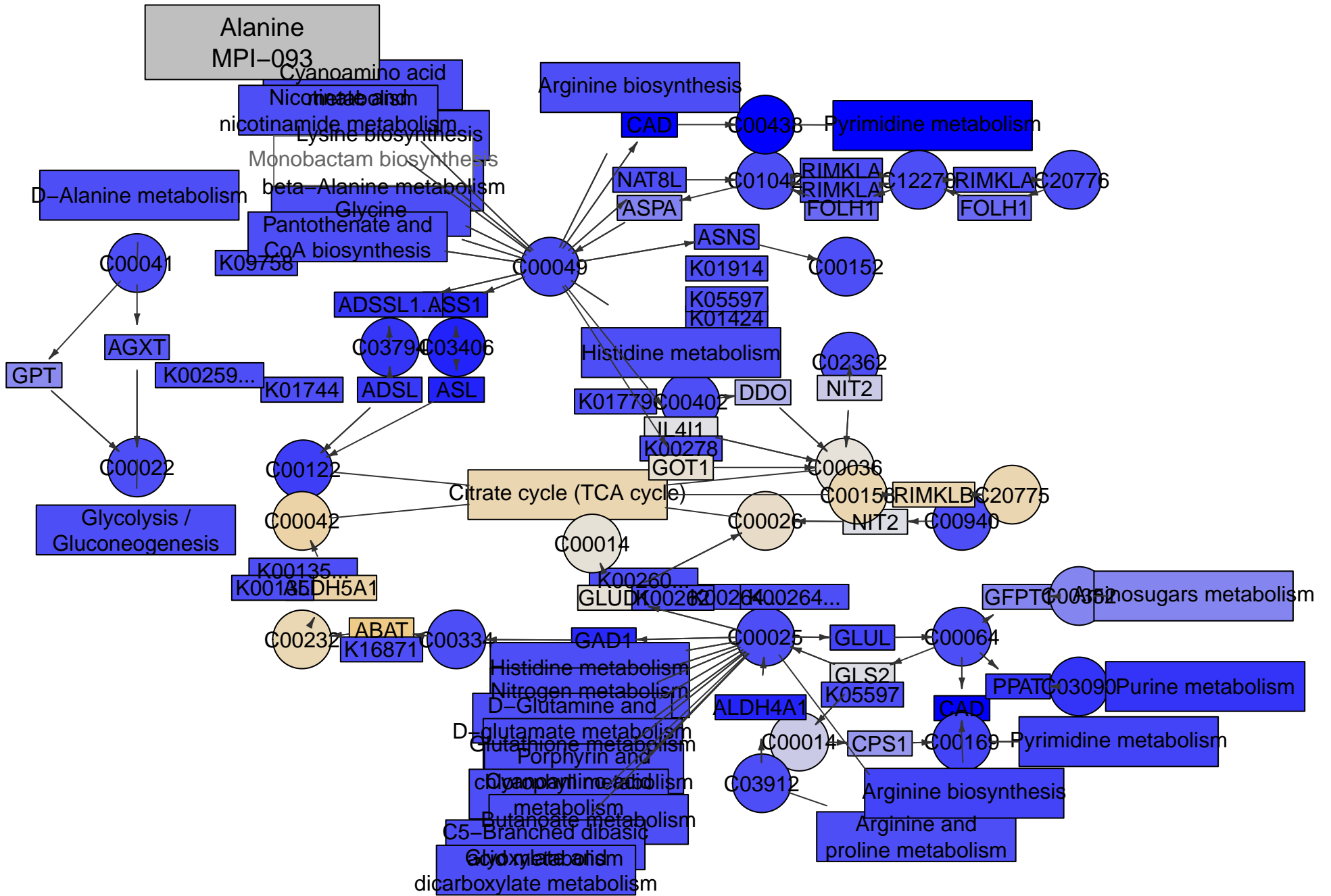


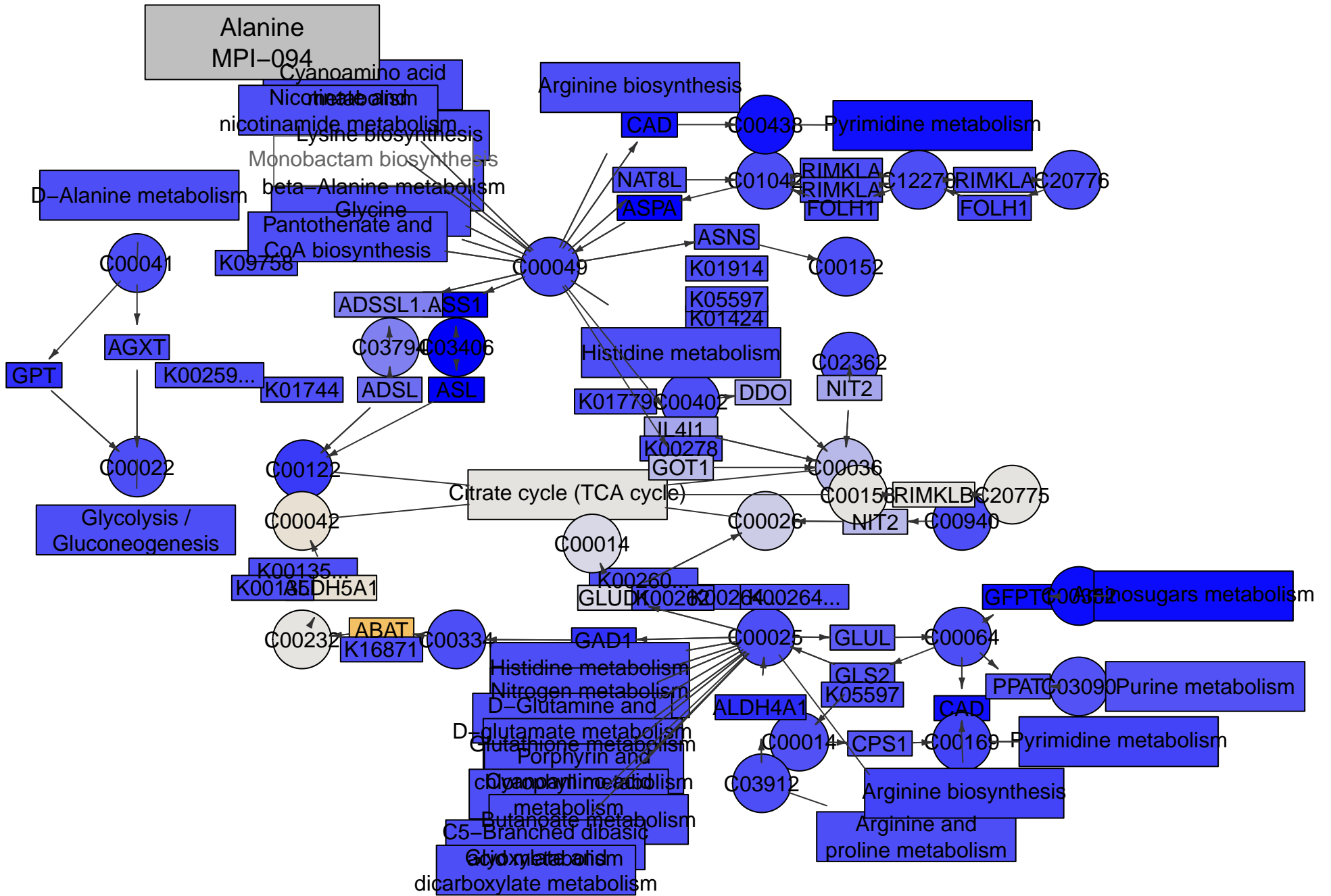


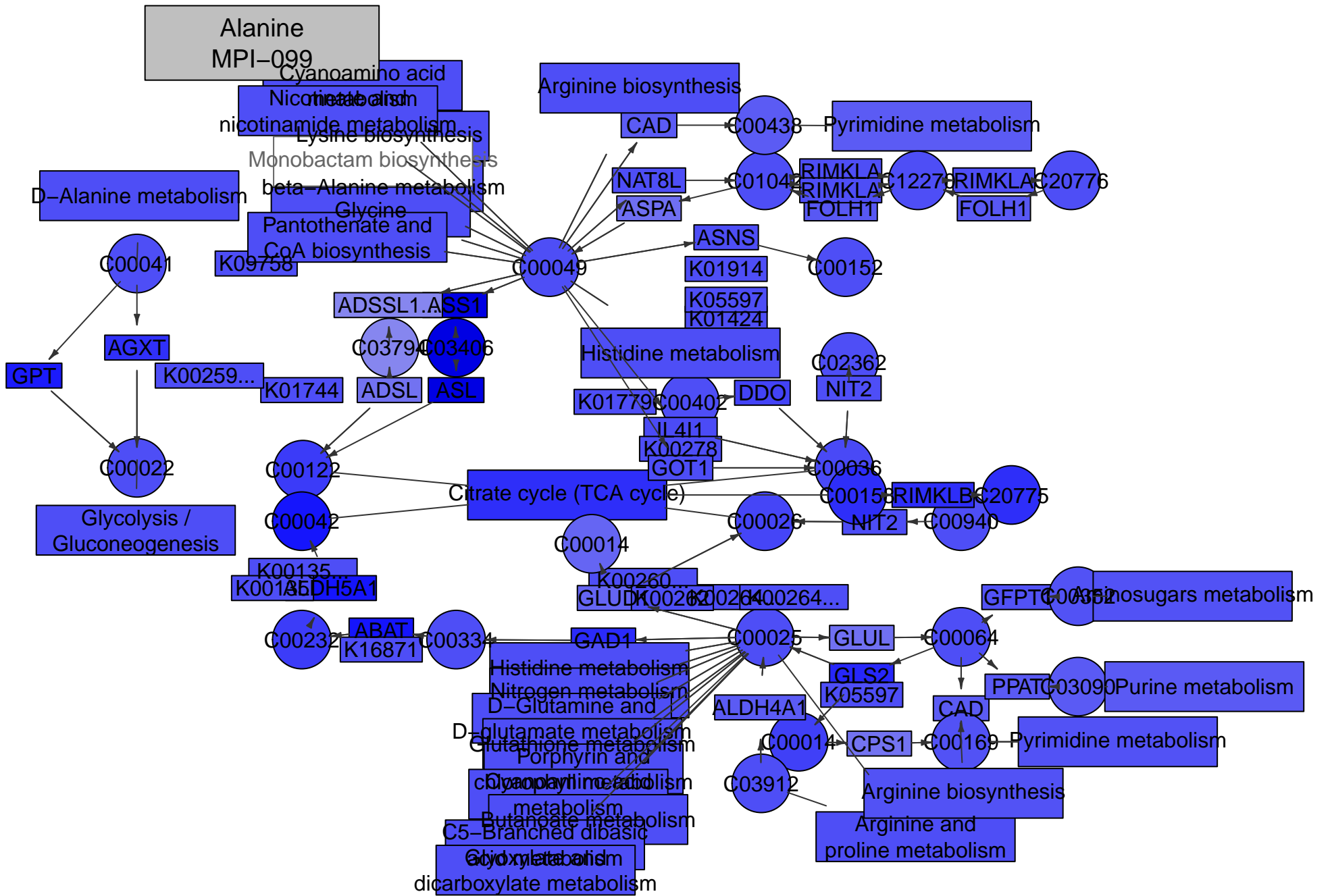


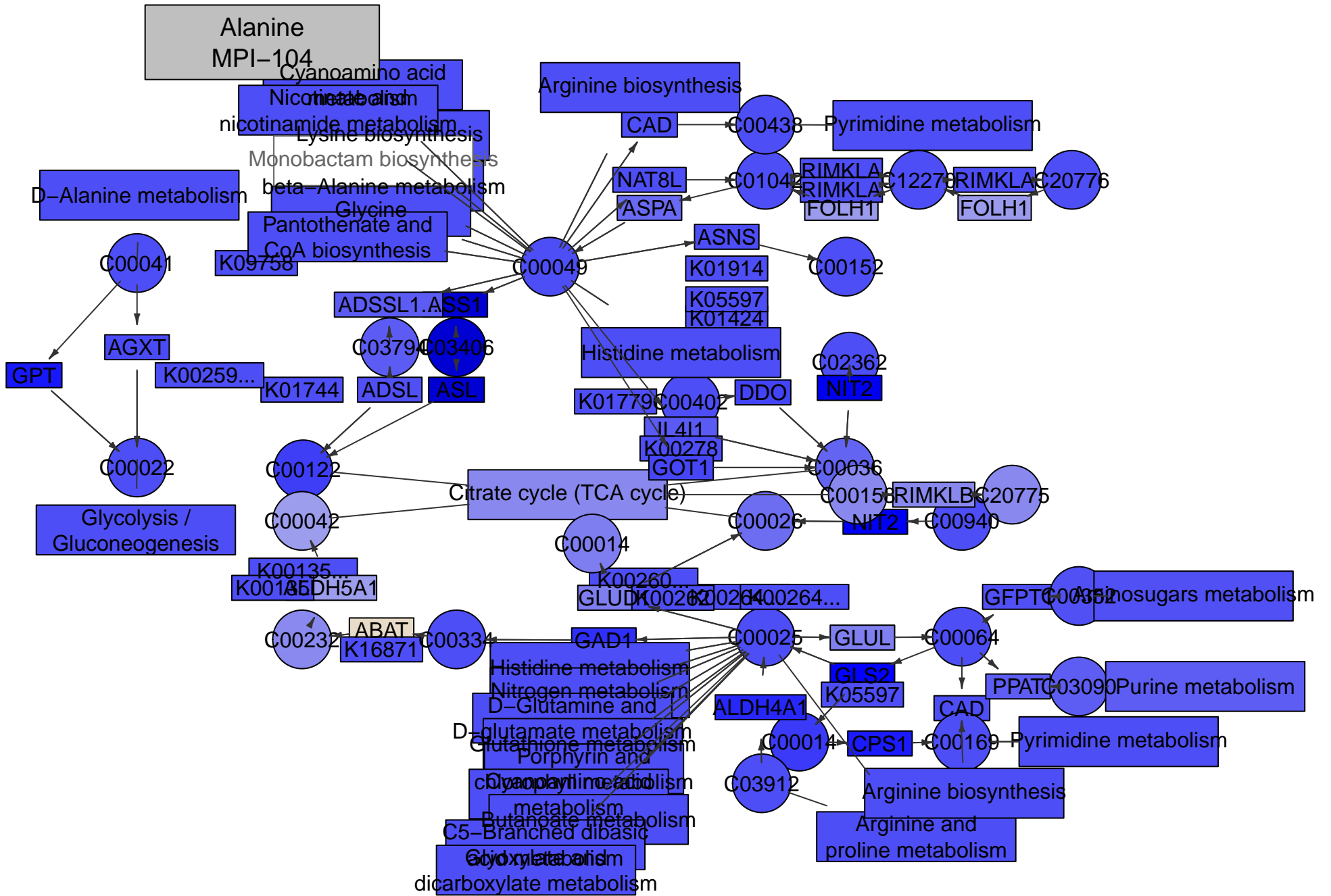


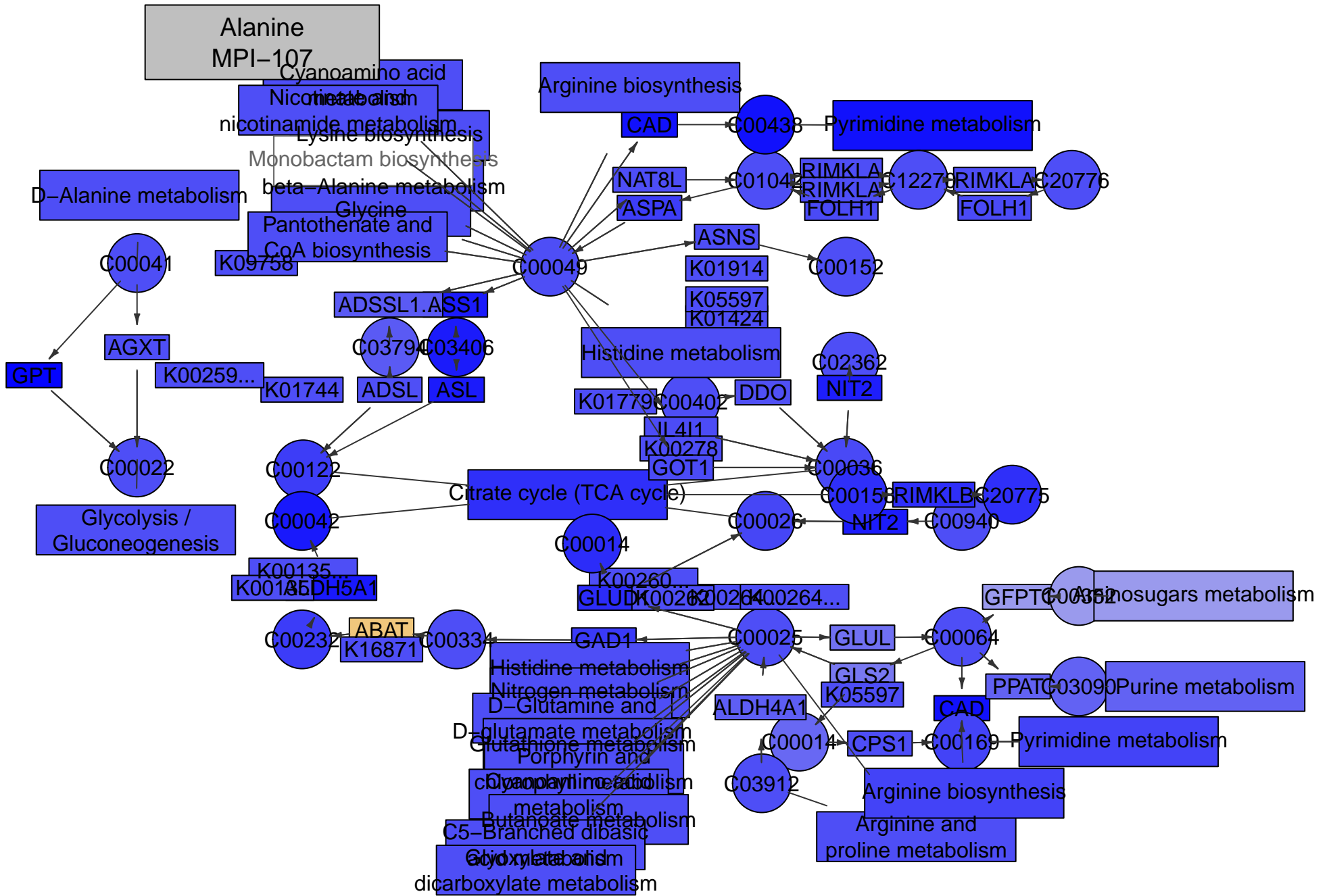


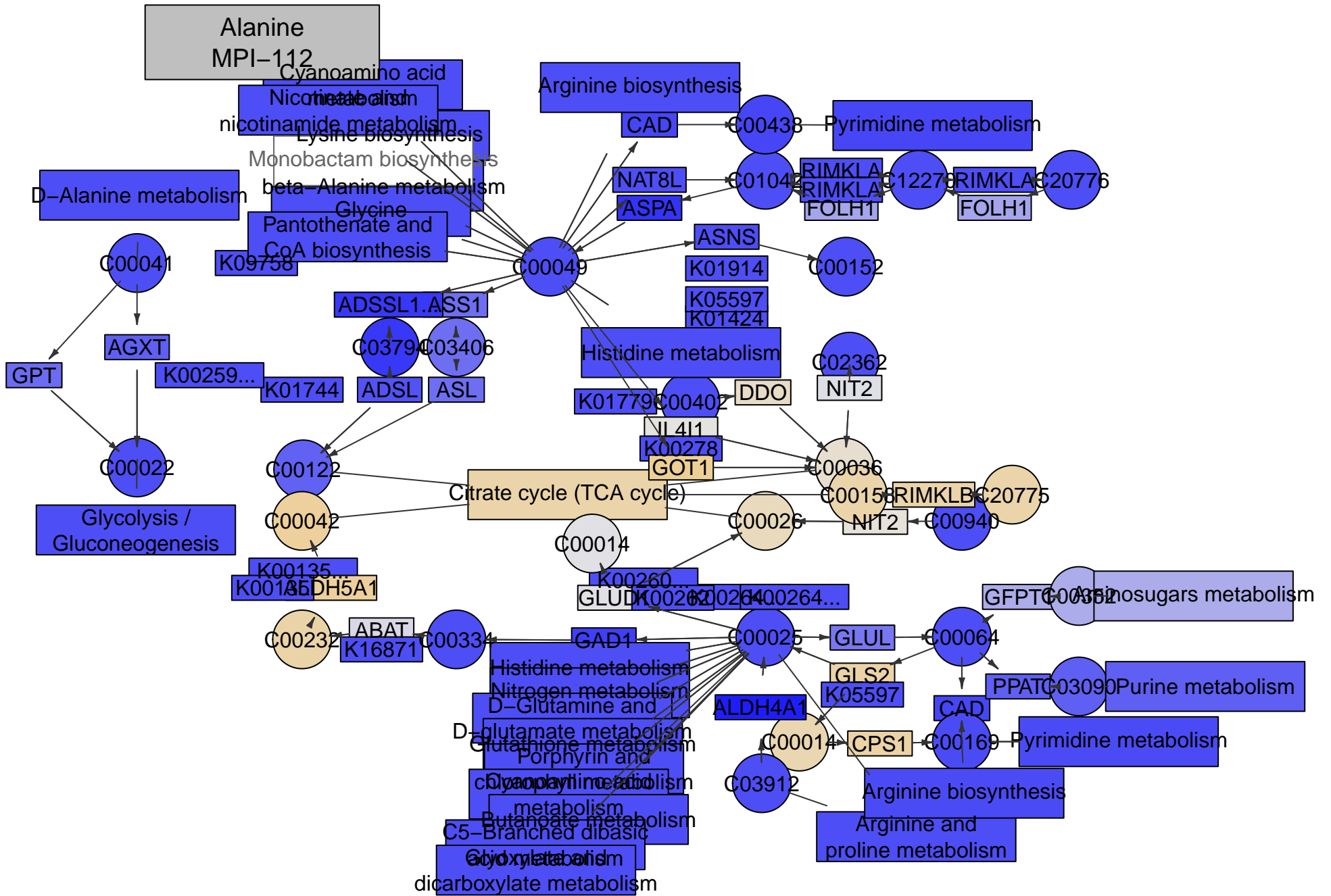


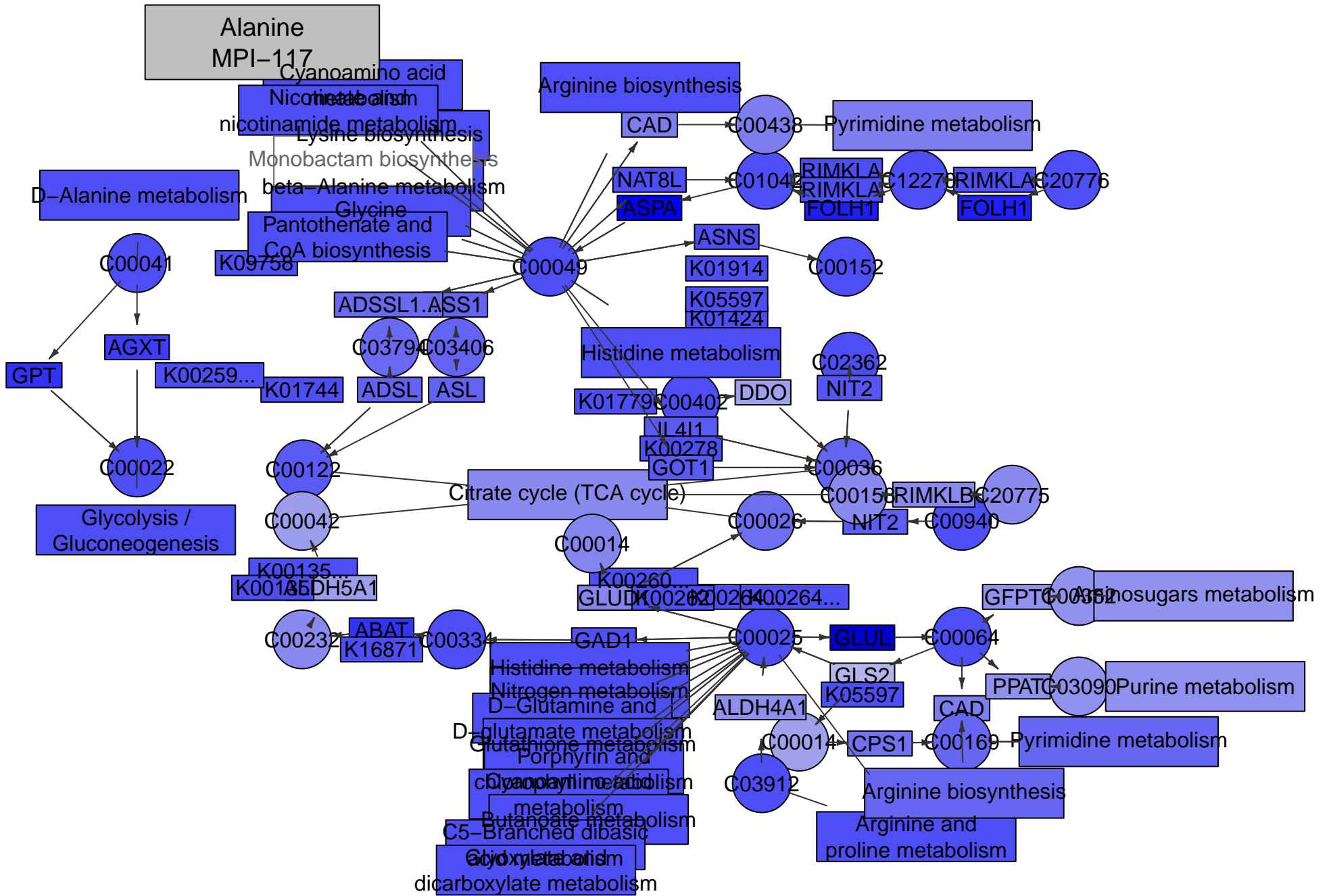


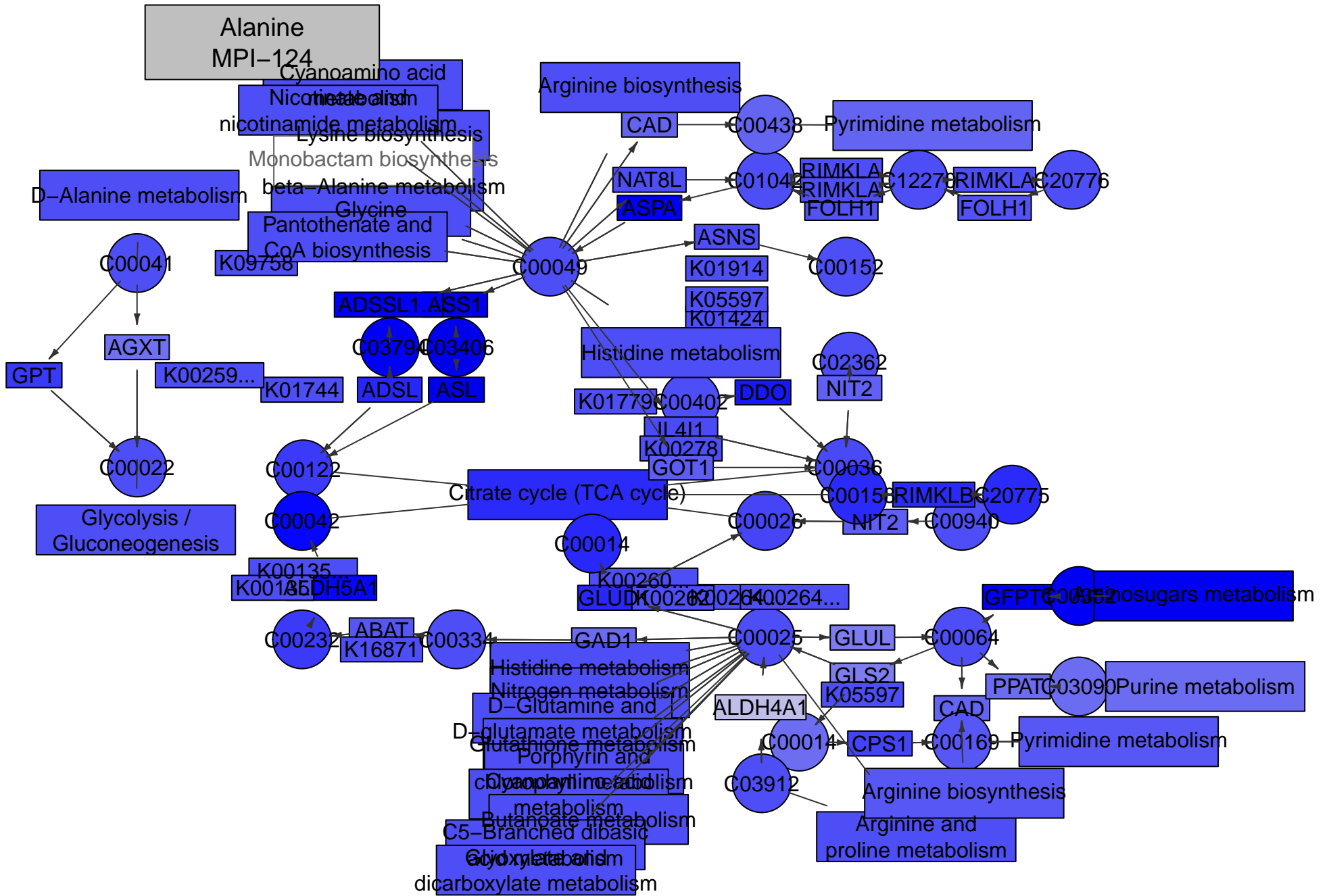


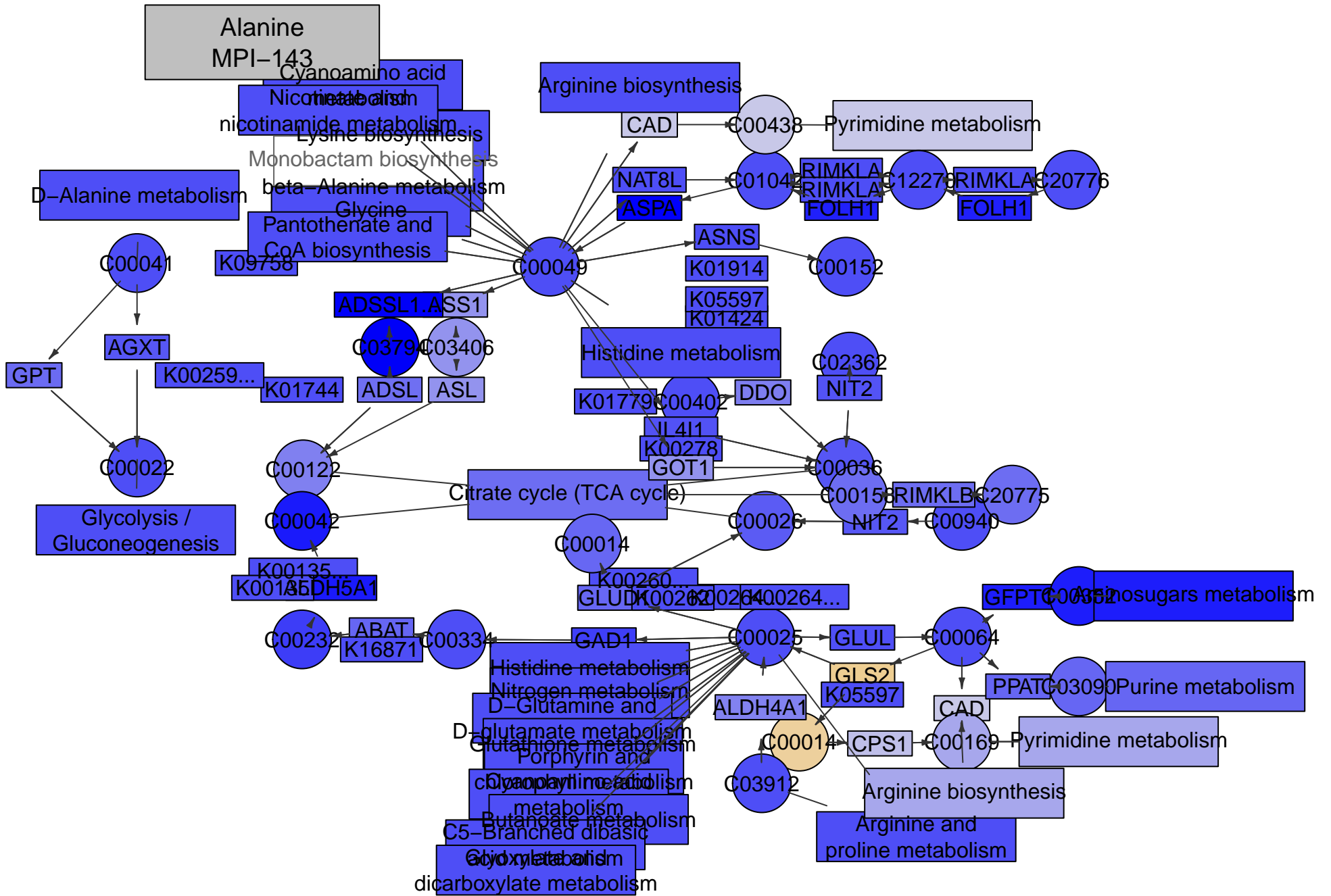


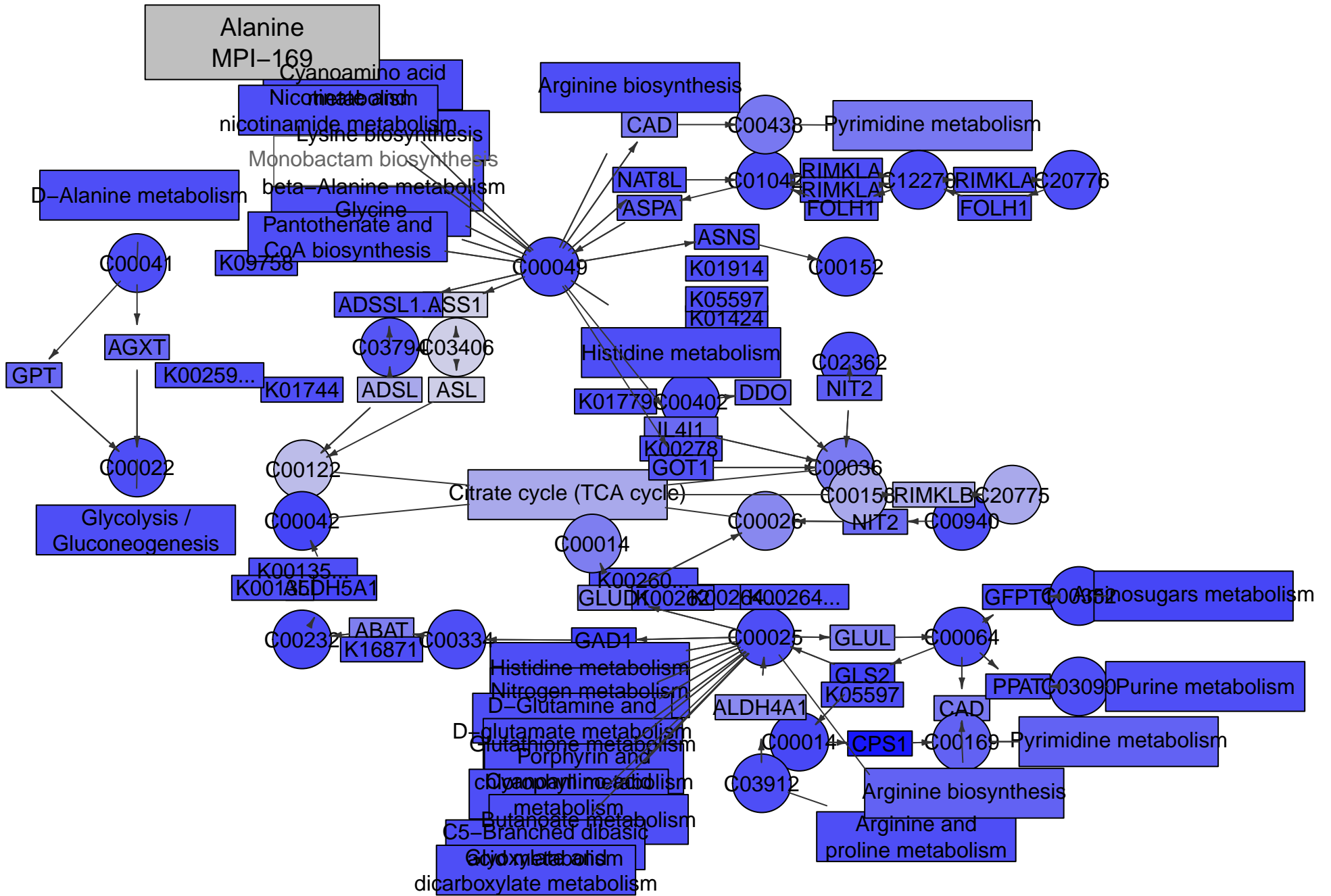


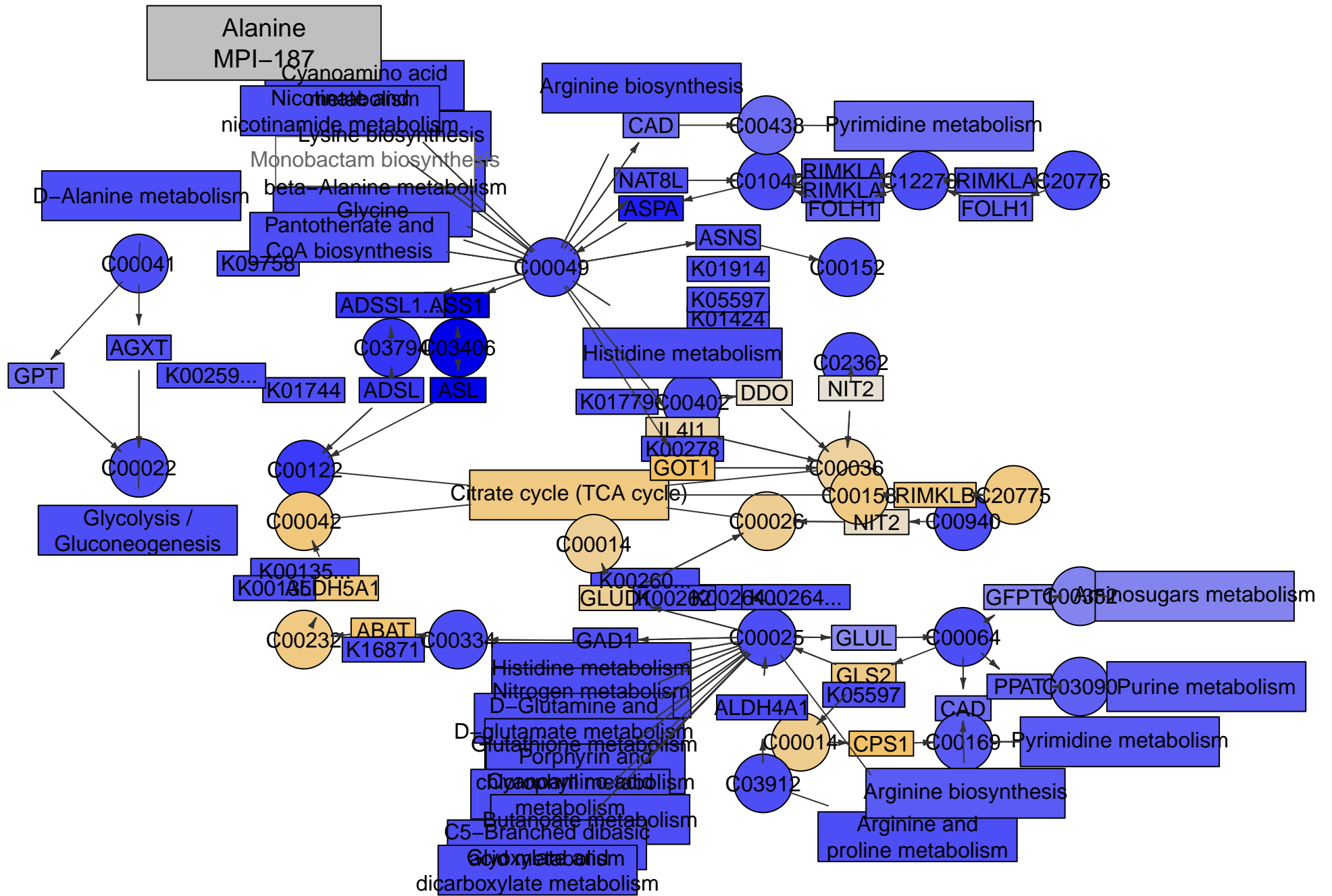


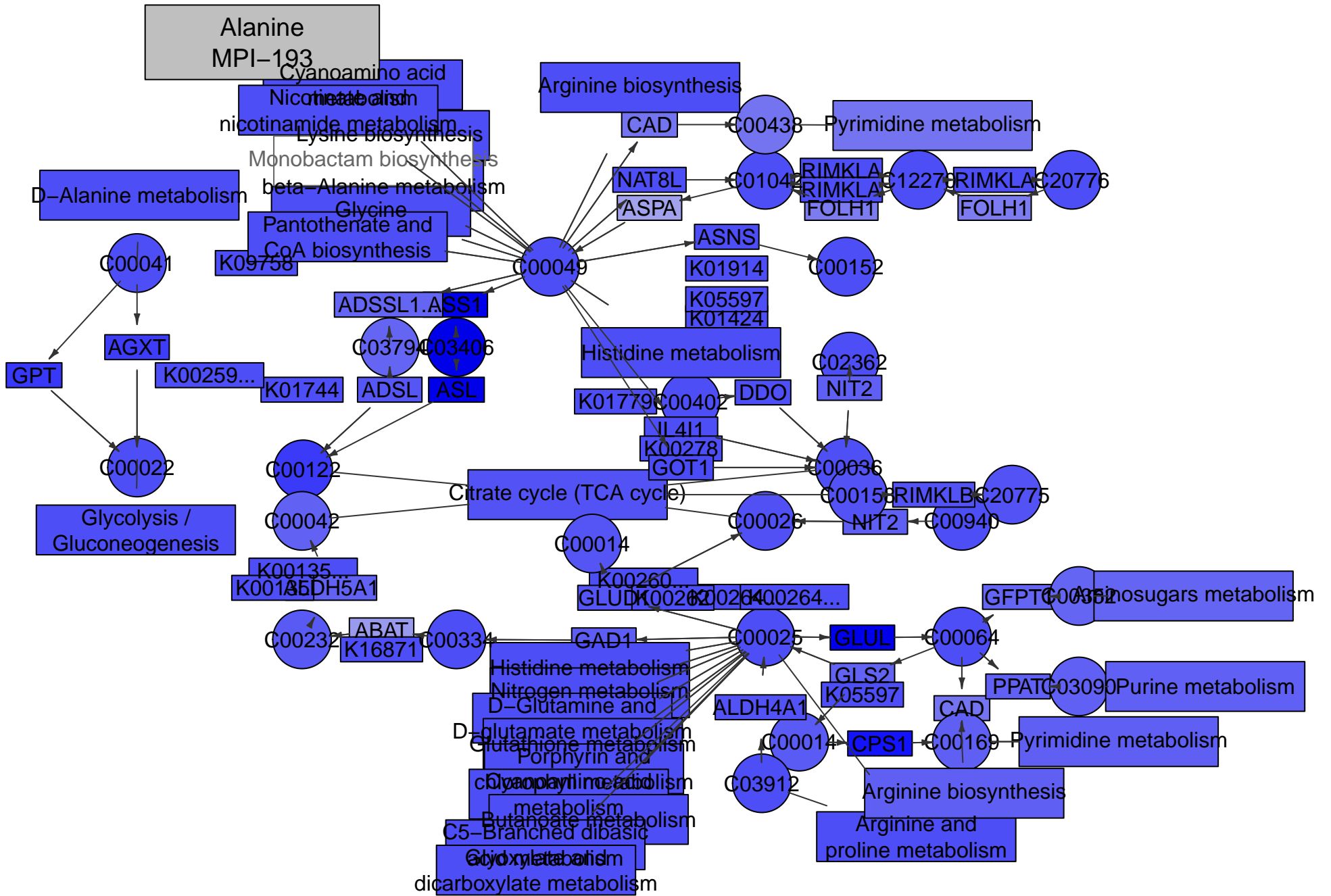


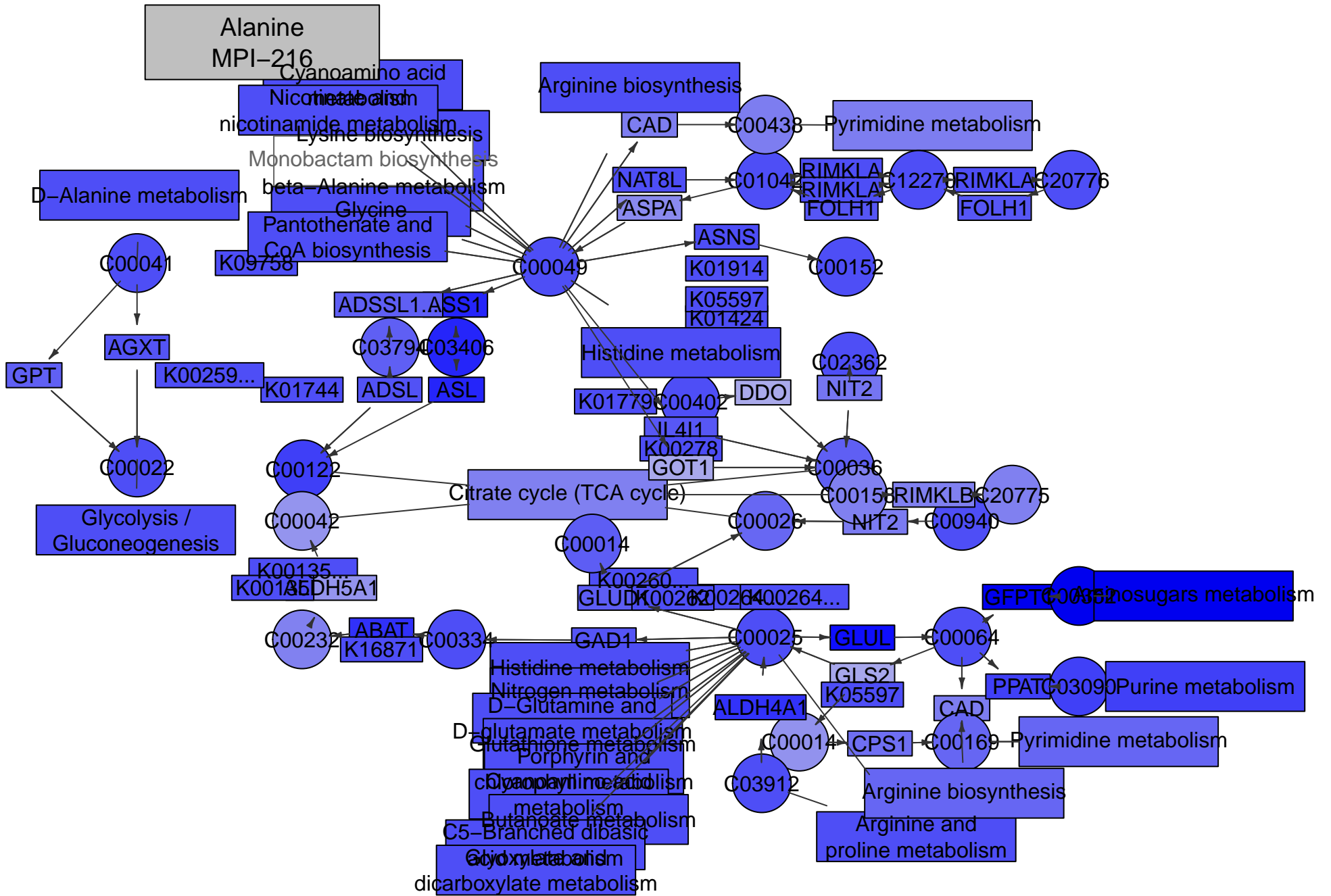


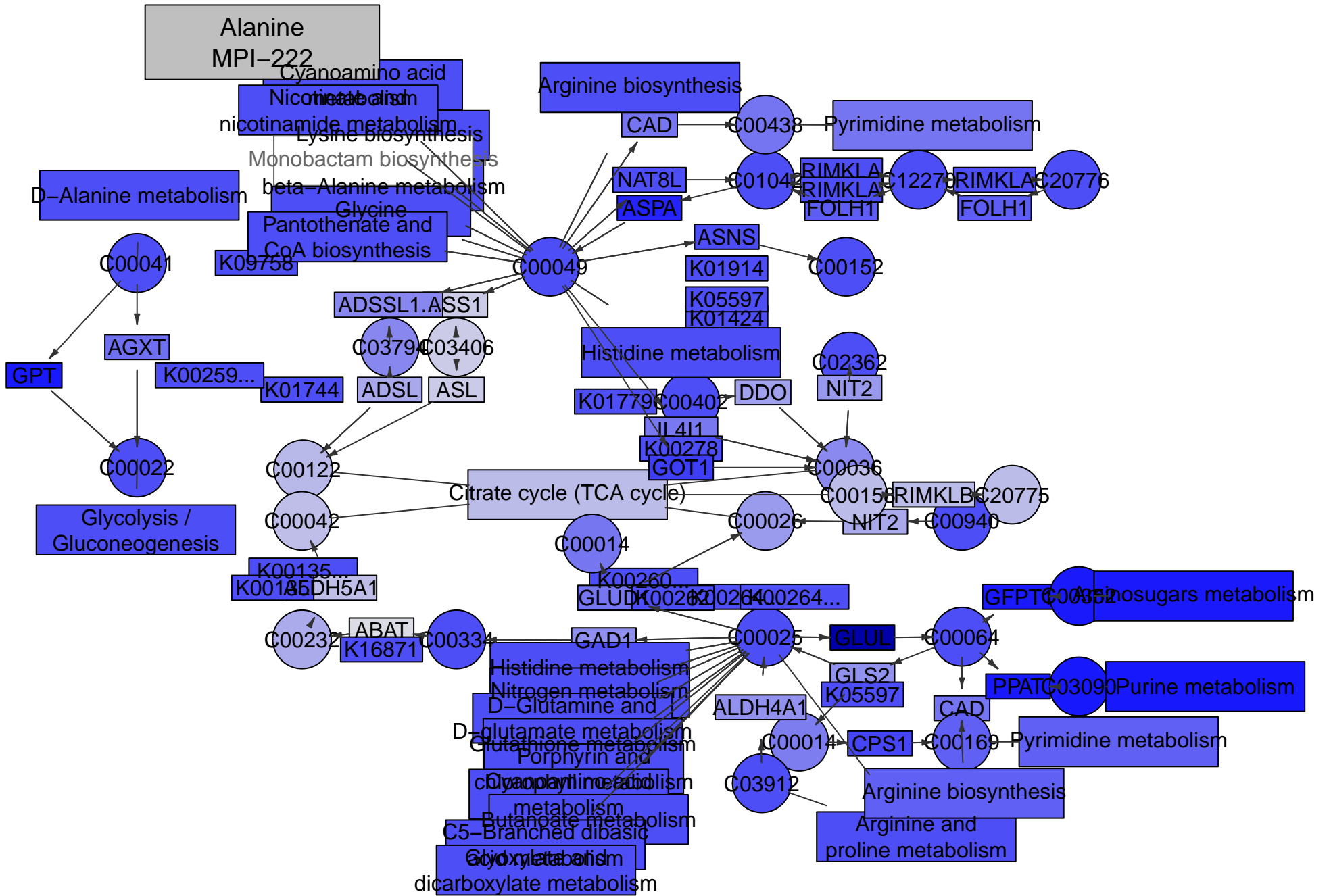


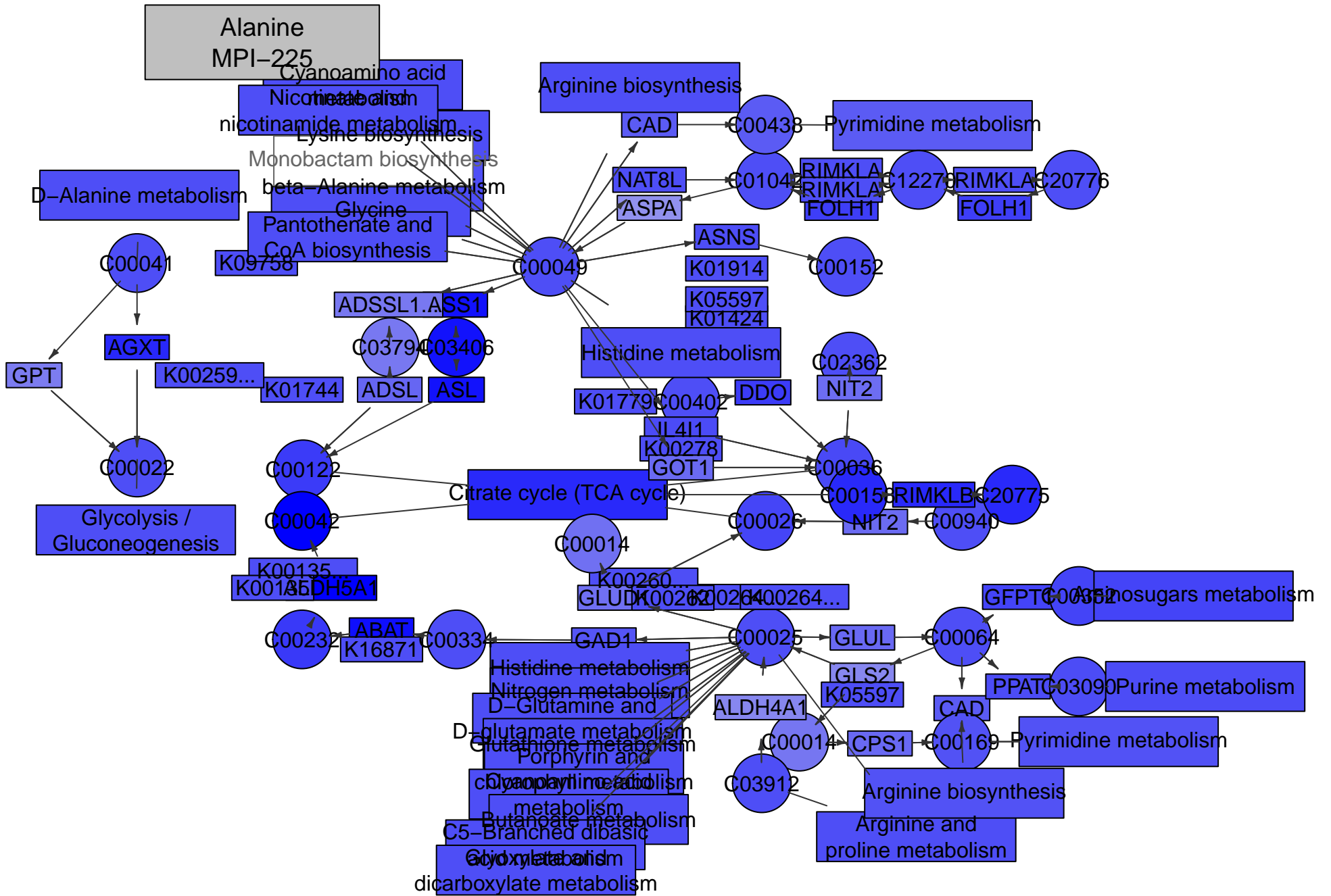


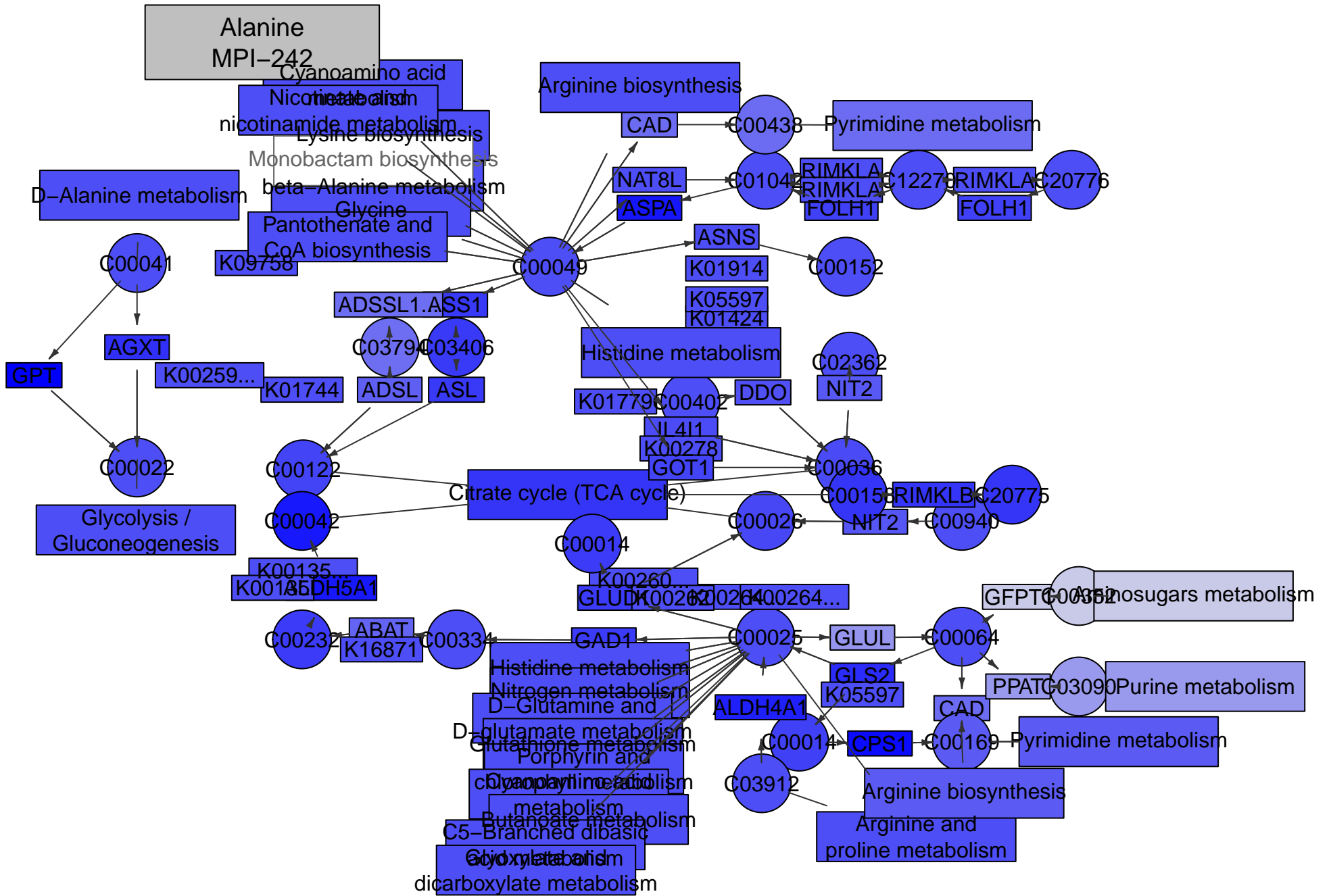












Alanine
MPI-242

Cyanoamino acid

Nicotinate metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Pantothenate and CoA biosynthesis

K09758

Arginine biosynthesis

CAD

C00438

Pyrimidine metabolism

NAT8L

C01042

RIMKLA

C12276

RIMKLA

C20776

ASPA

FOLH1

FOLH1

ASNS

C00152

K01914

K0597

K01424

Histidine metabolism

C02362

NIT2

K01779

C00402

DDO

NL411

K00278

GOT1

C00036

ADSSL1.ASS1

C03790

C03406

ADSL

ASL

K01744

K00259...

C00041

AGXT

GPT

C00022

Glycolysis /
Gluconeogenesis

C00122

C00042

Citrate cycle (TCA cycle)

C00026

C00158

RIMKLB

C20775

NIT2

C00940

C00014

K00260...

GLUDK

K00262

K00264

K00264...

GFPT

C00352

Sugars metabolism

C00232

ABAT

K16871

C00334

GAD1

C00025

GLUL

C00064

Histidine metabolism

Nitrogen metabolism

D-Glutamine and

D-glutamate metabolism

Glutathione metabolism

Porphyrin and

heme metabolism

Cyanocobalamin metabolism

Butanoate metabolism

C5-Branched dibasic

Glyoxylate

dicarboxylate metabolism

ALDH4A1

C00014

CPS1

C00169

CAD

C00169

Pyrimidine metabolism

C03912

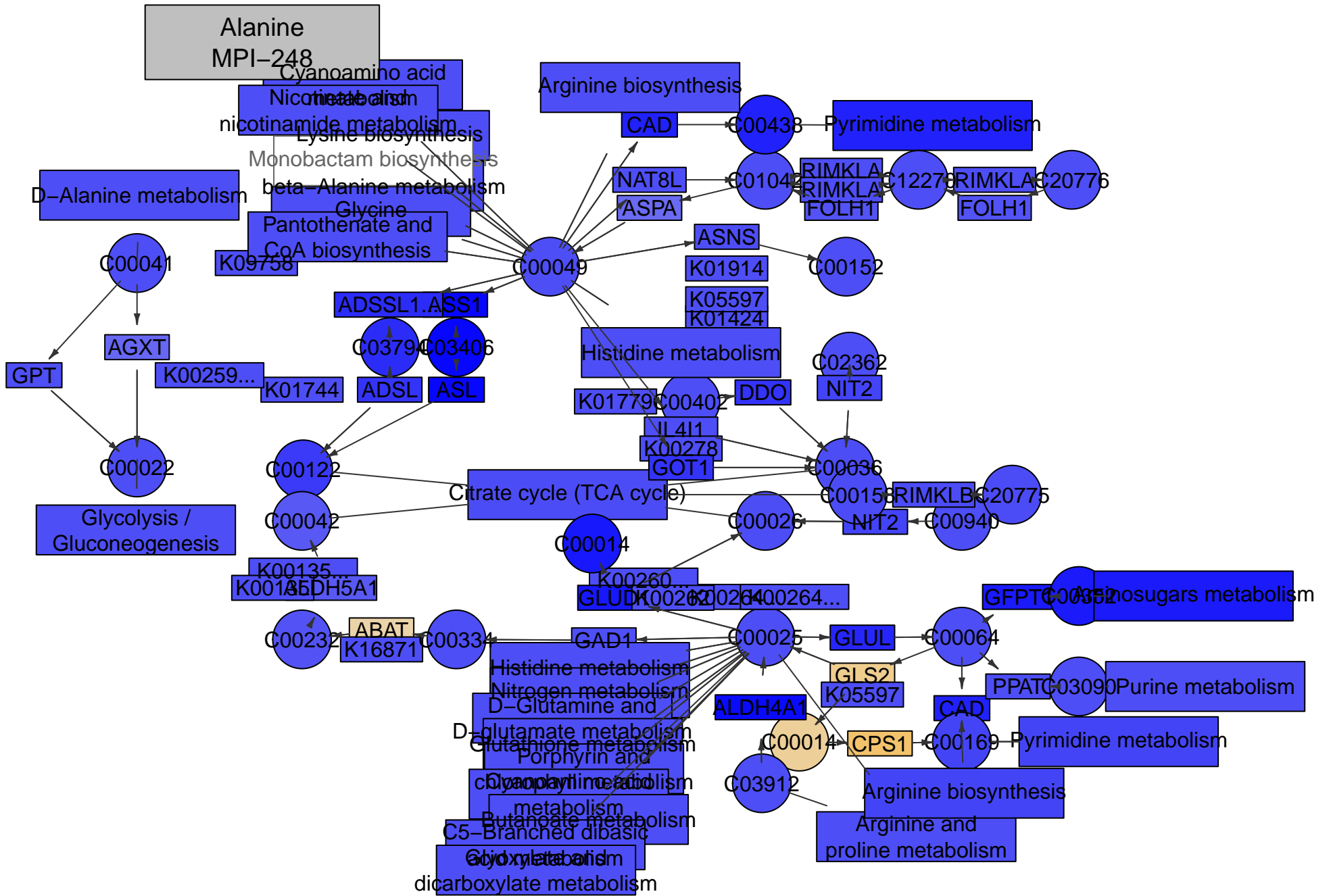
Arginine biosynthesis

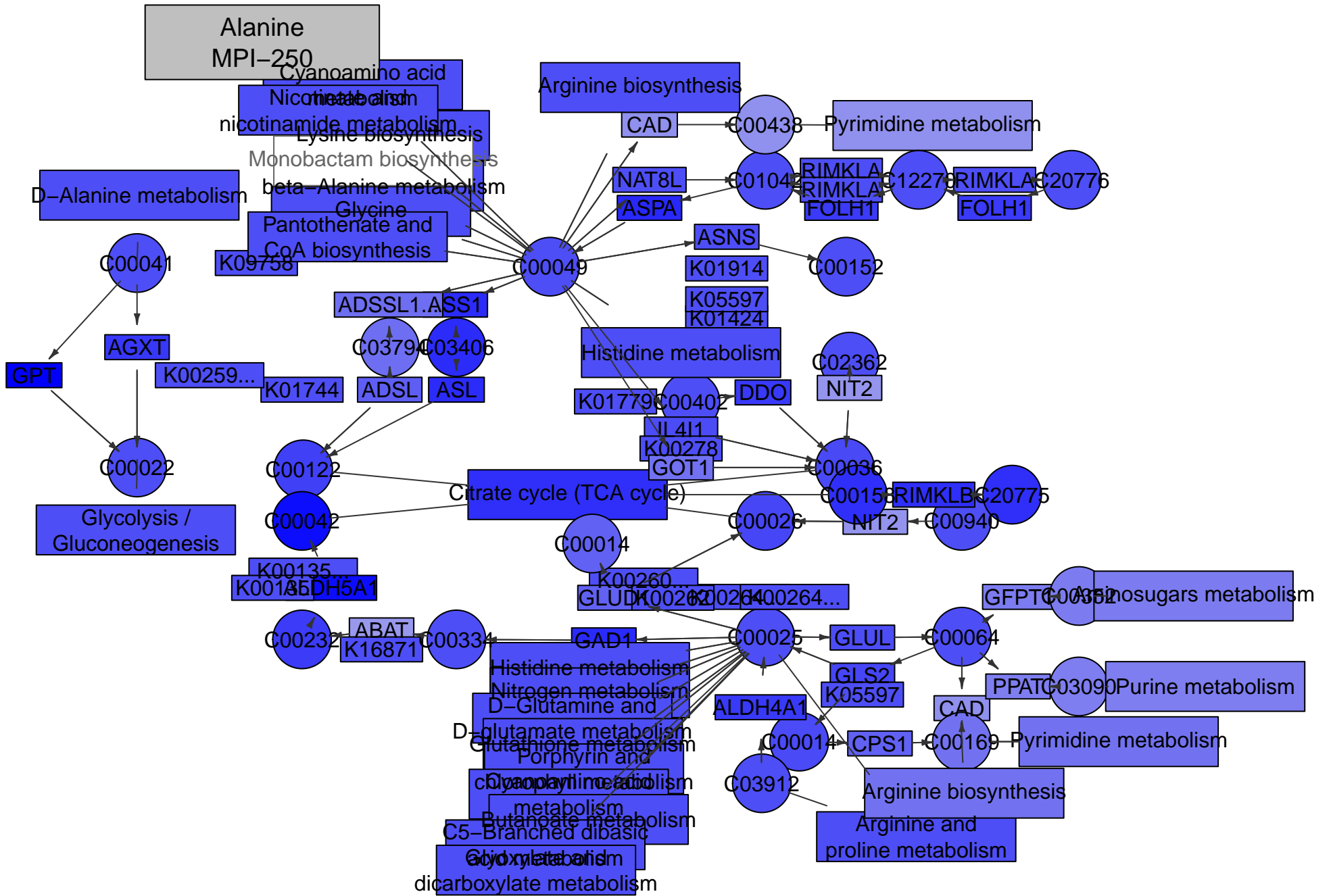
Arginine and proline metabolism

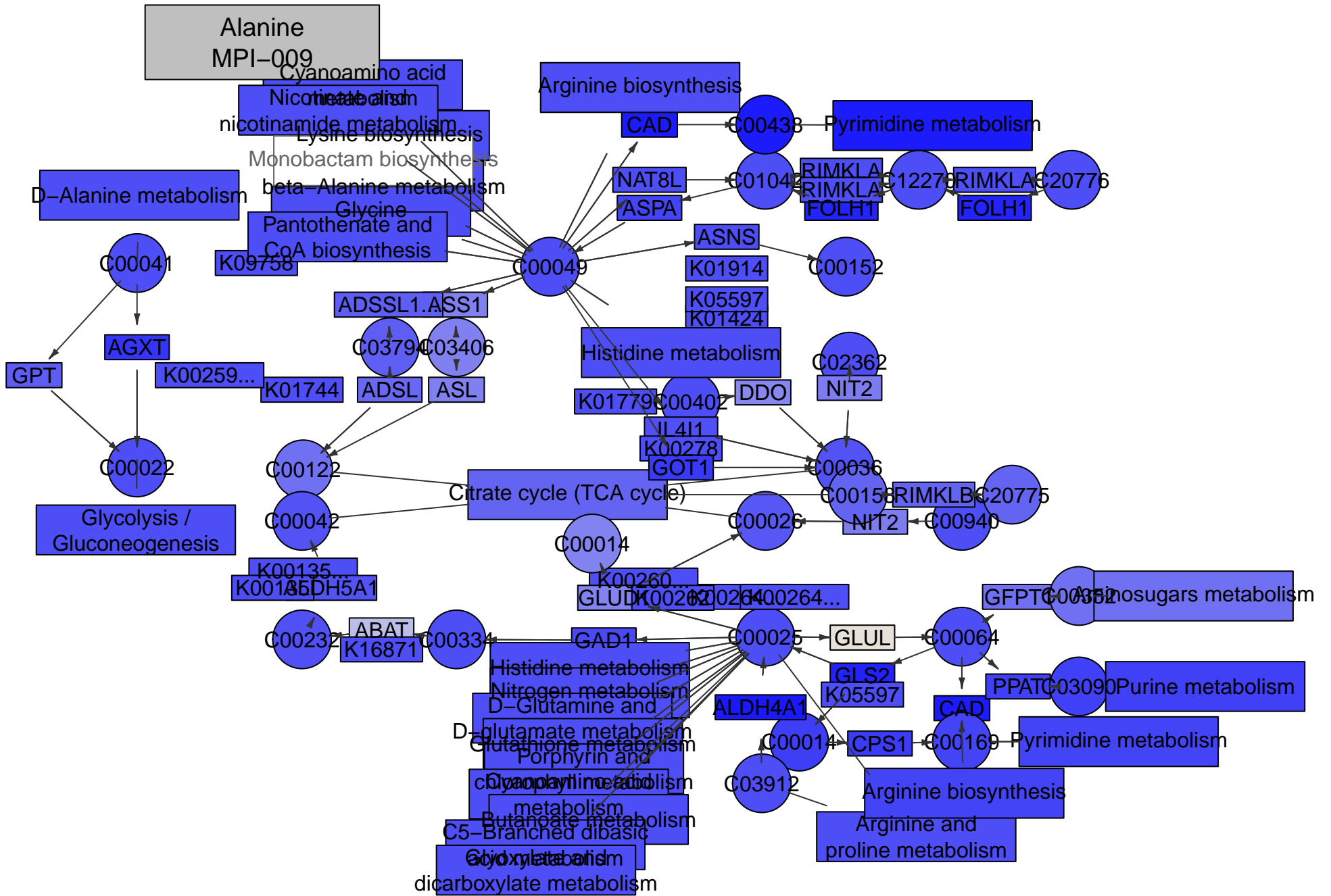
PPATC

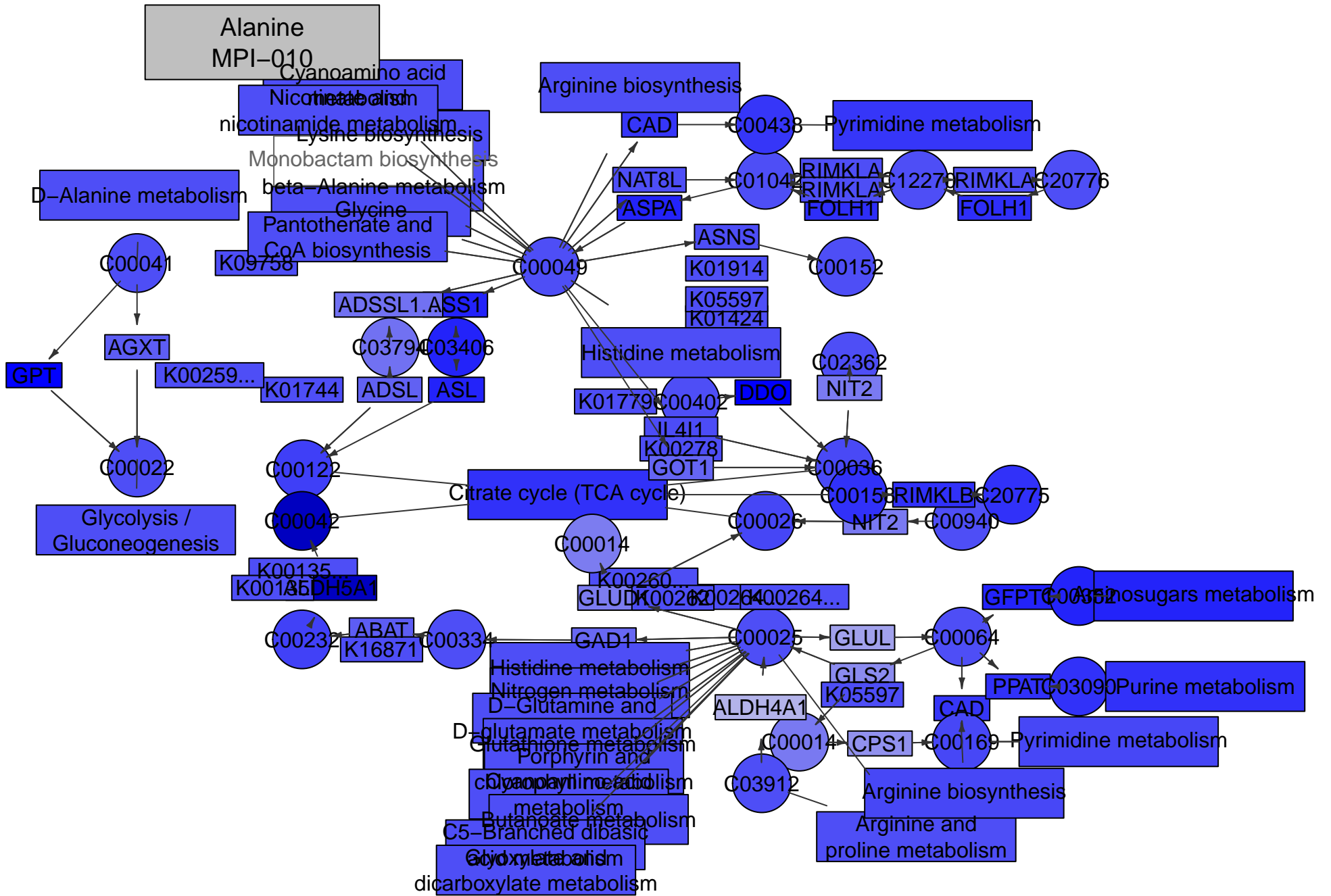
C03090

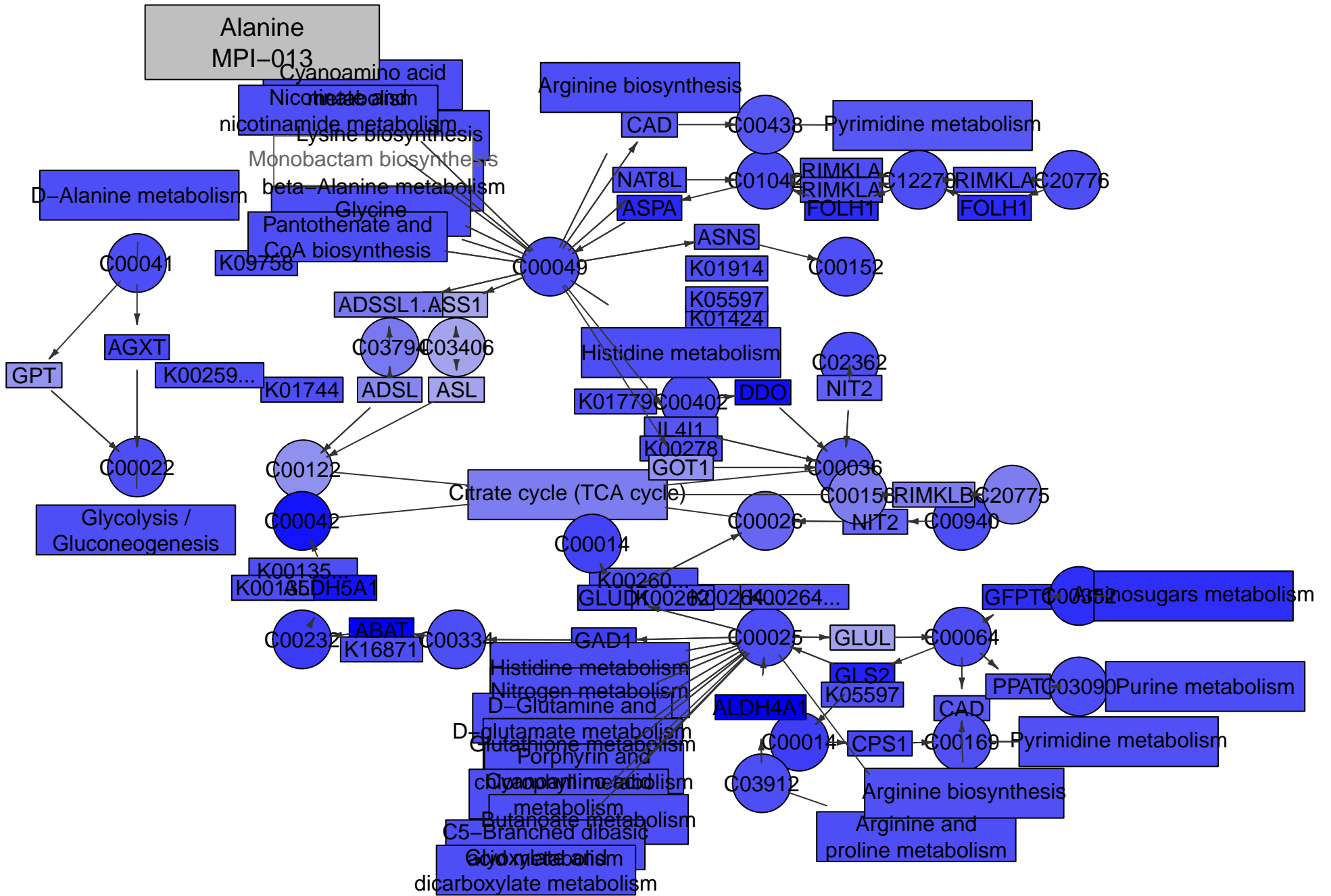
Purine metabolism

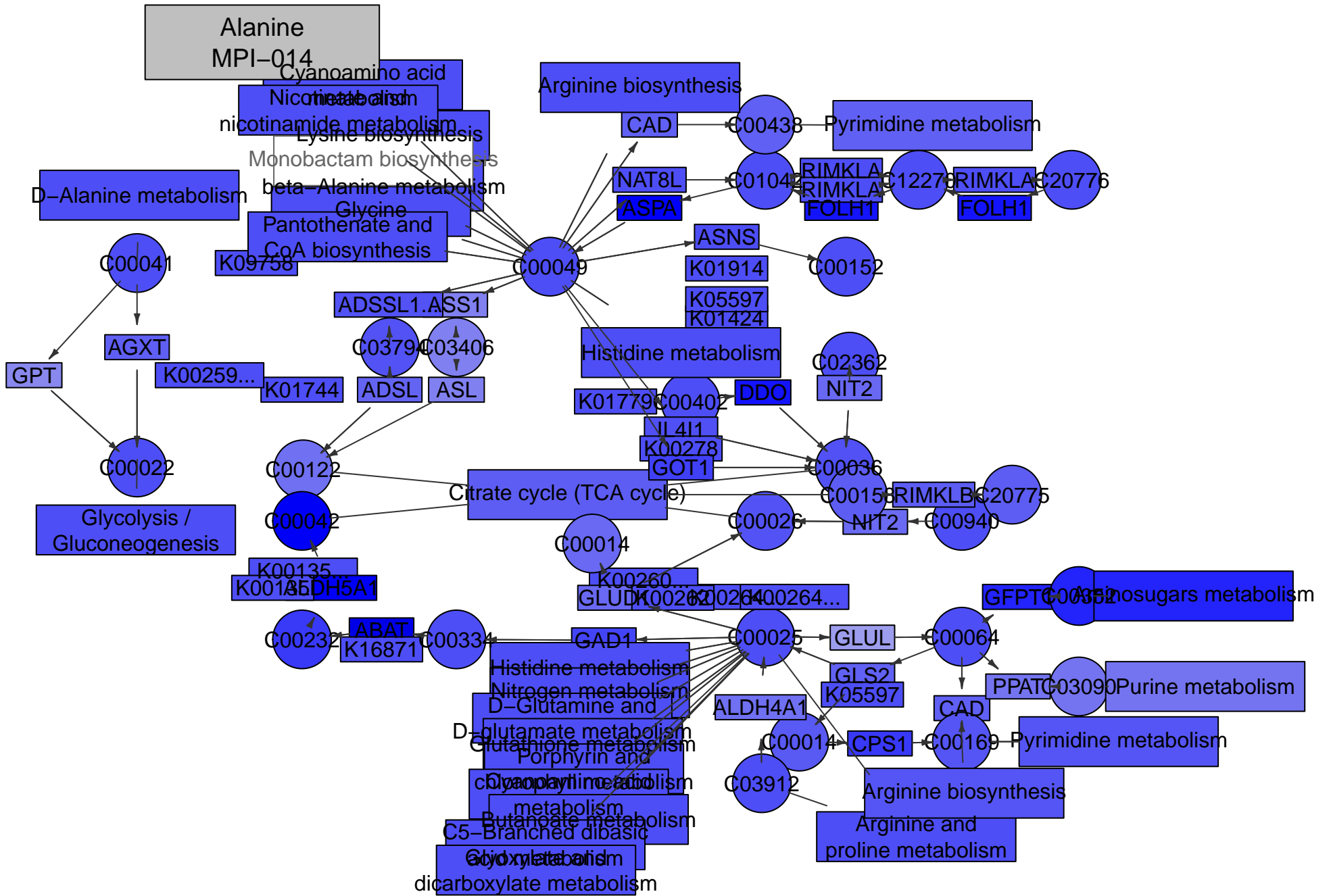


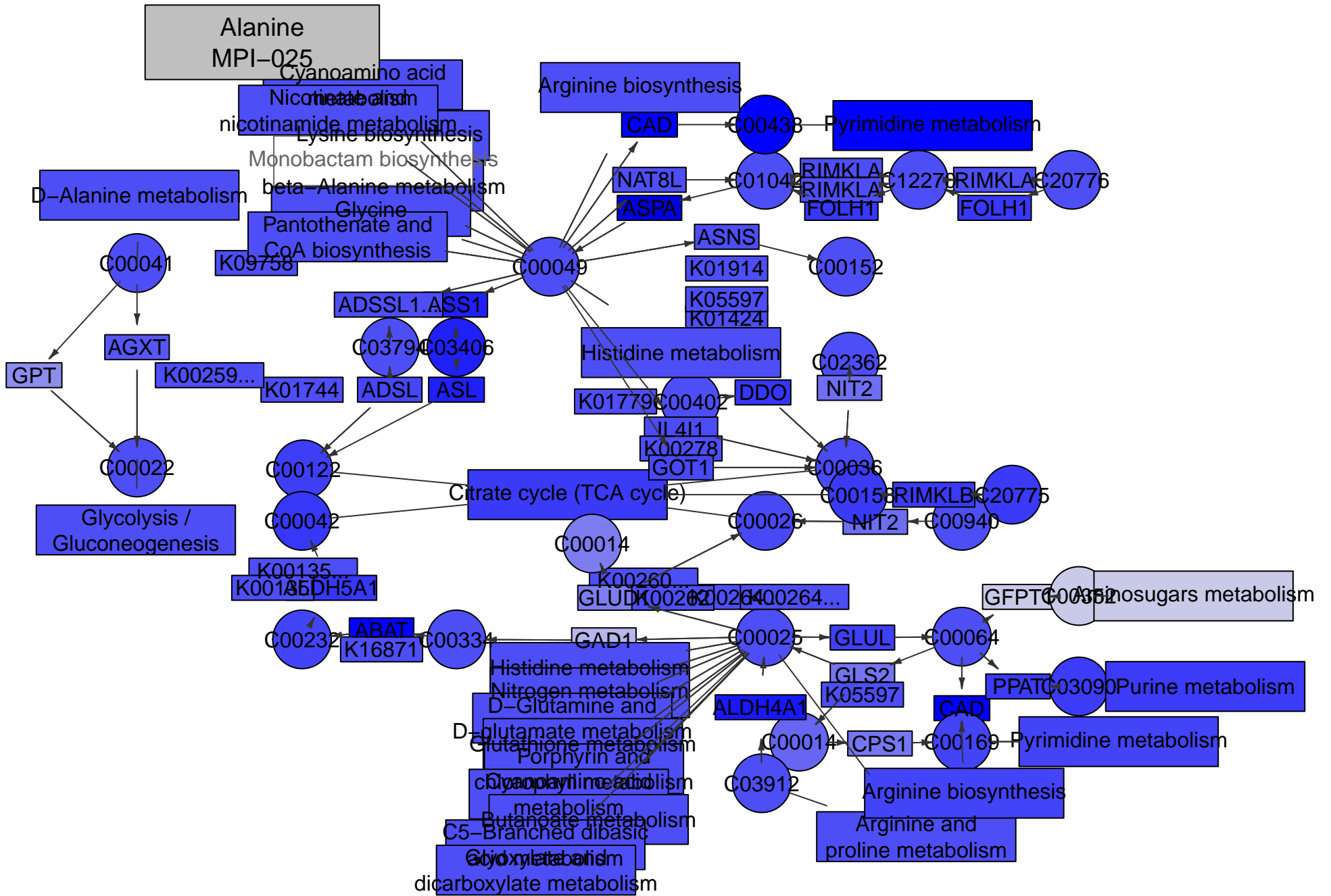


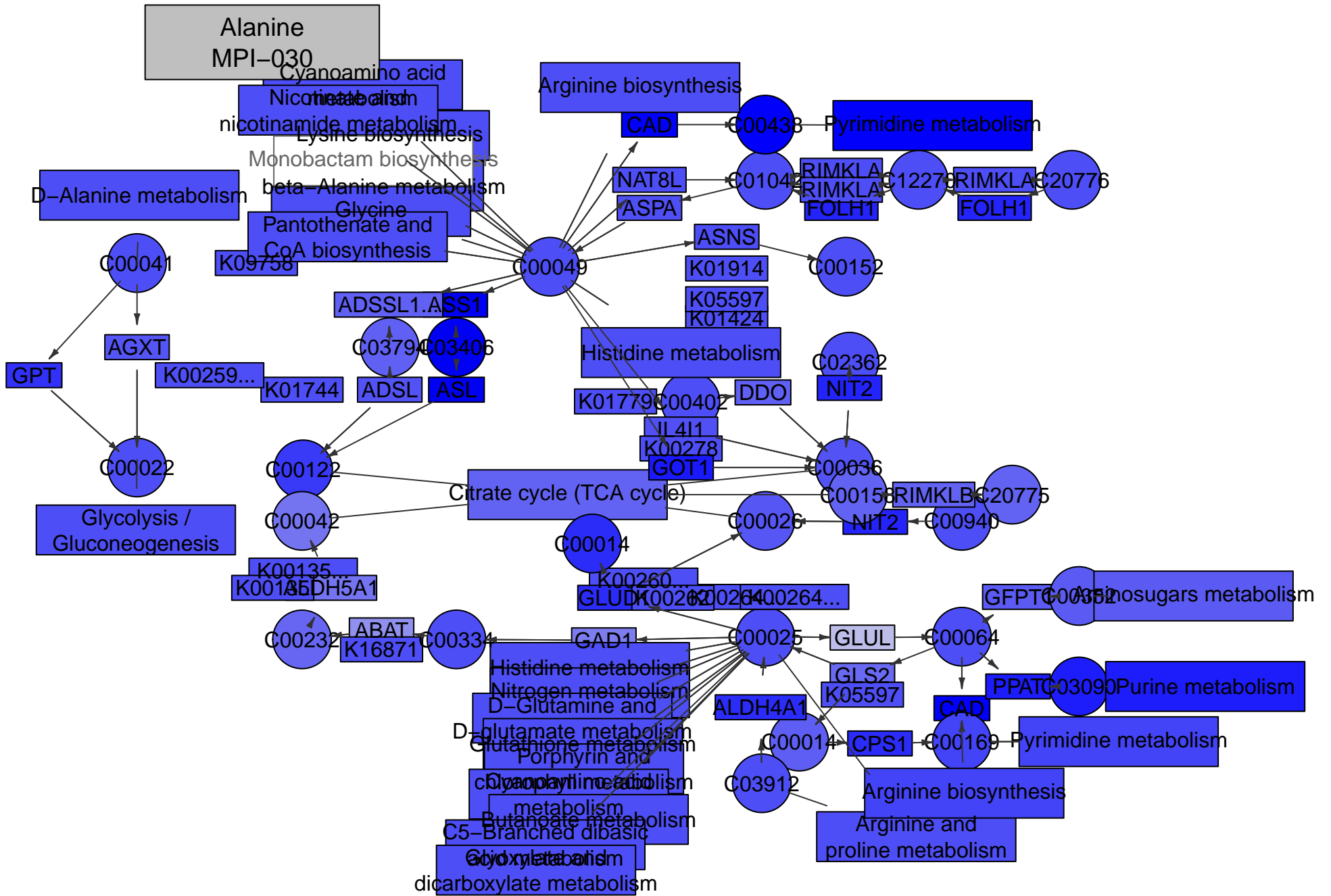


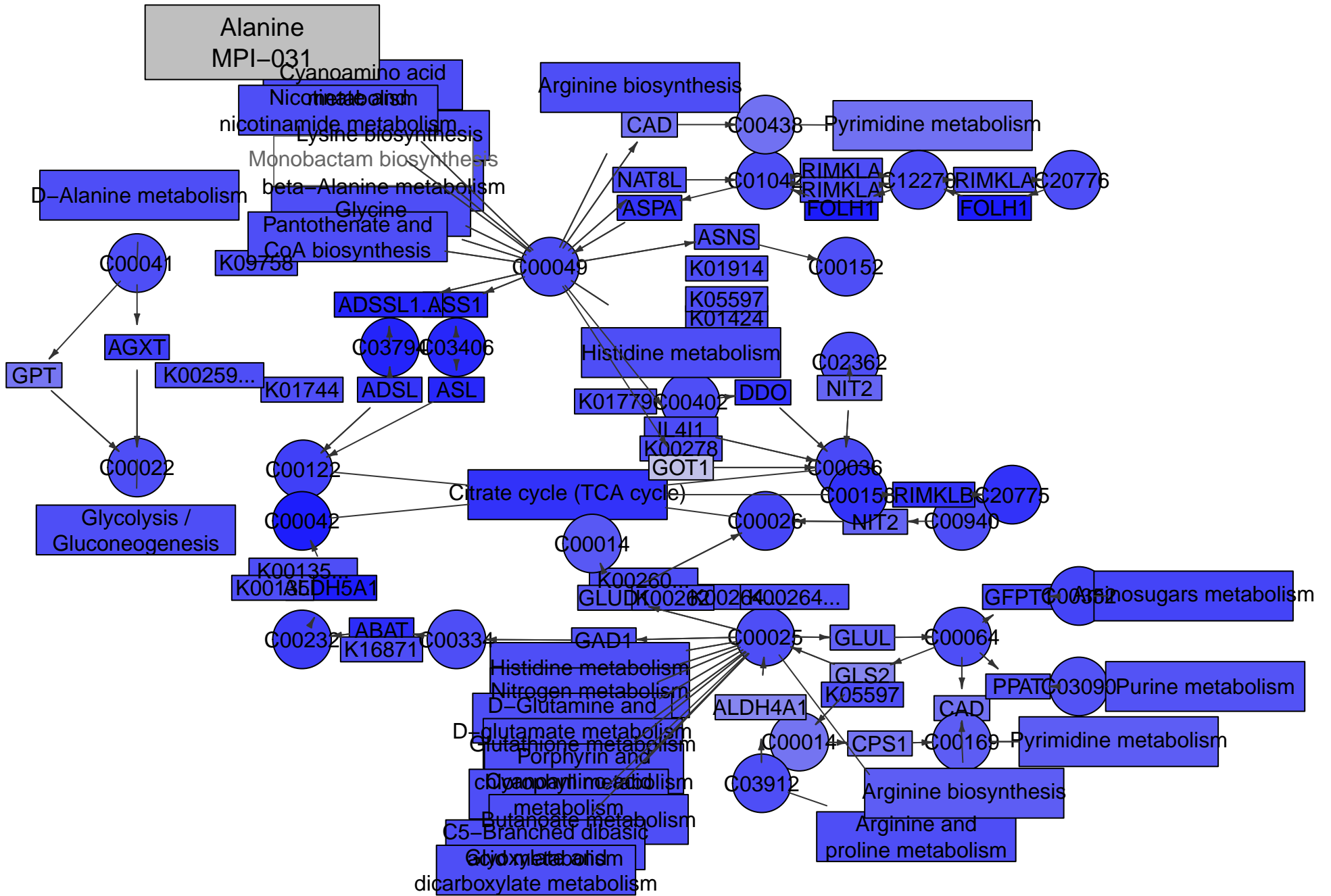


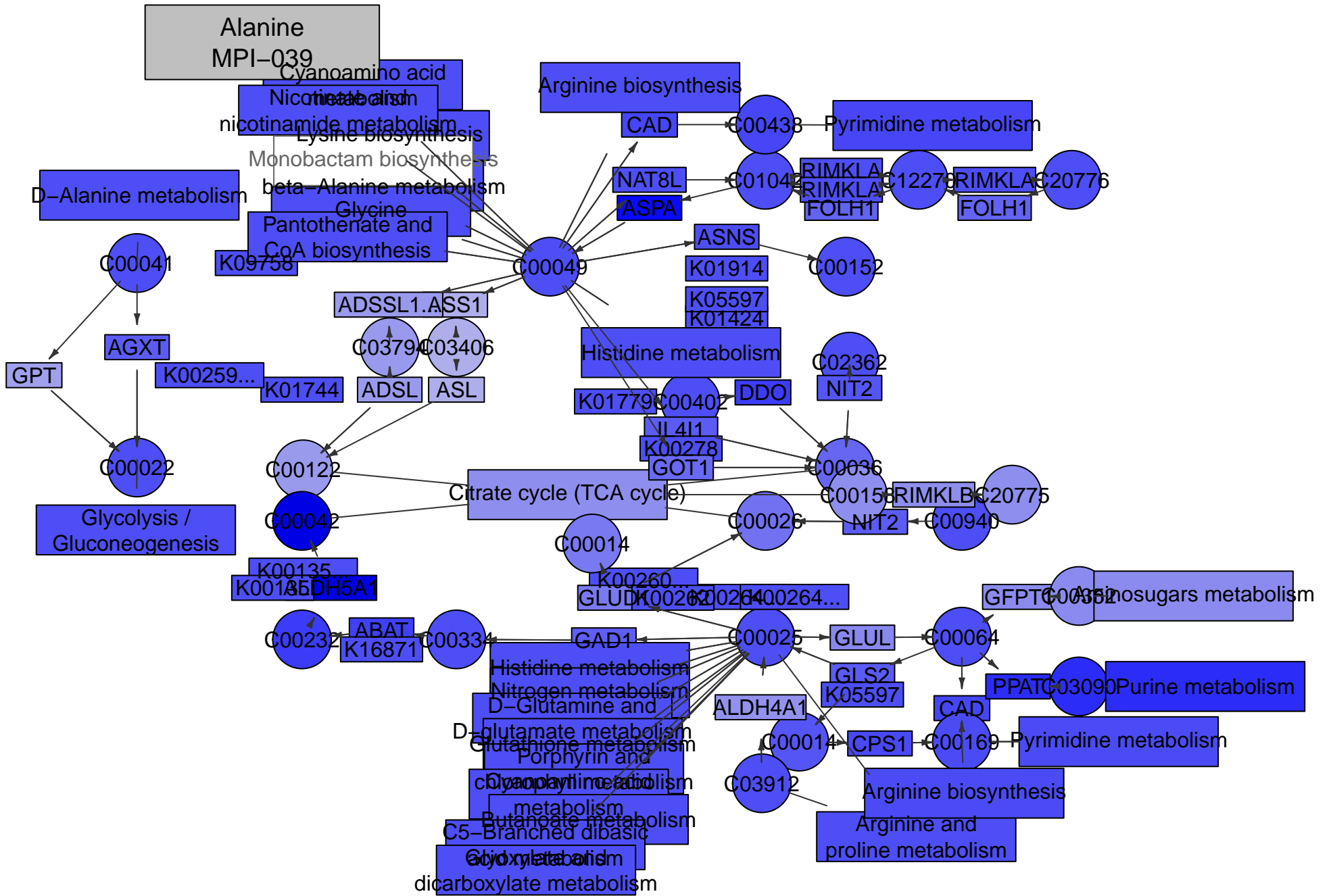


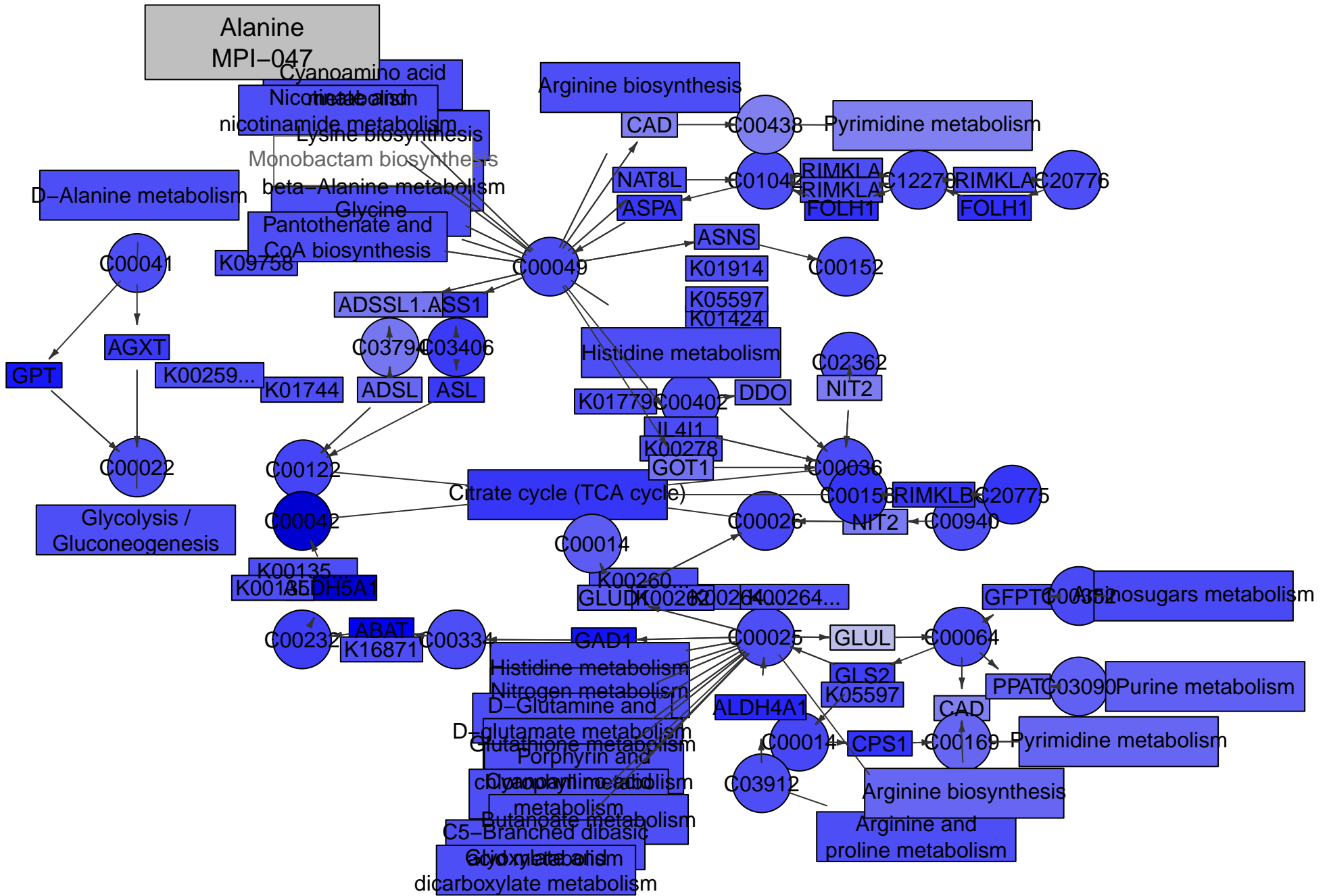


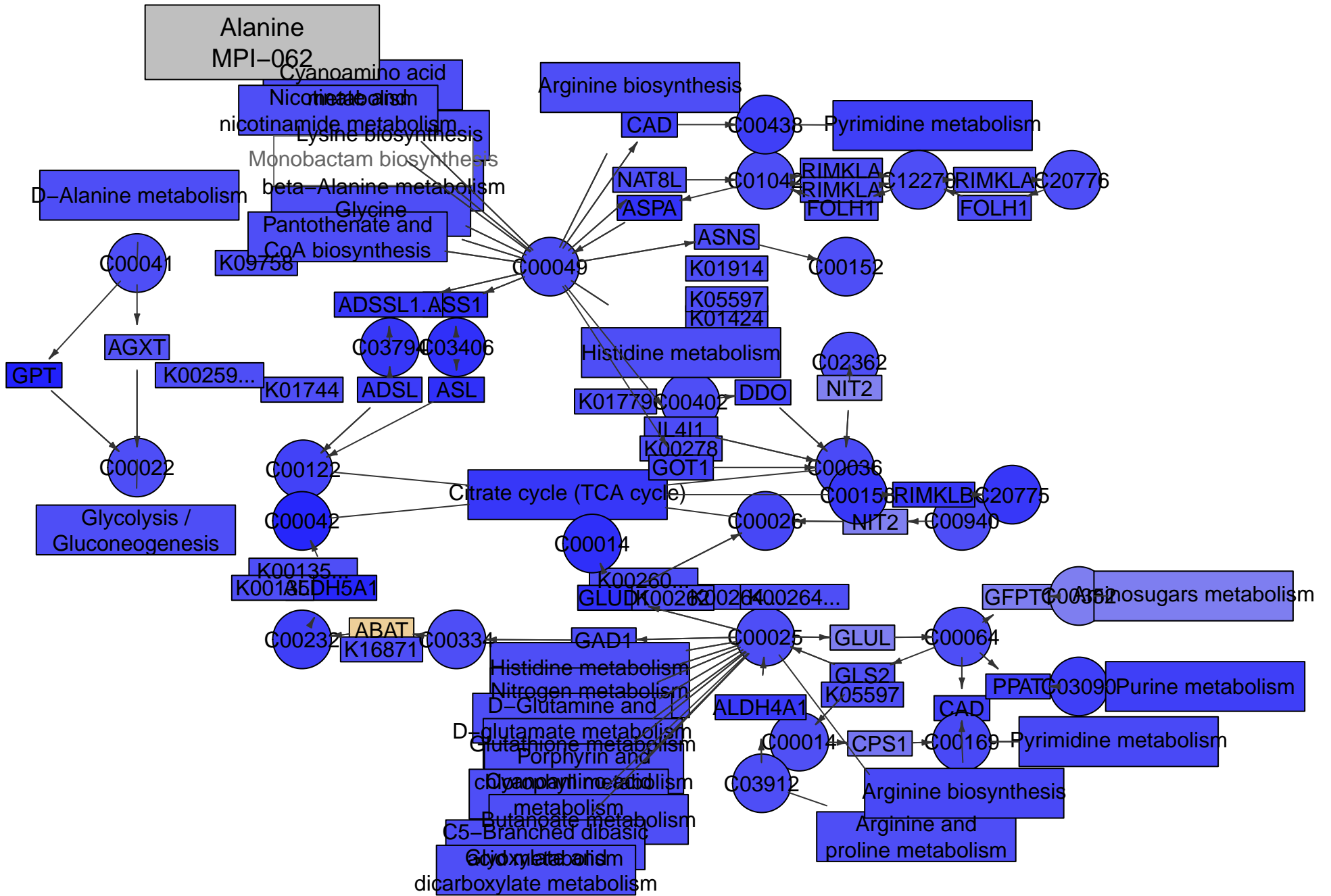












Alanine
MPI-062

Cyanoamino acid

metabolism

Nicotinamide

metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Pantothenate and

CoA biosynthesis

Arginine biosynthesis

CAD

C00438

Pyrimidine metabolism

NAT8L

C01042

RIMKLA

C12276

RIMKLA

C20776

ASPA

FOLH1

FOLH1

ASNS

C00152

K01914

K0597

K01424

Histidine metabolism

C02362

NIT2

K01779

C00402

DDO

NI 411

K00278

GOT1

C00036

Citrate cycle (TCA cycle)

C00158

RIMKLB

C20775

NIT2

C00940

Glycolysis /
Gluconeogenesis

Disaccharides metabolism

GFPT

C00352

C00232

ABAT

K16871

C00334

GAD1

C00025

GLUL

C00064

C00352

GFPT

C00352

C00352

C00352

Histidine metabolism

Nitrogen metabolism

D-Glutamine and

D-glutamate metabolism

Glutathione metabolism

Porphyrin and

heme metabolism

Cyanocobalamin metabolism

Butanoate metabolism

C5-Branched dibasic

dicarboxylate metabolism

ALDH4A1

C00014

CPS1

C00169

CAD

C00169

PPATC

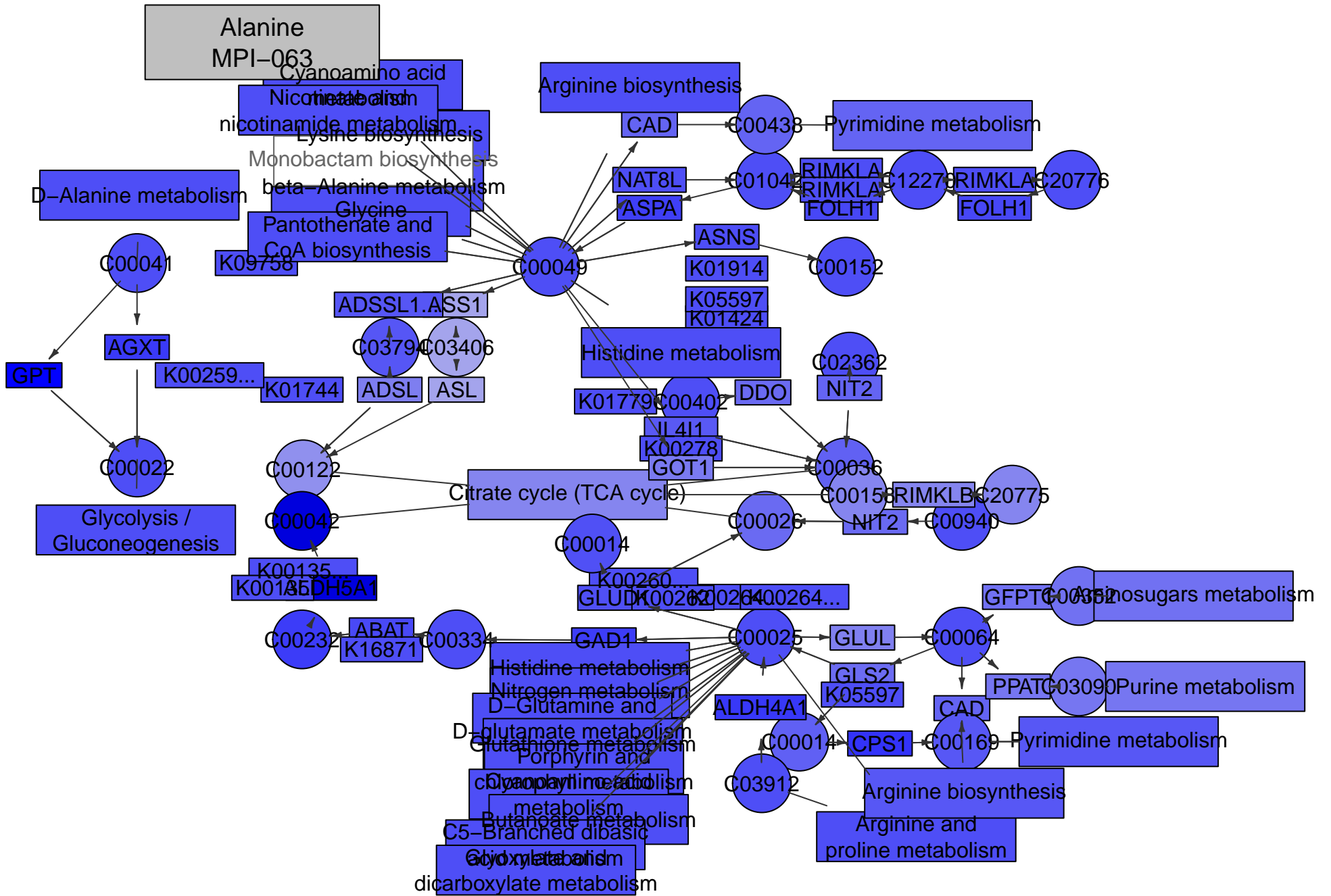
C03090

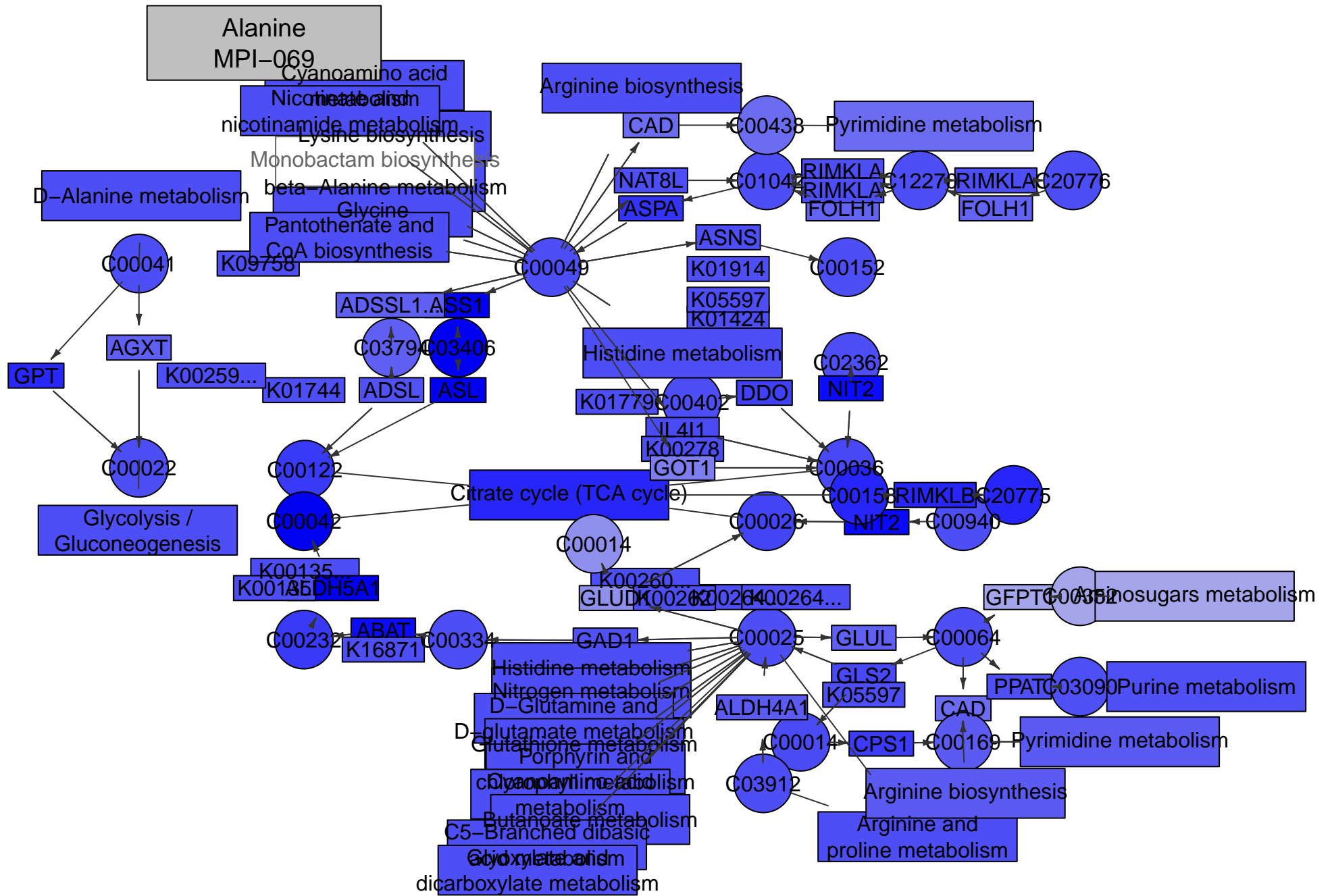
Purine metabolism

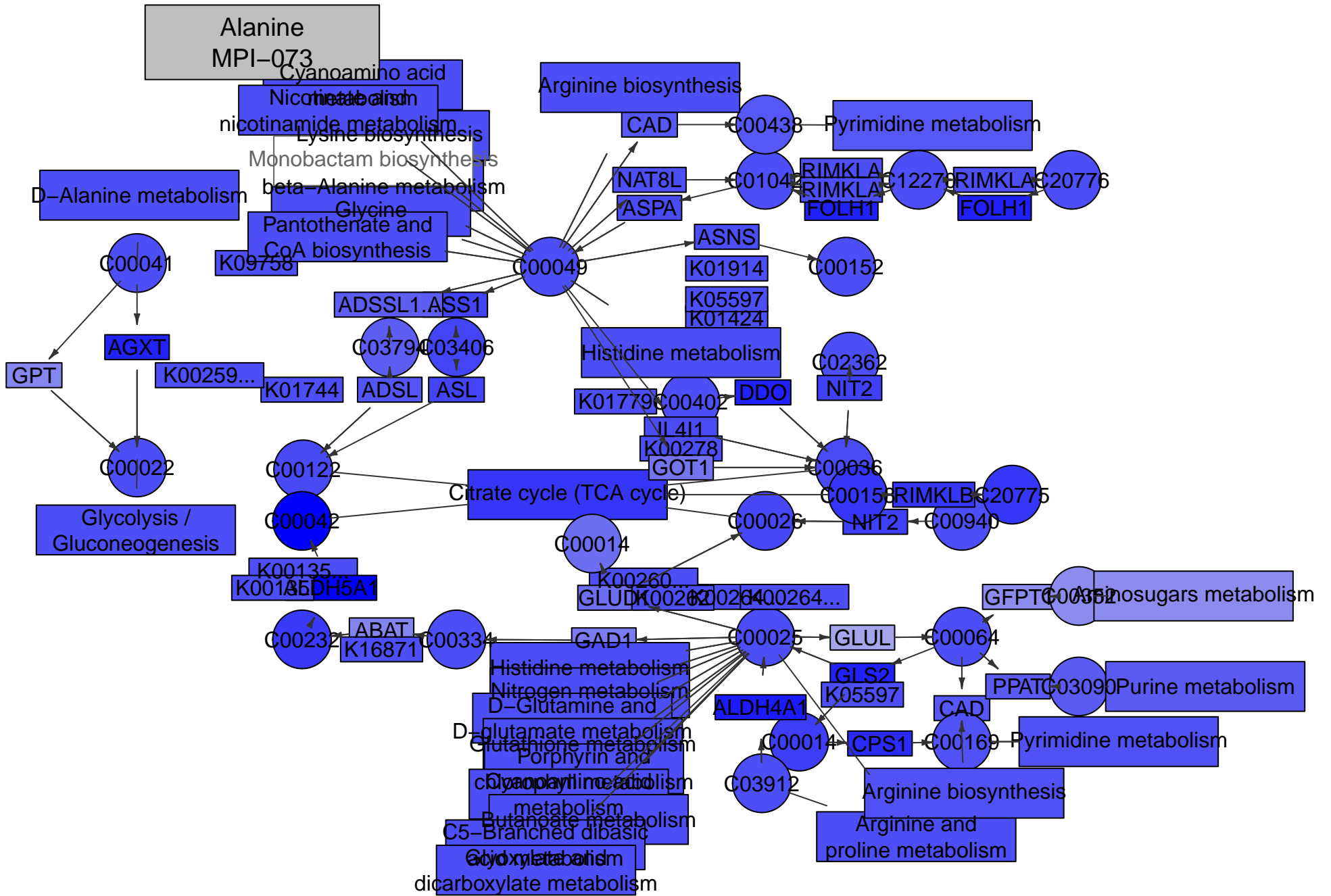
Pyrimidine metabolism

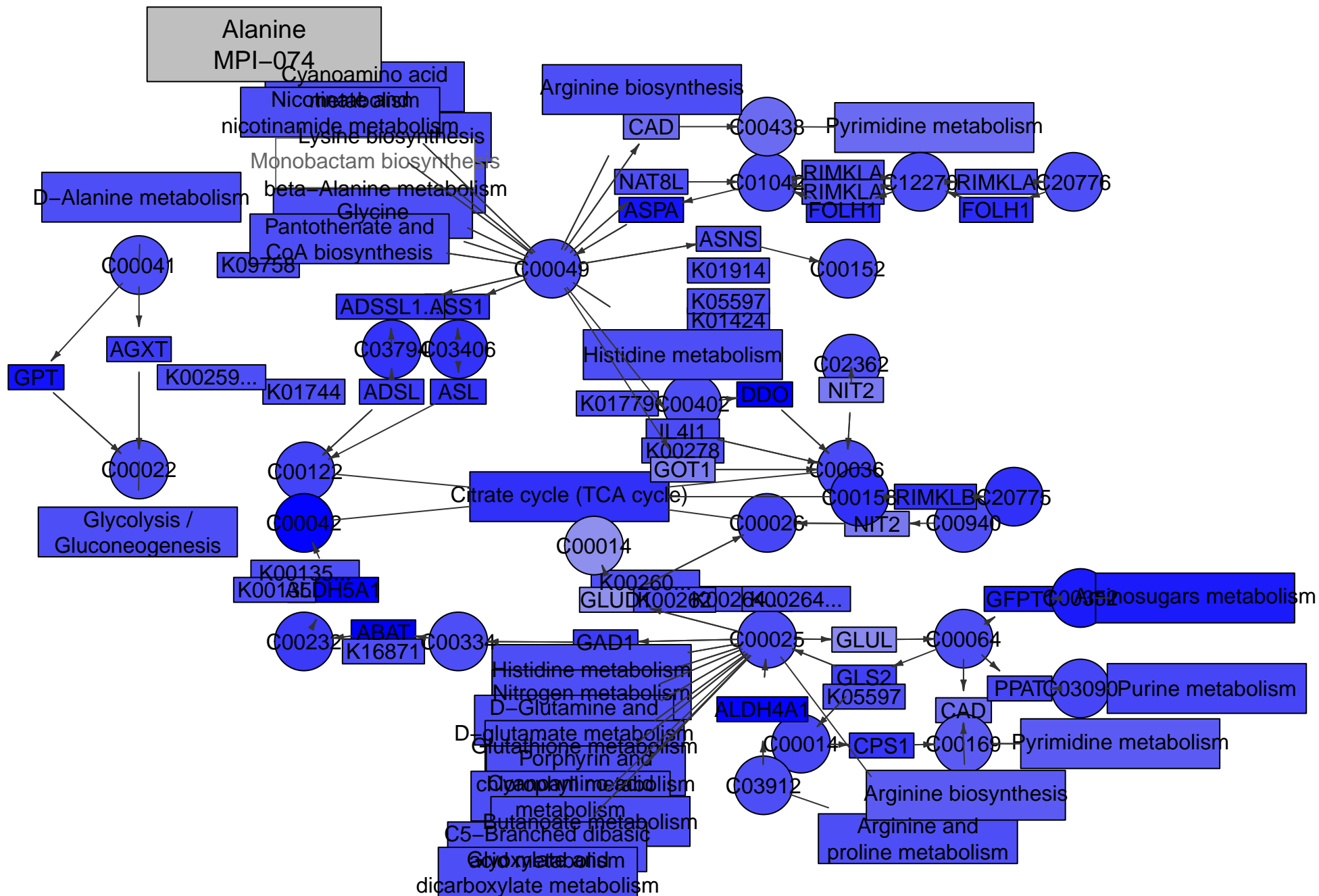
Arginine biosynthesis

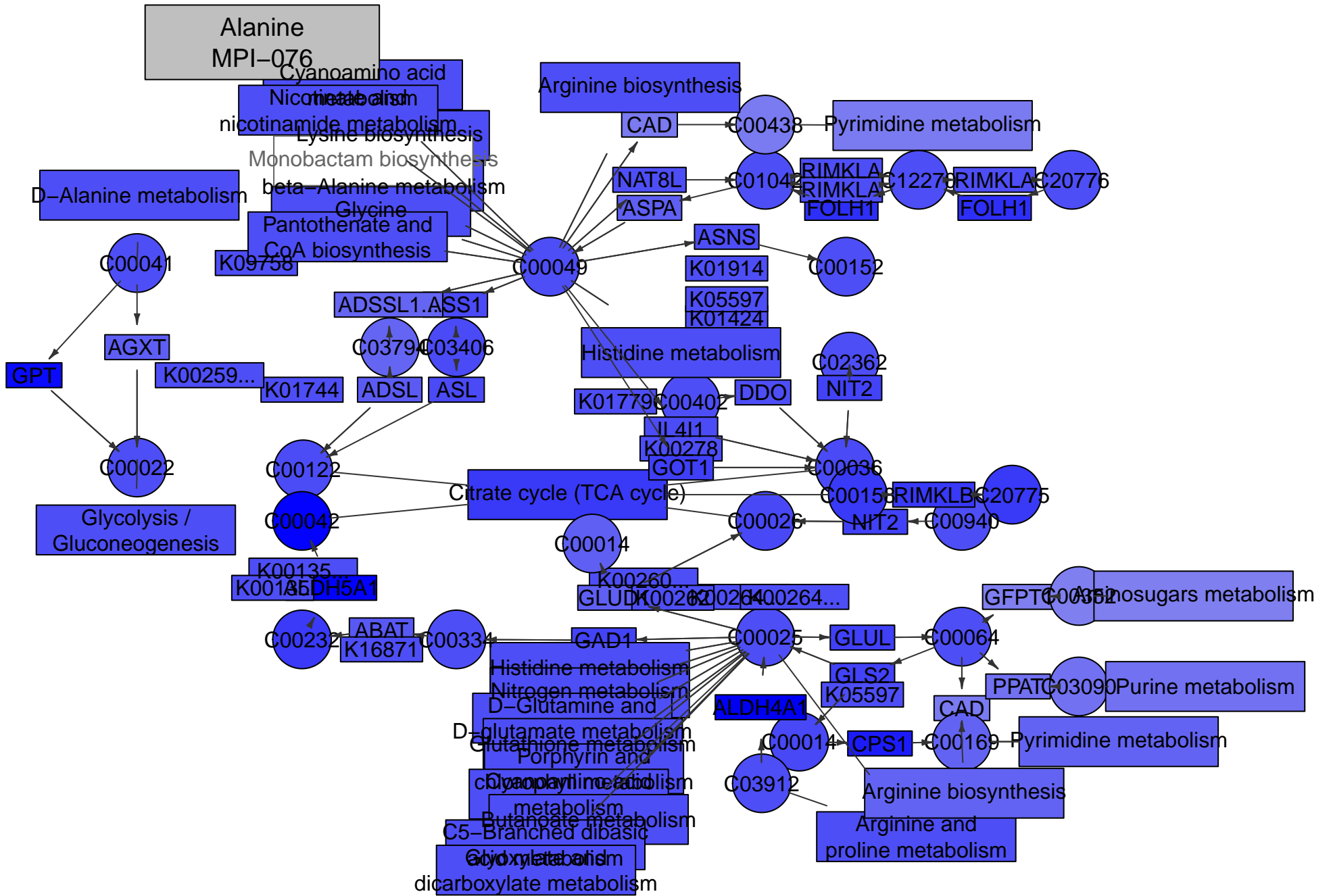
Arginine and
proline metabolism

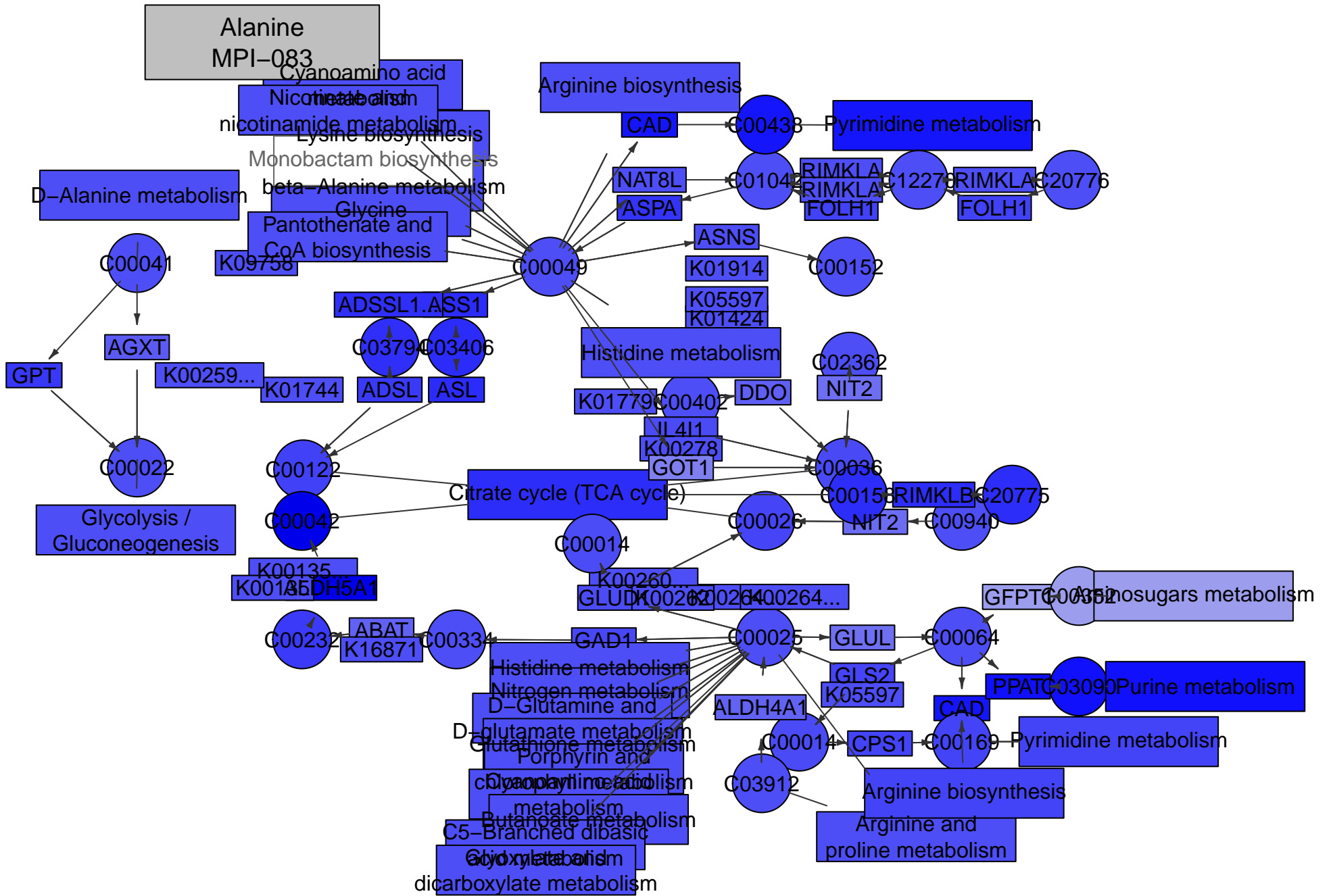


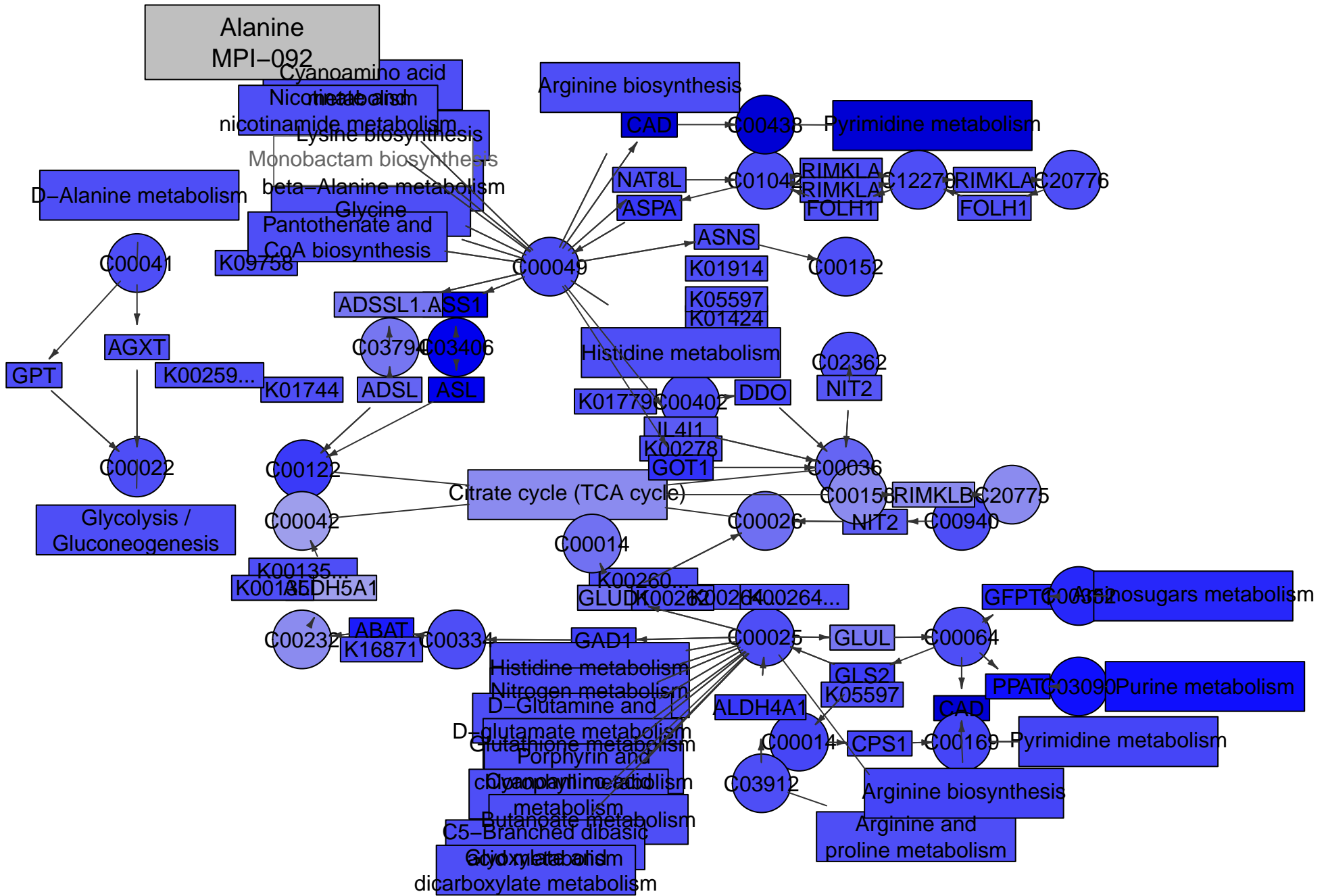


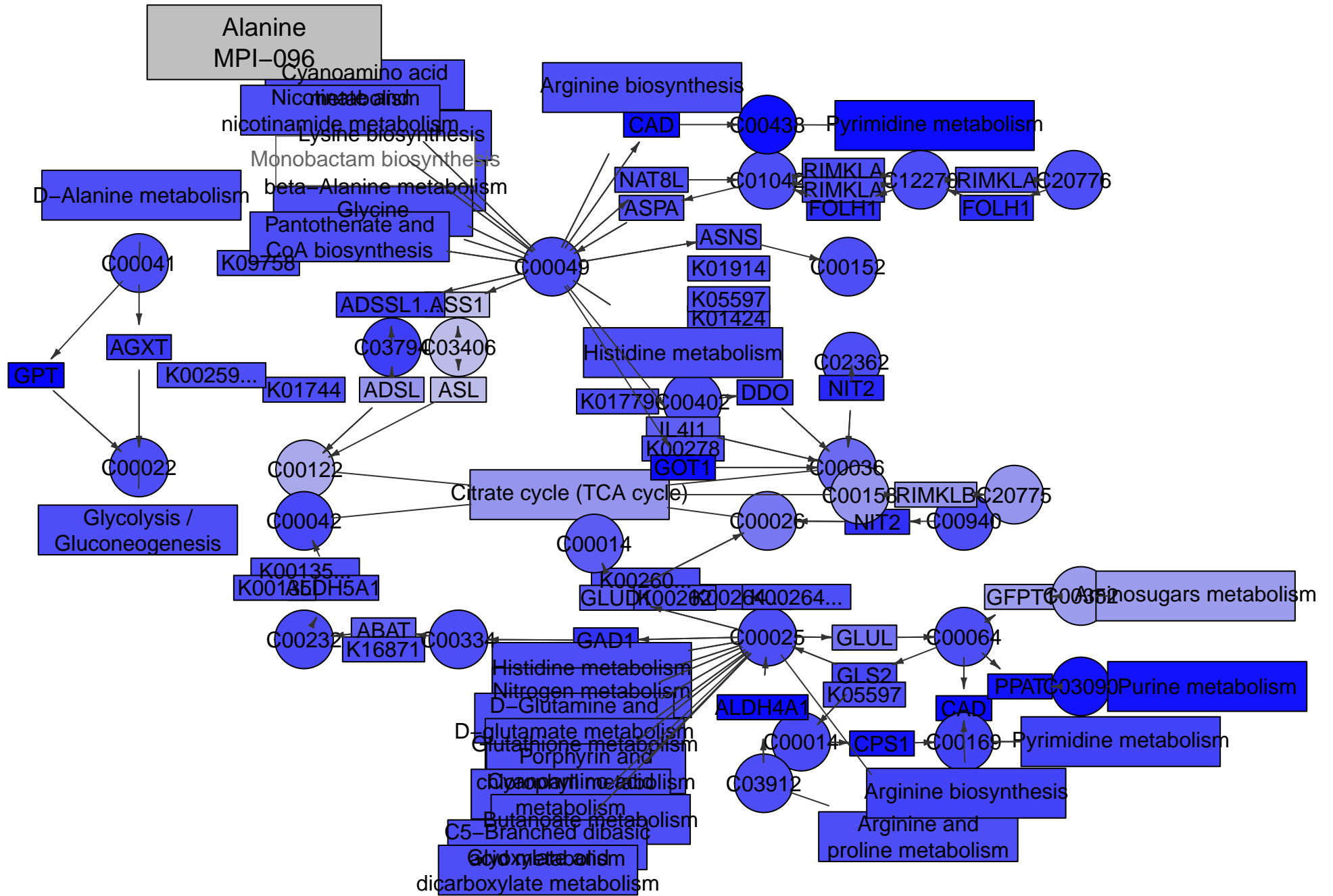


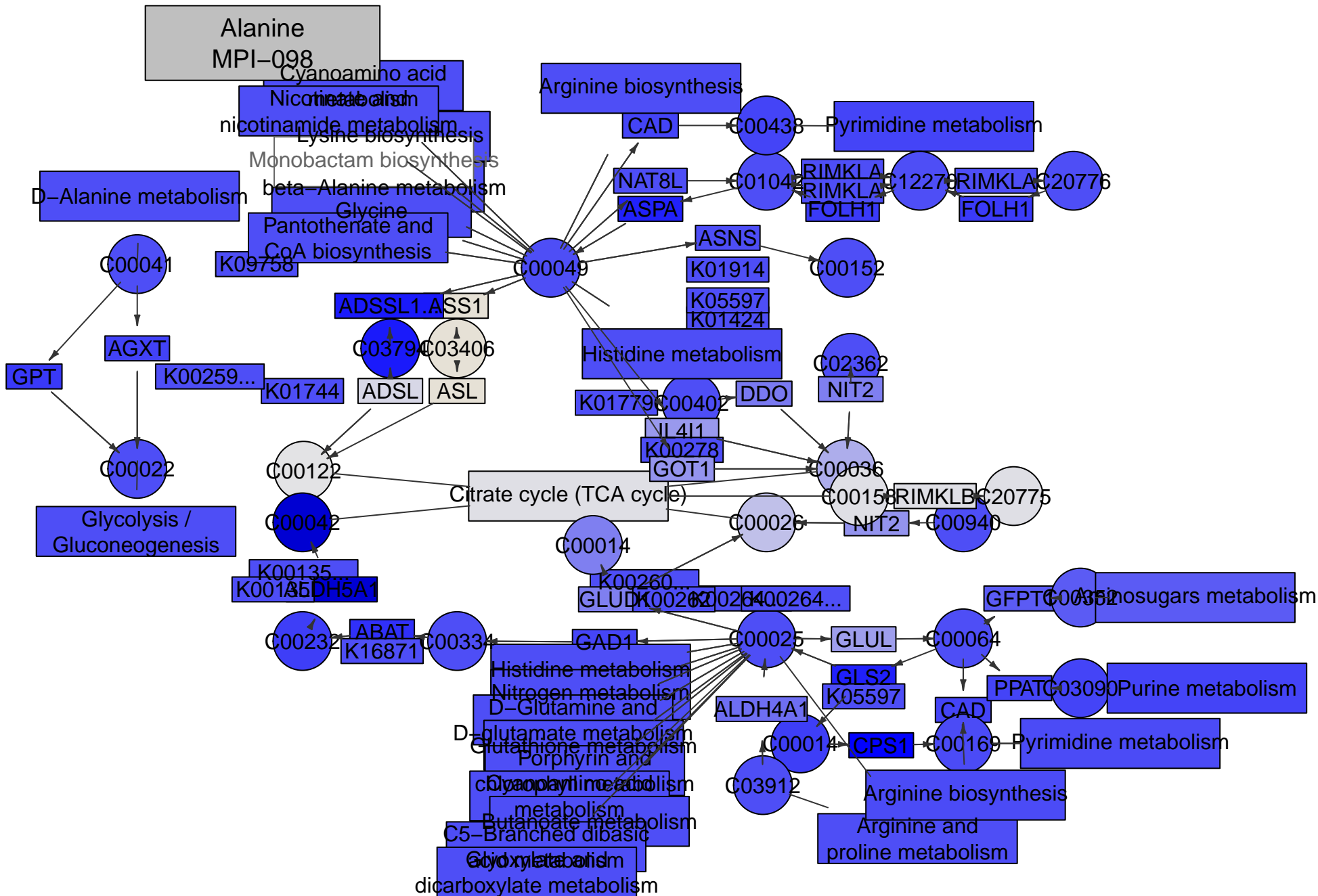


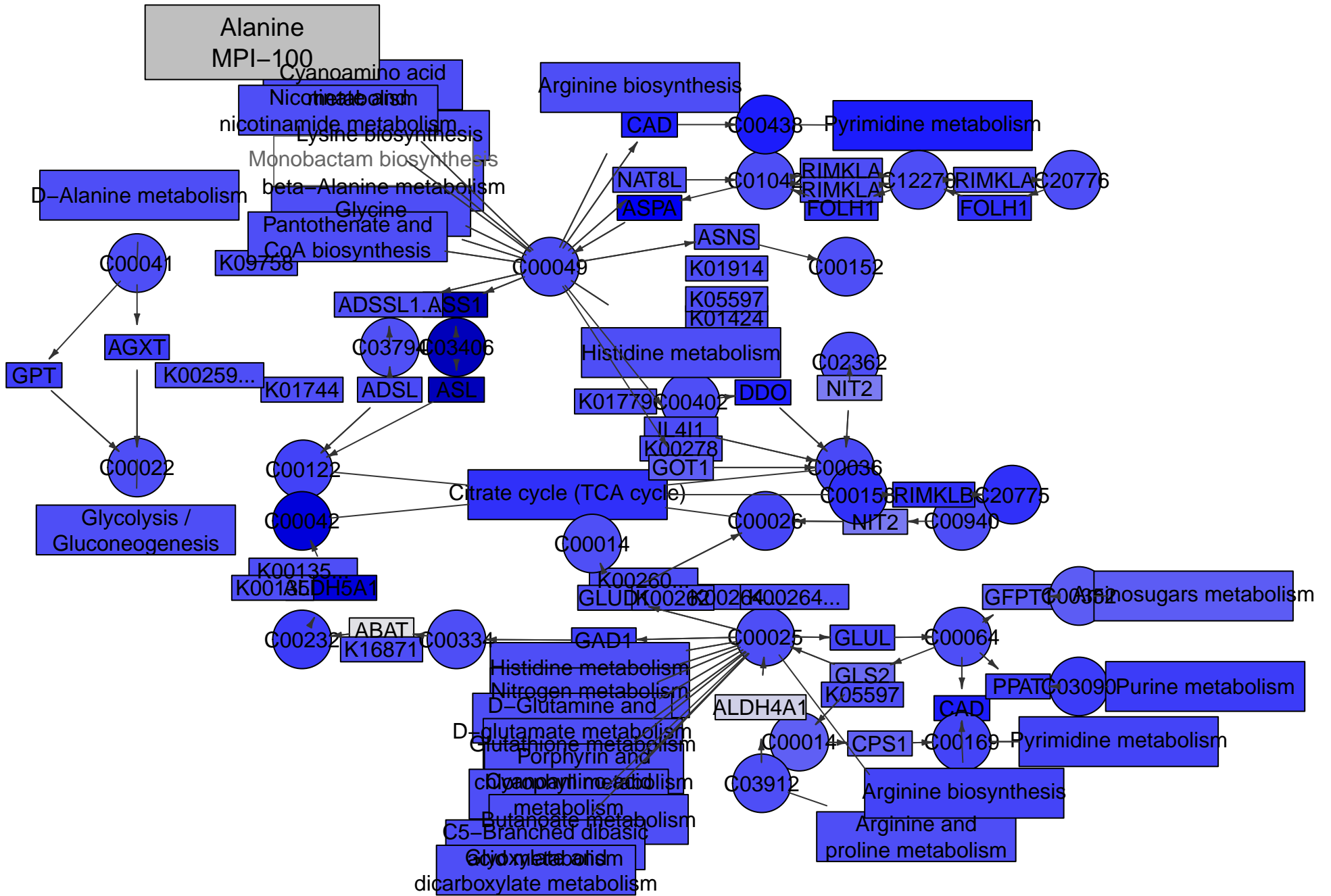


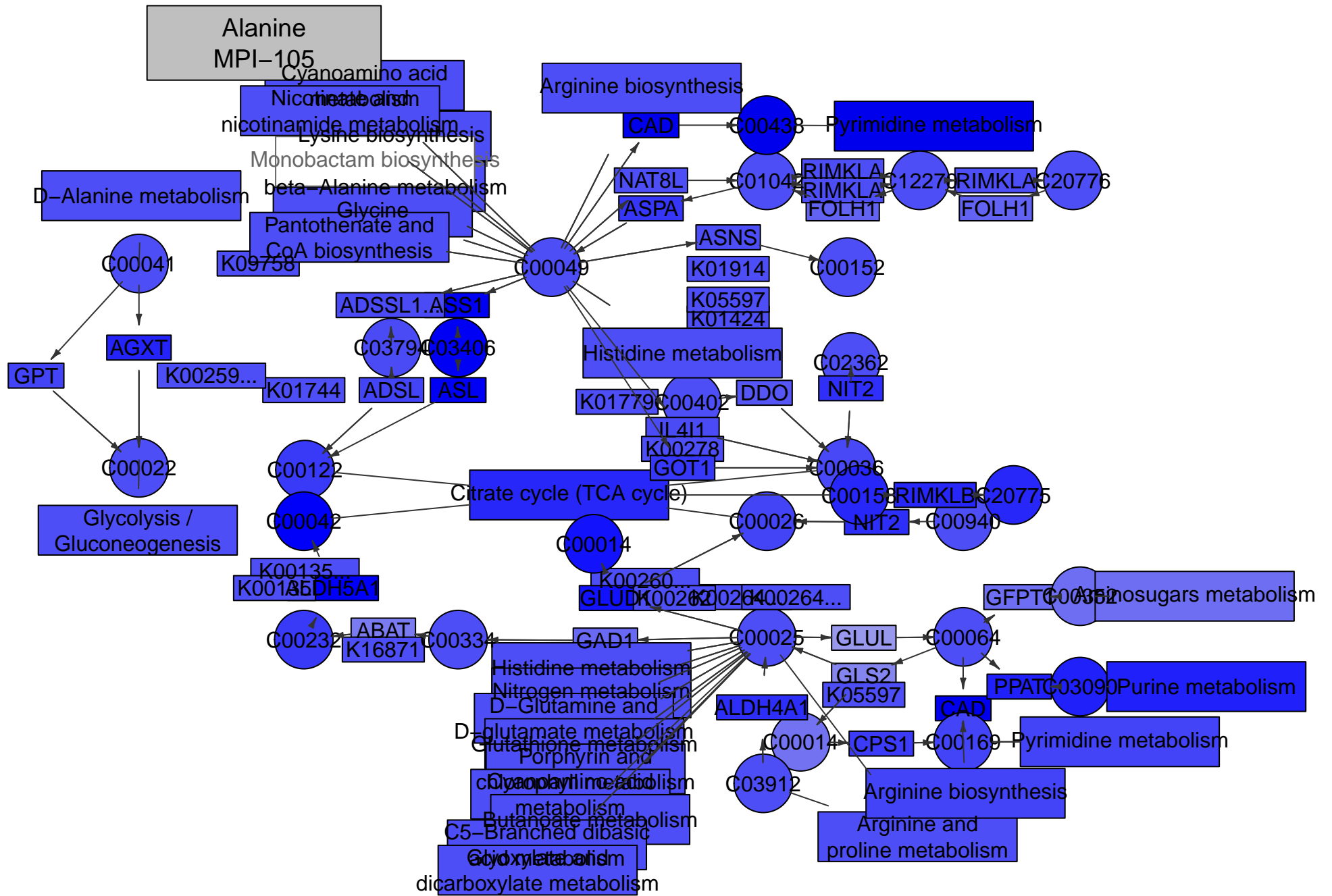


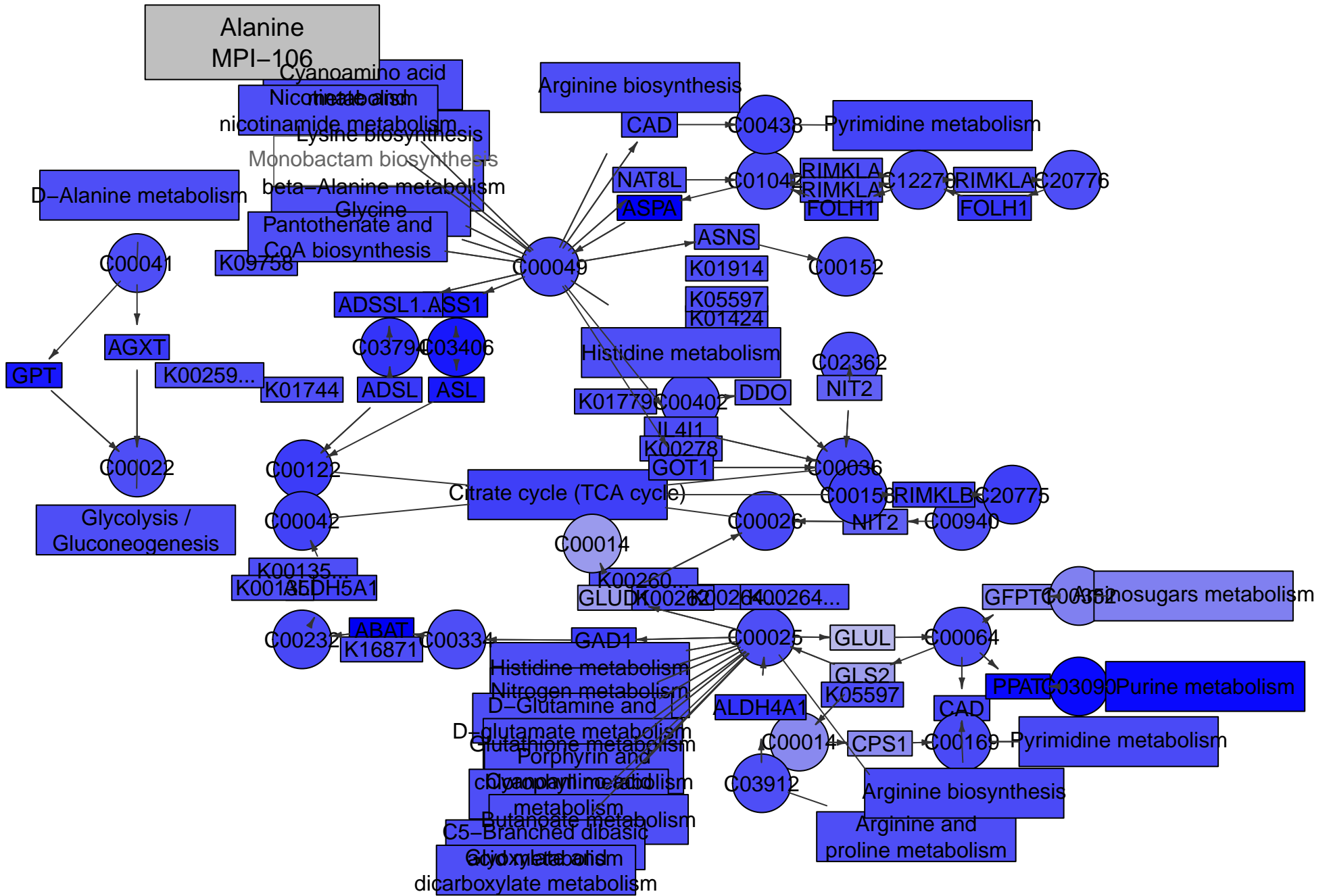


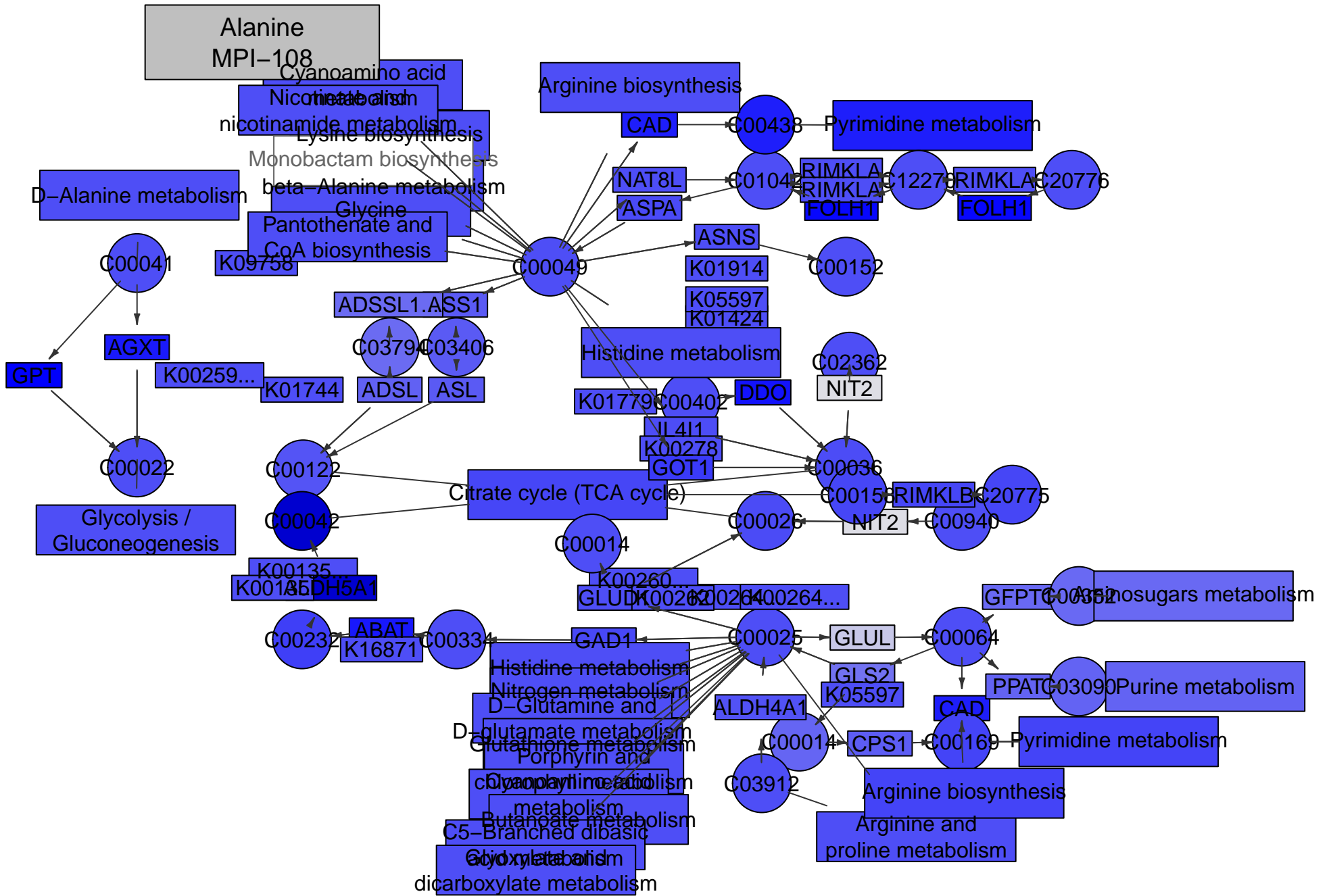


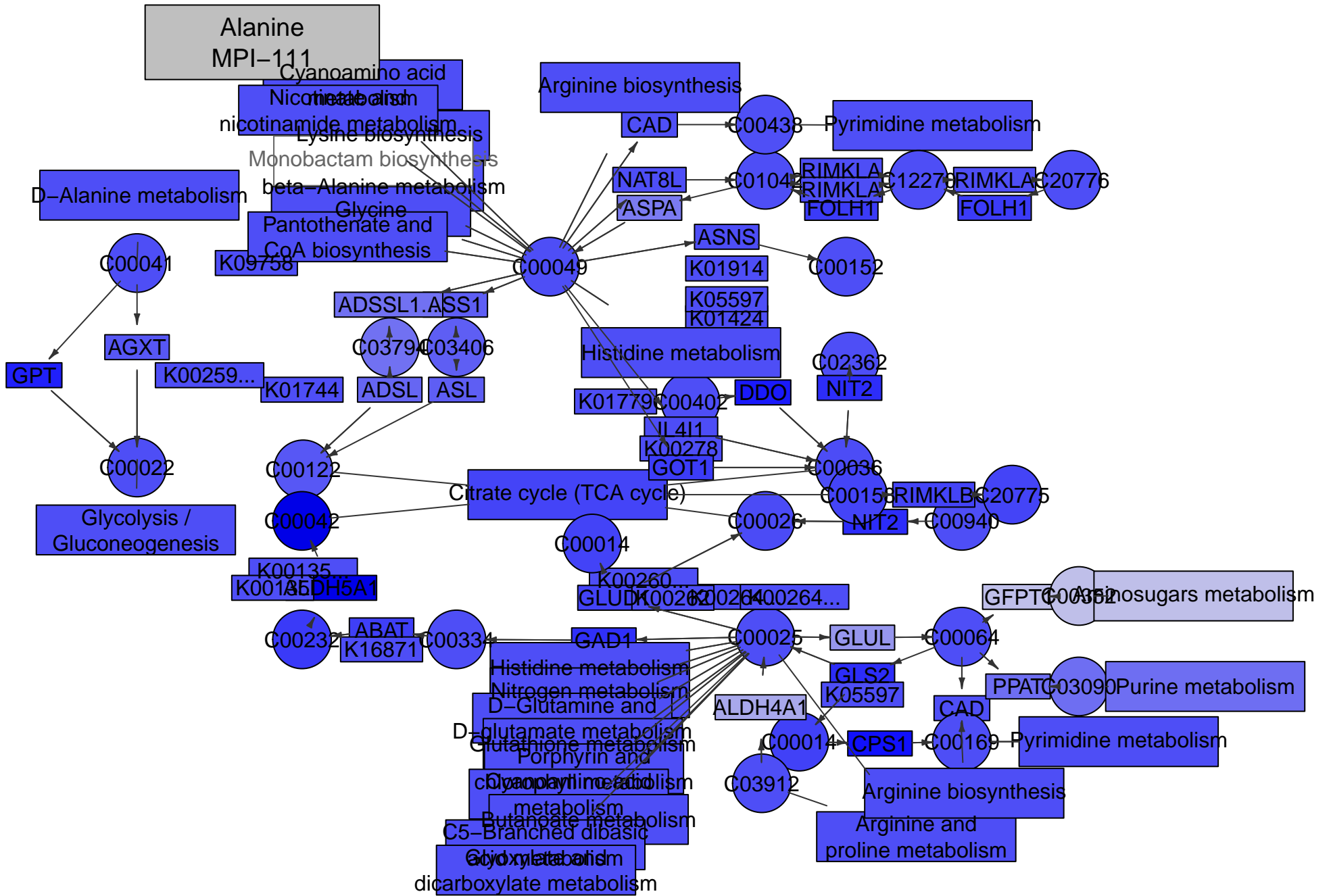


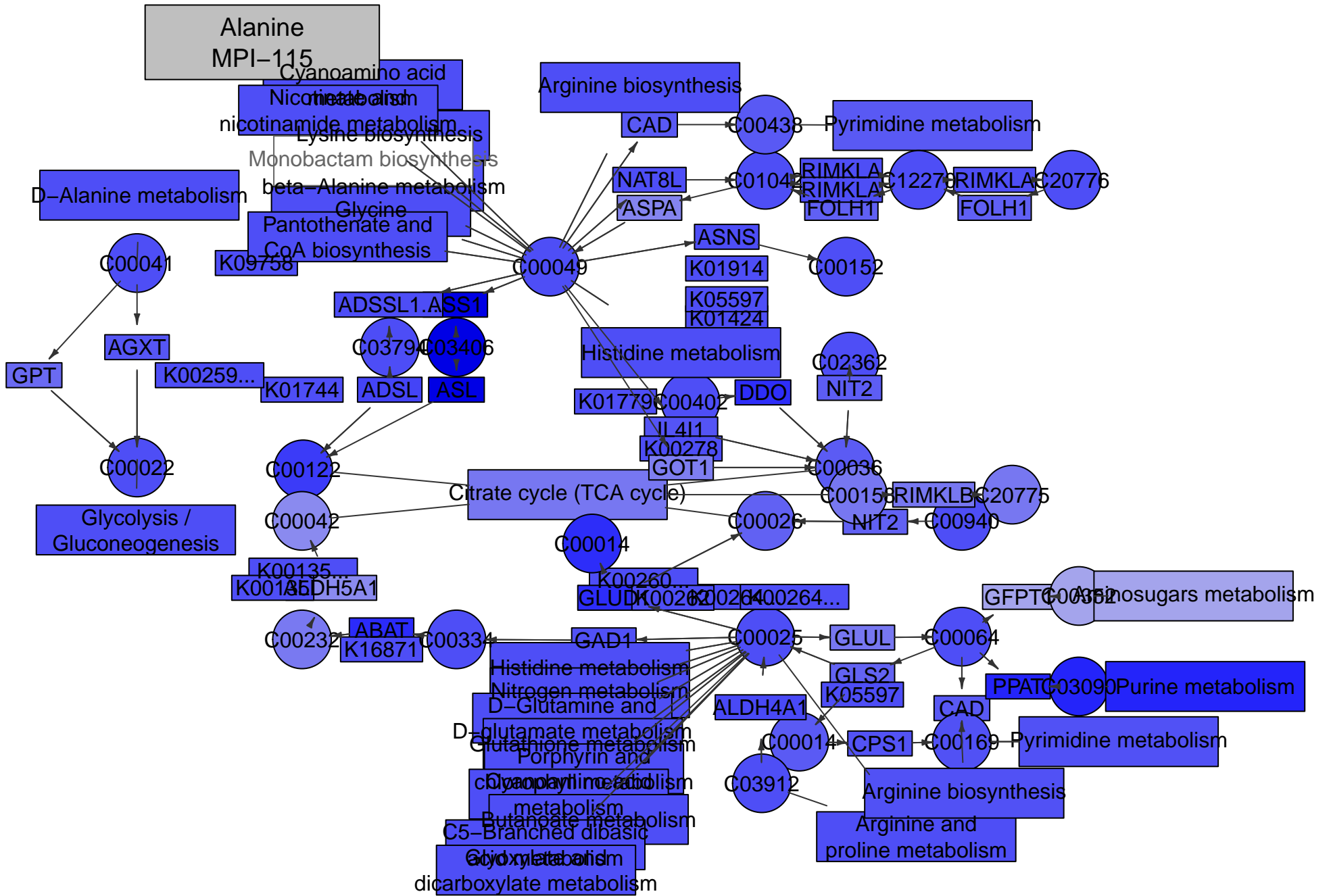


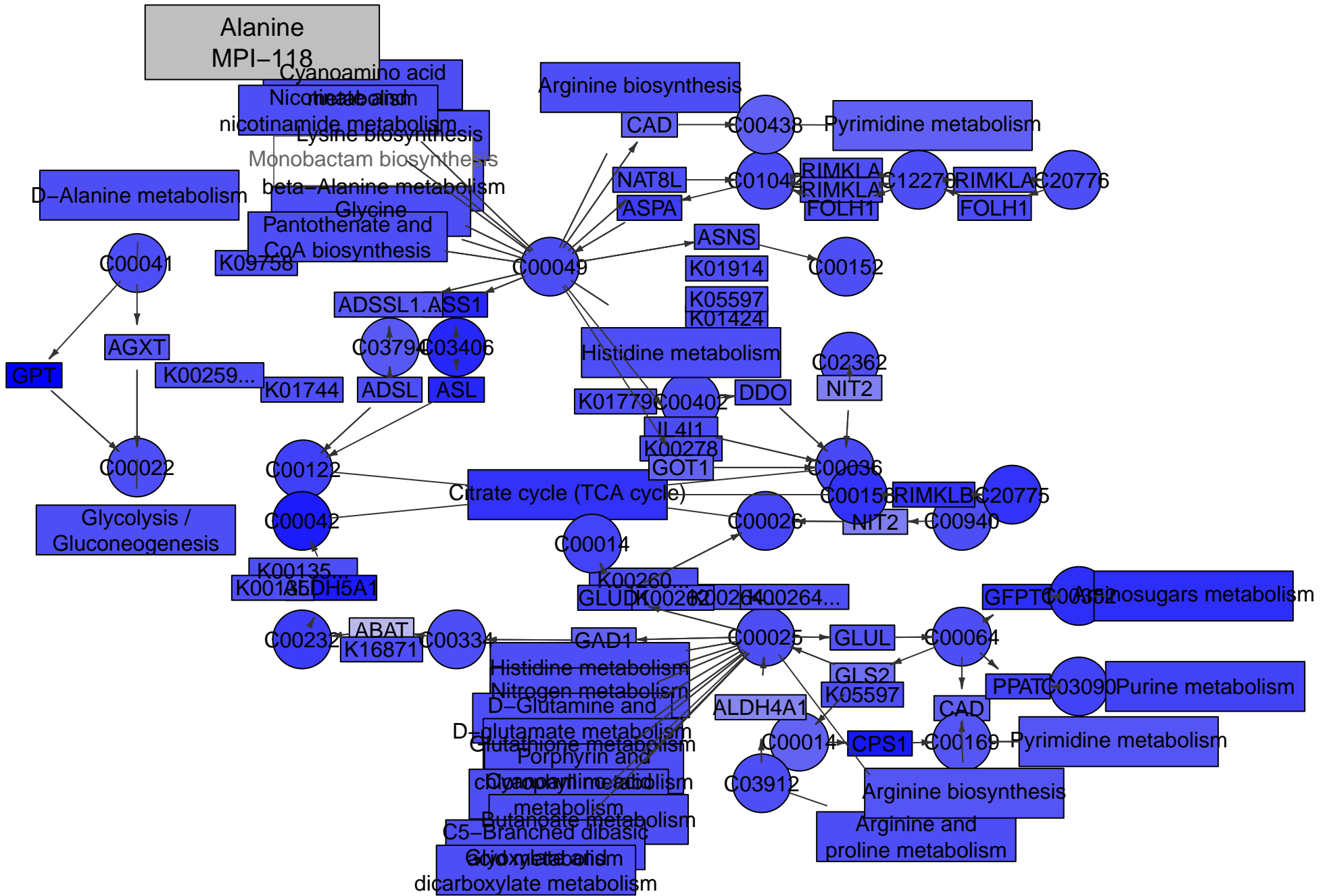


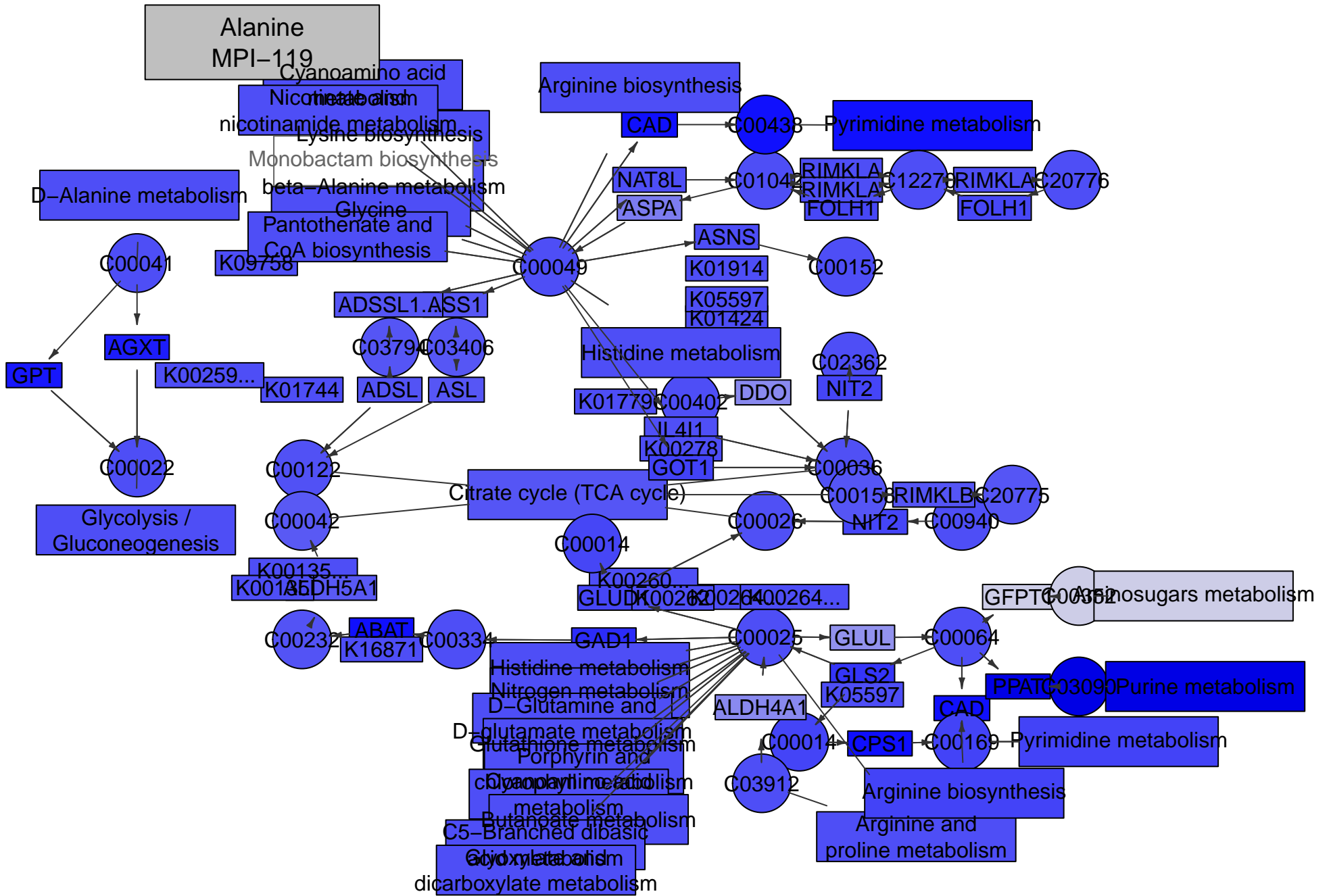


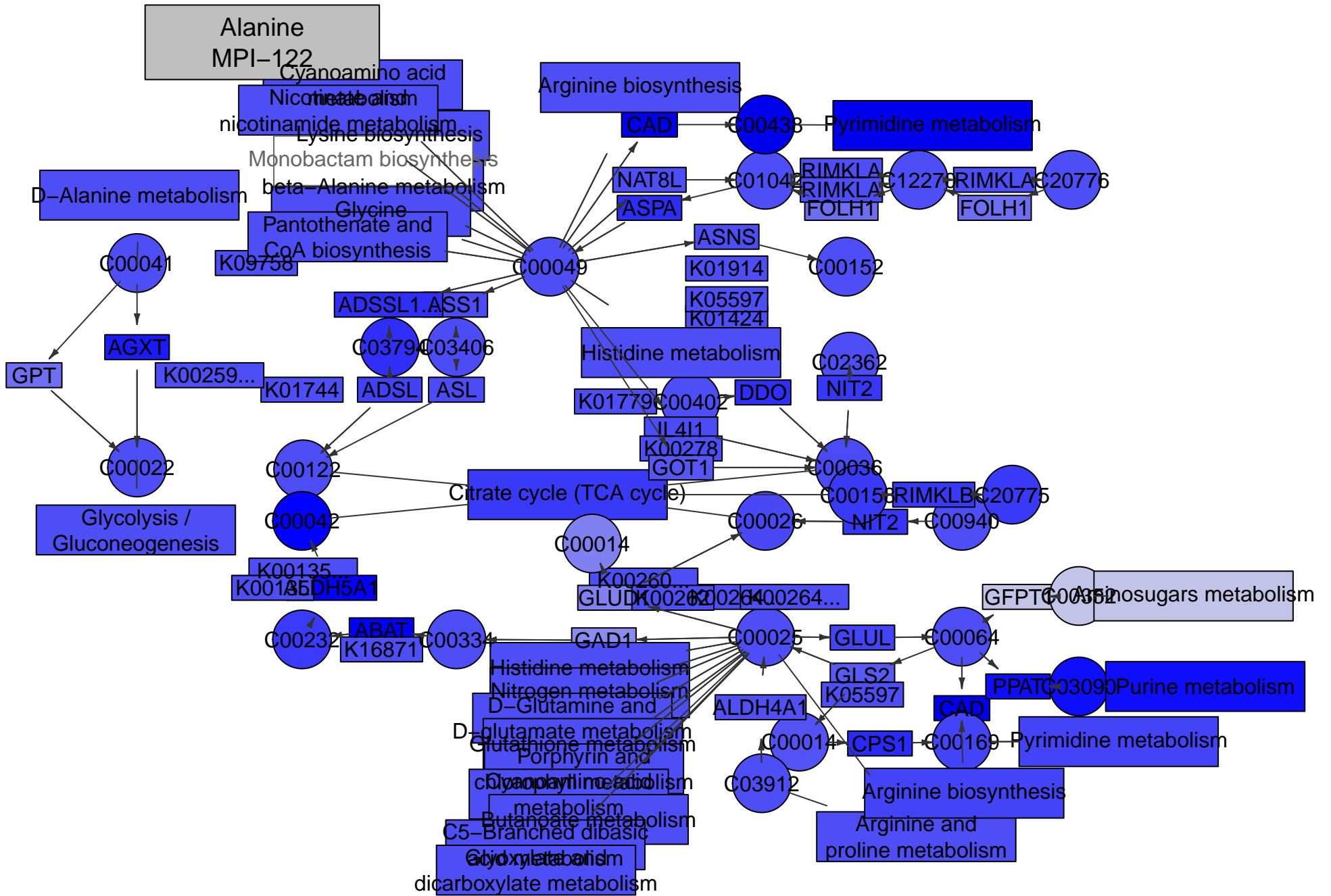


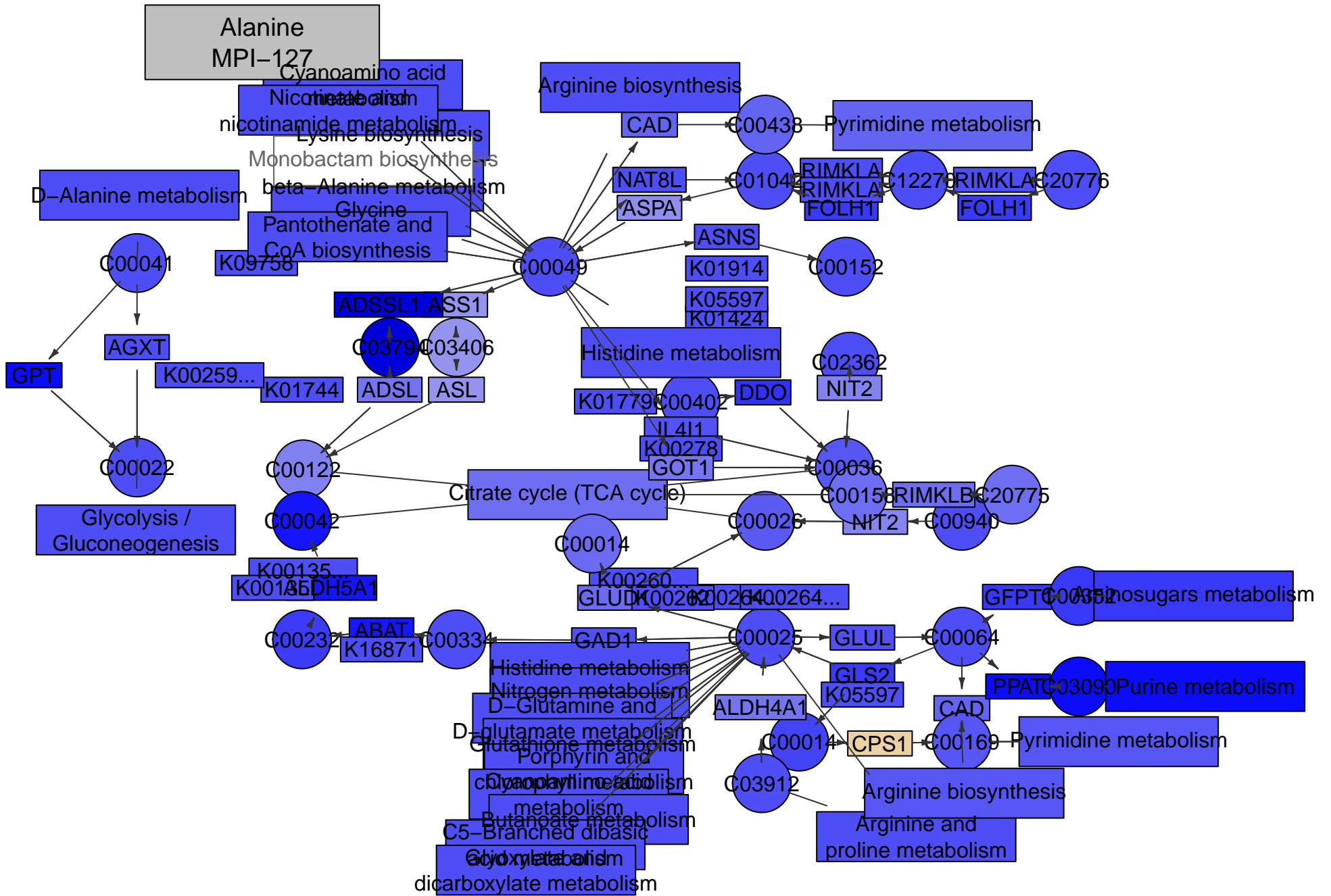


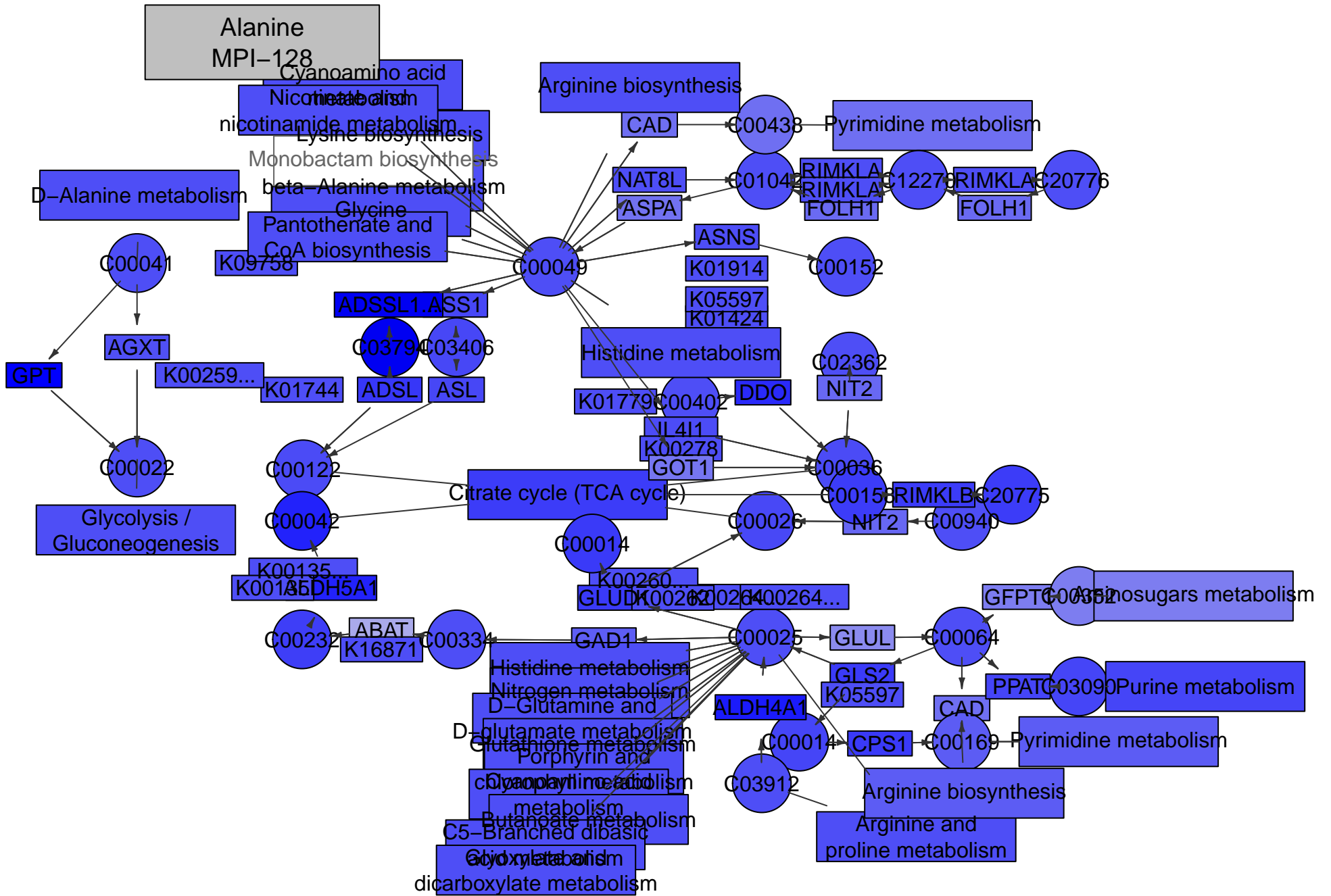


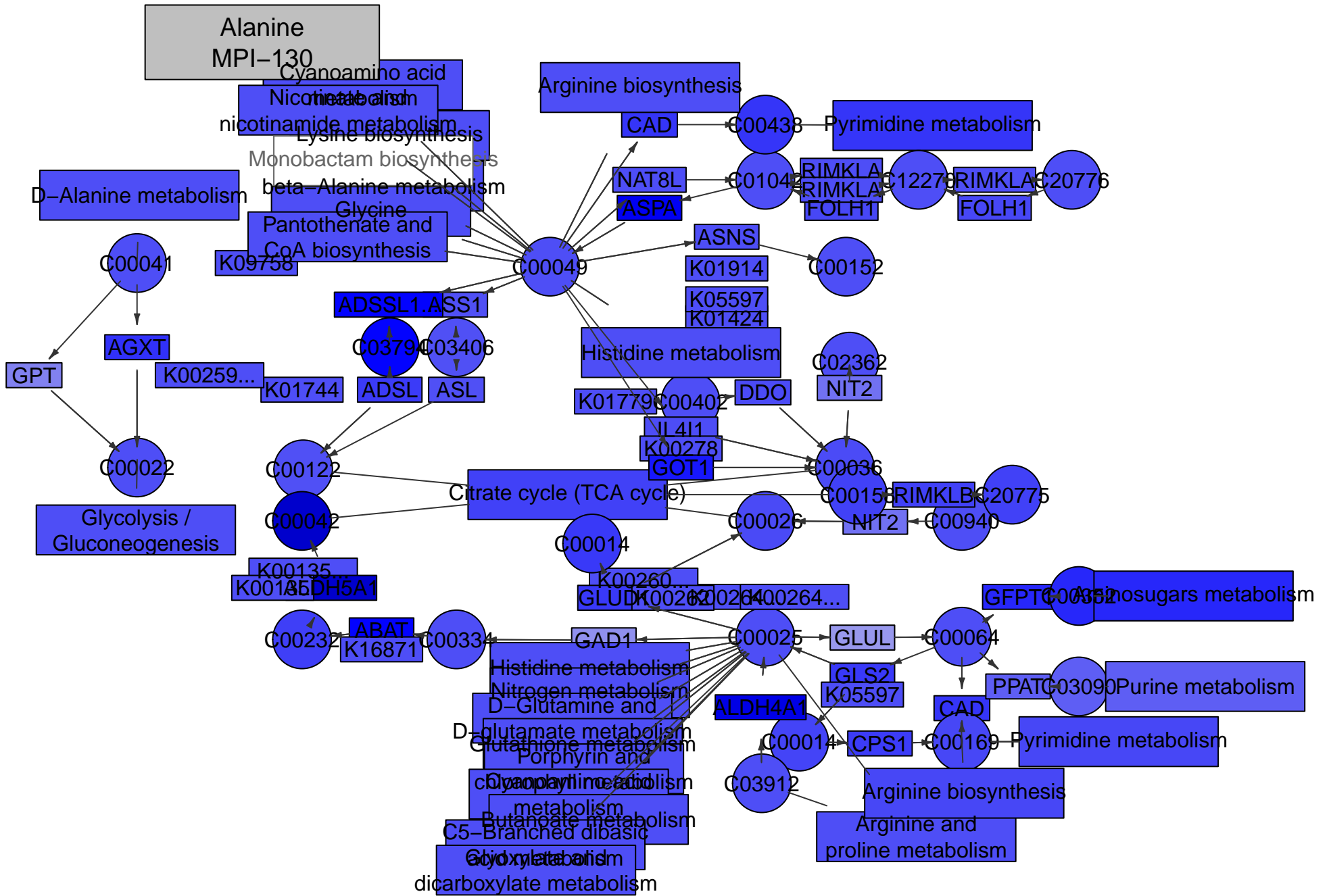


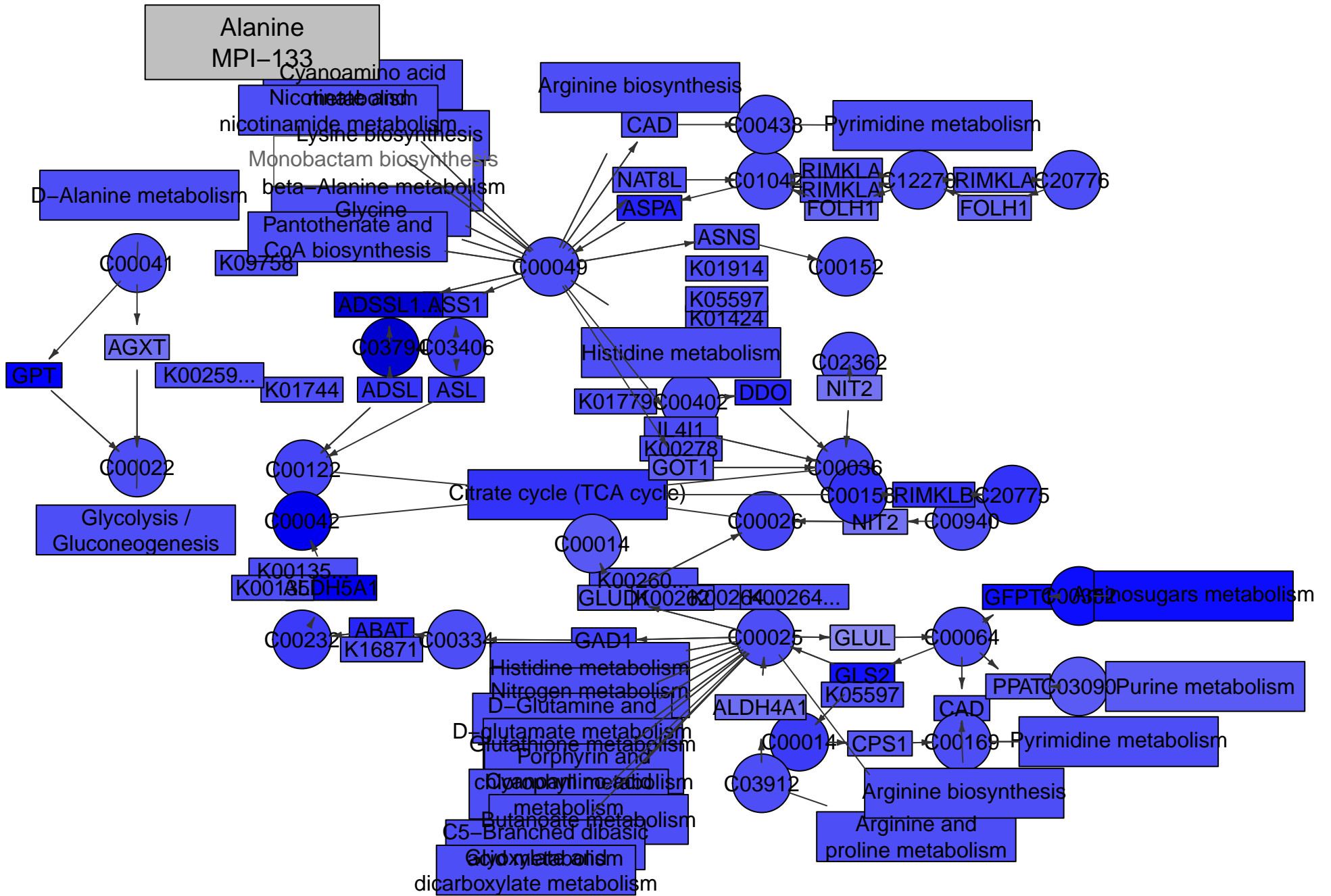


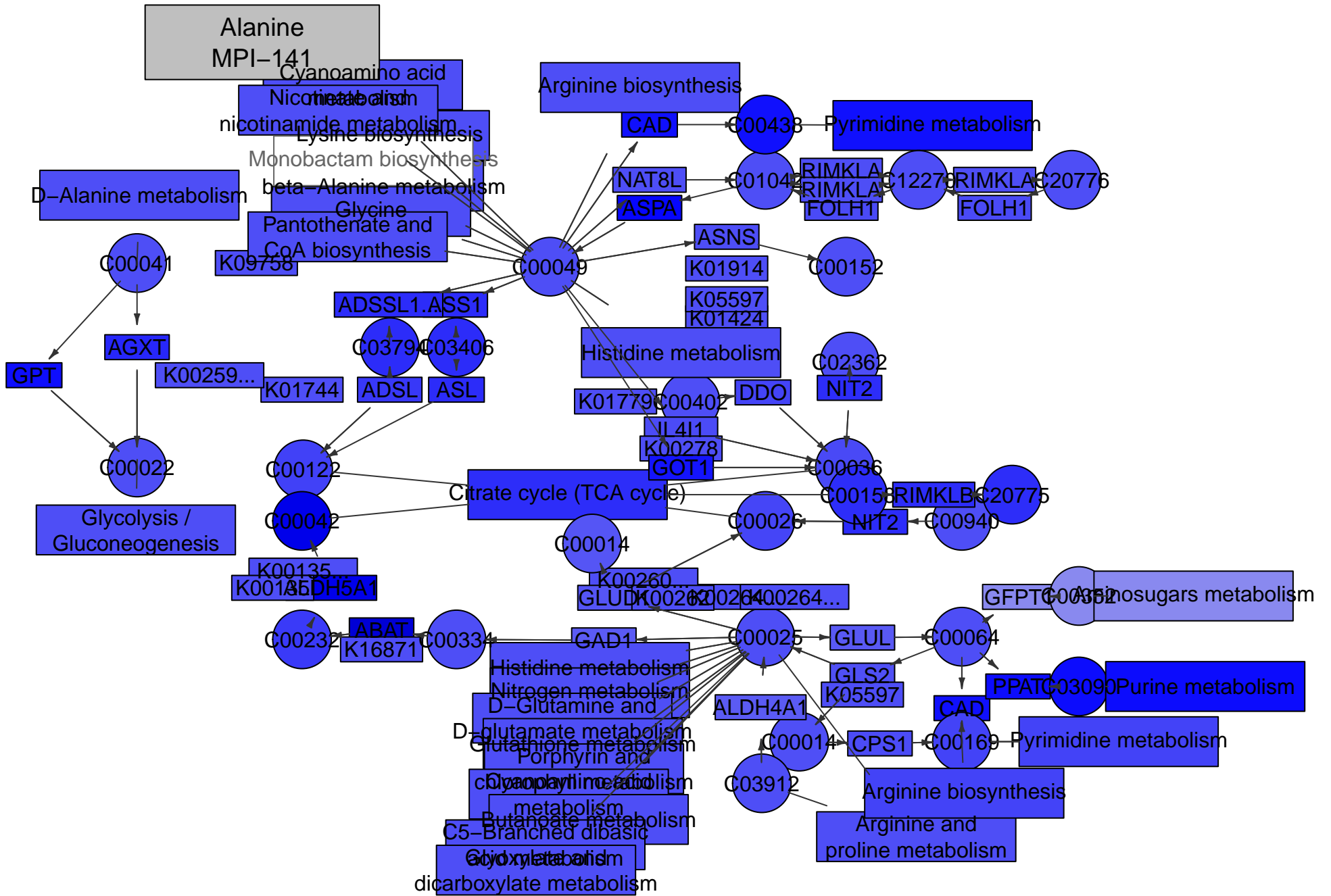


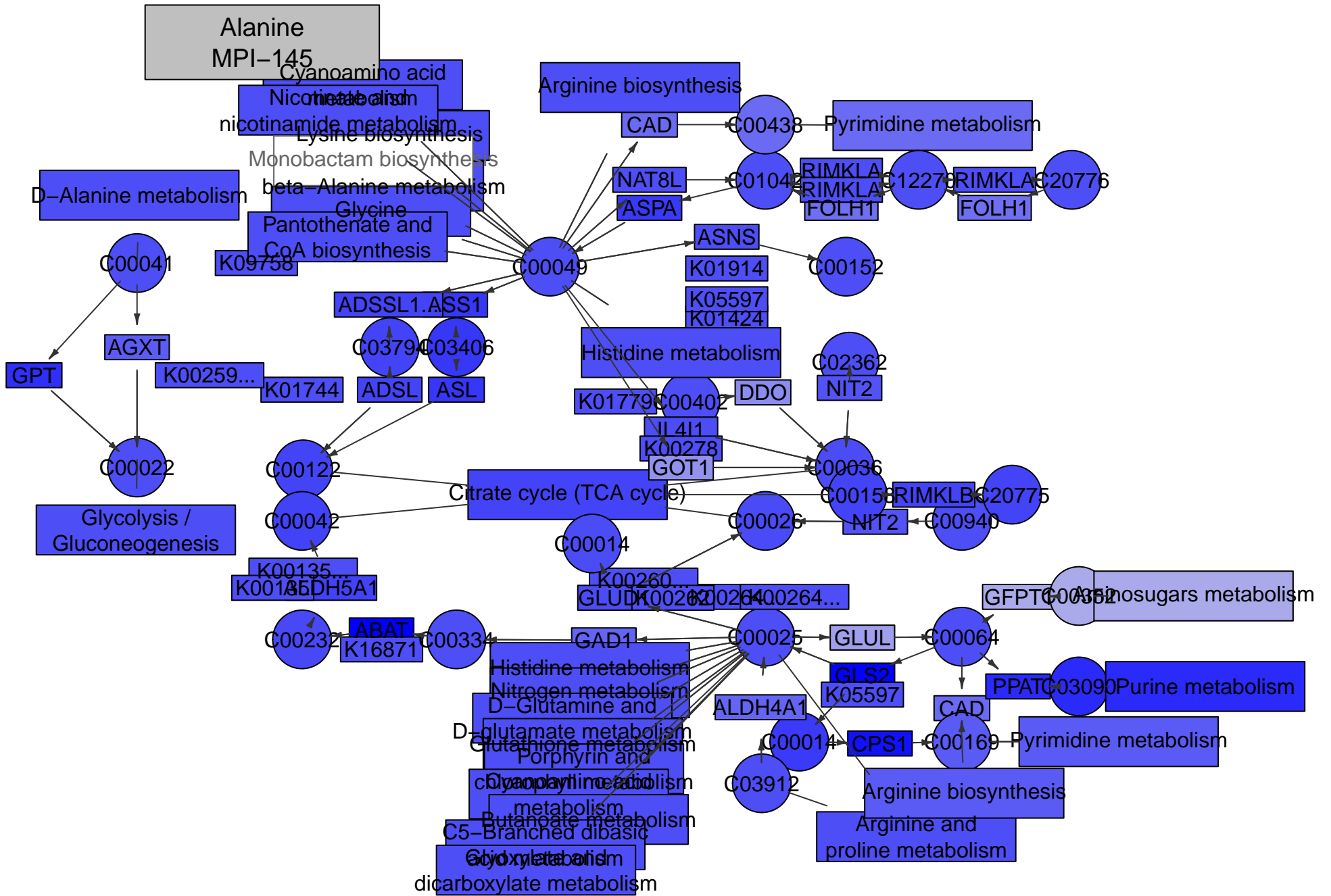


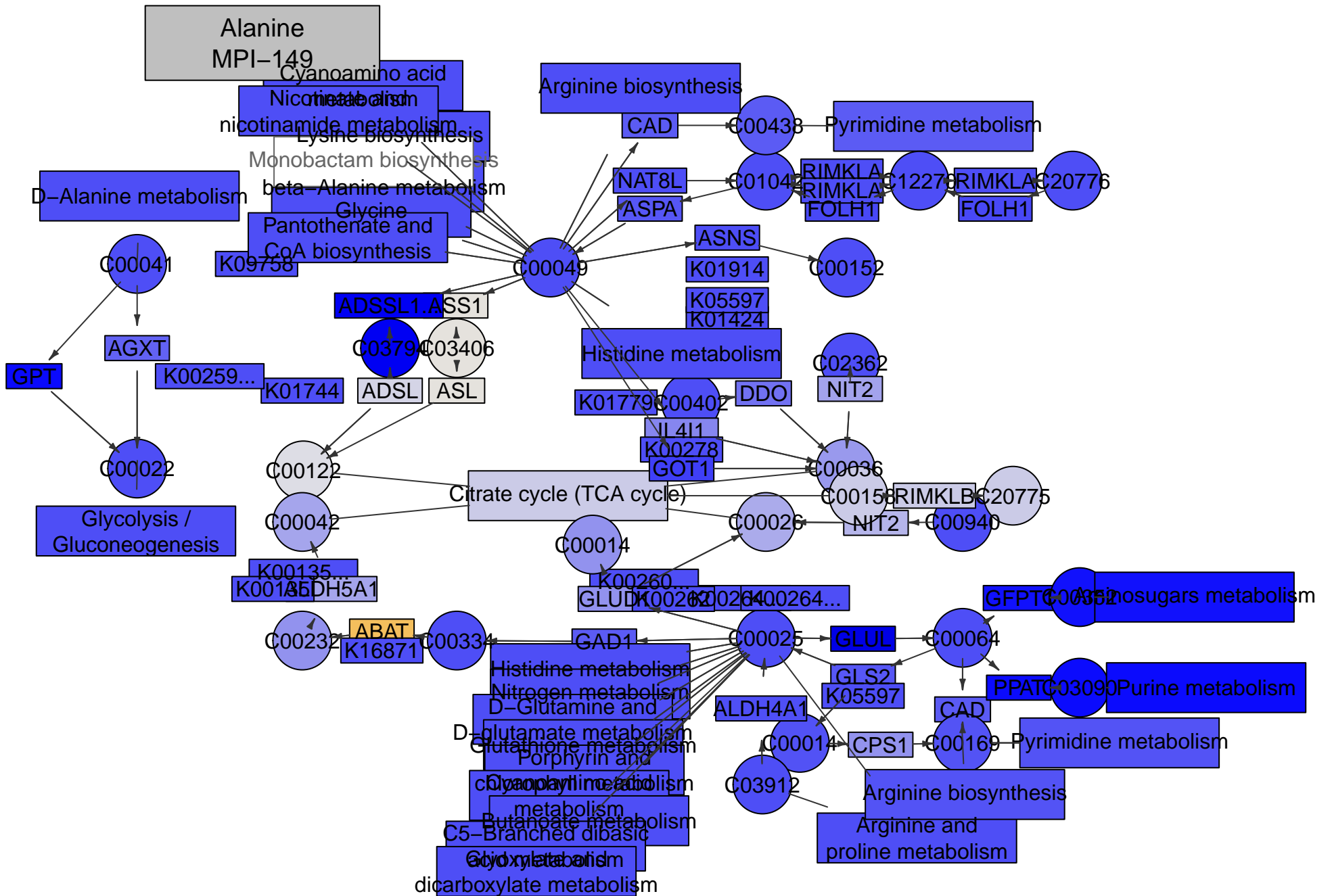


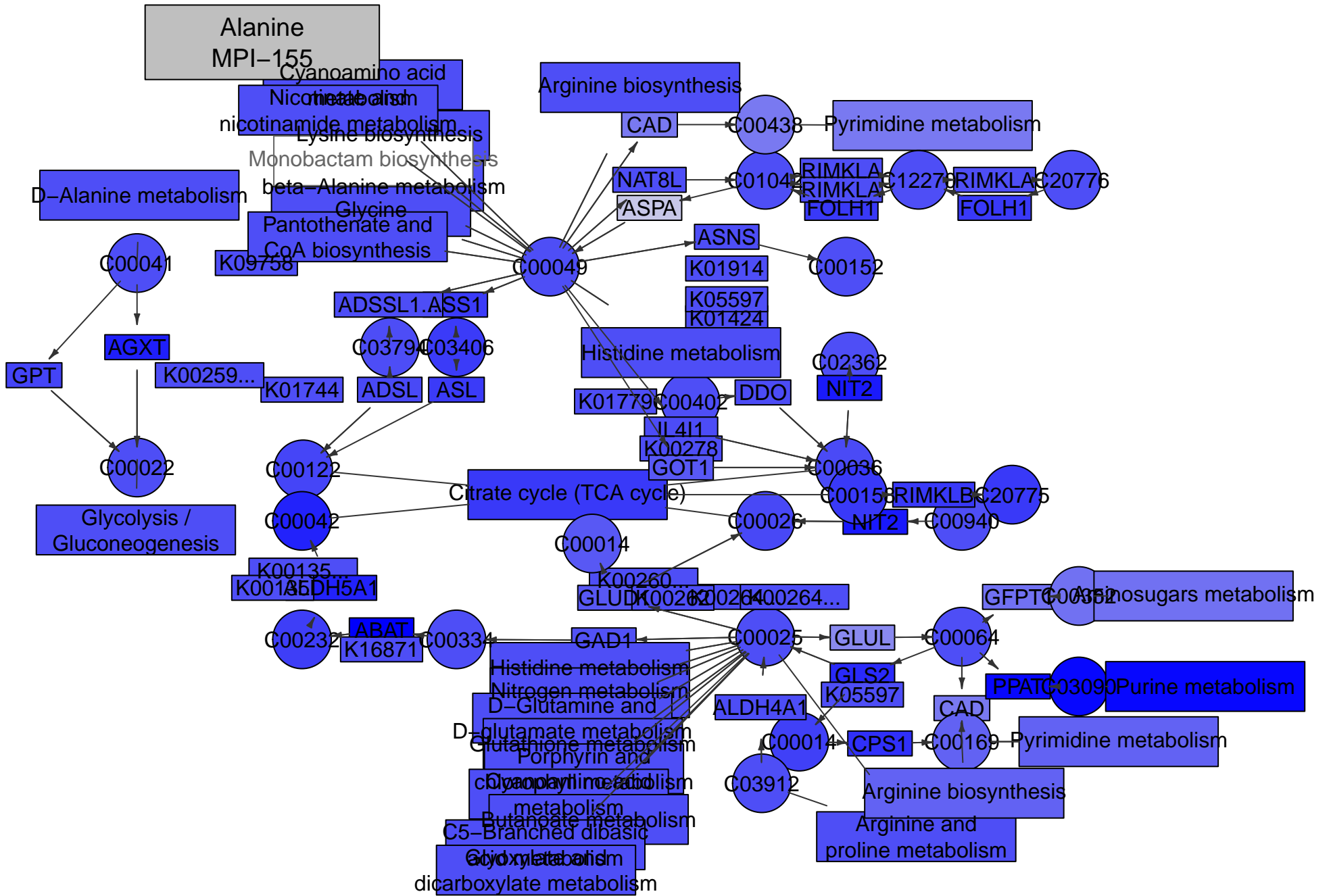


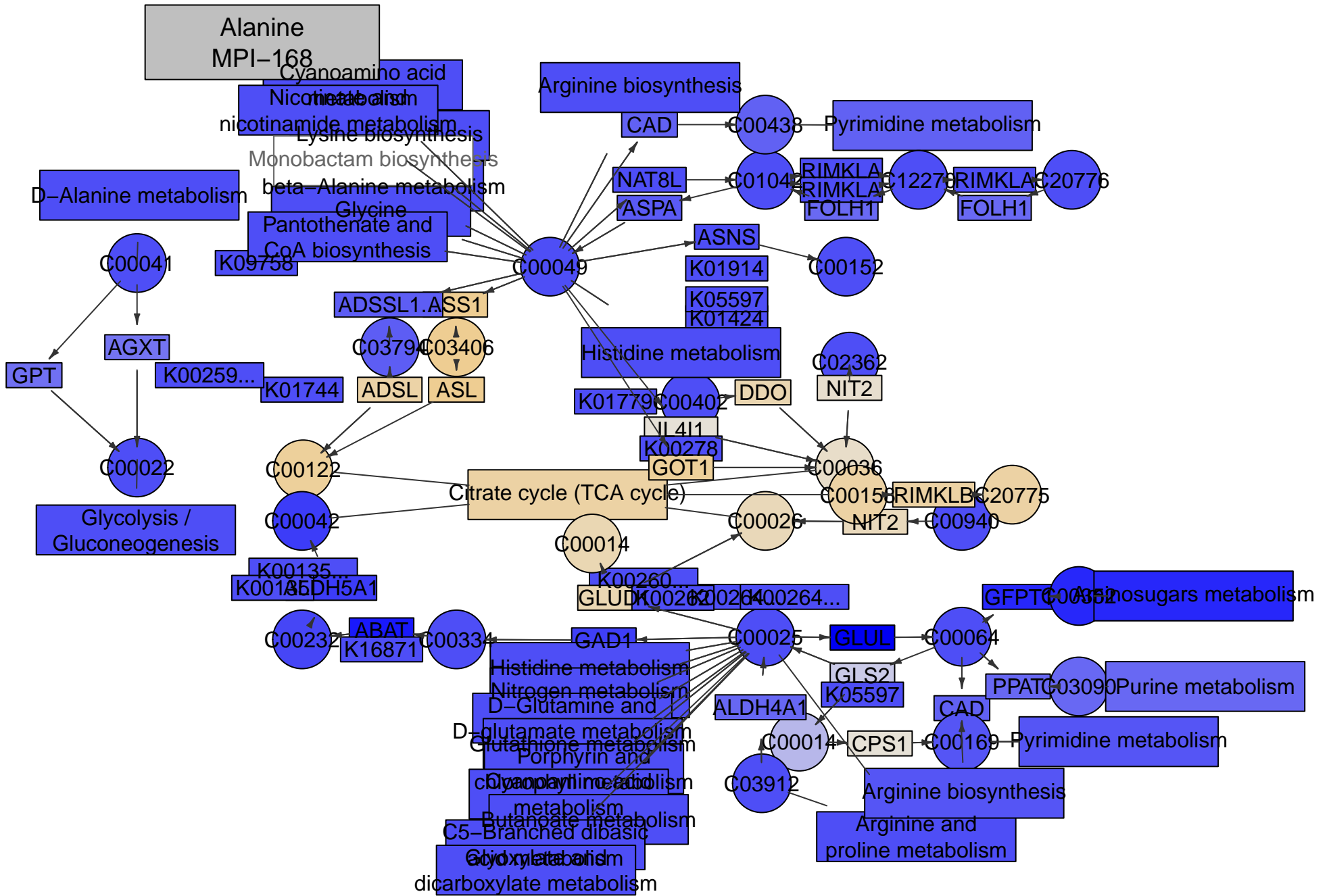


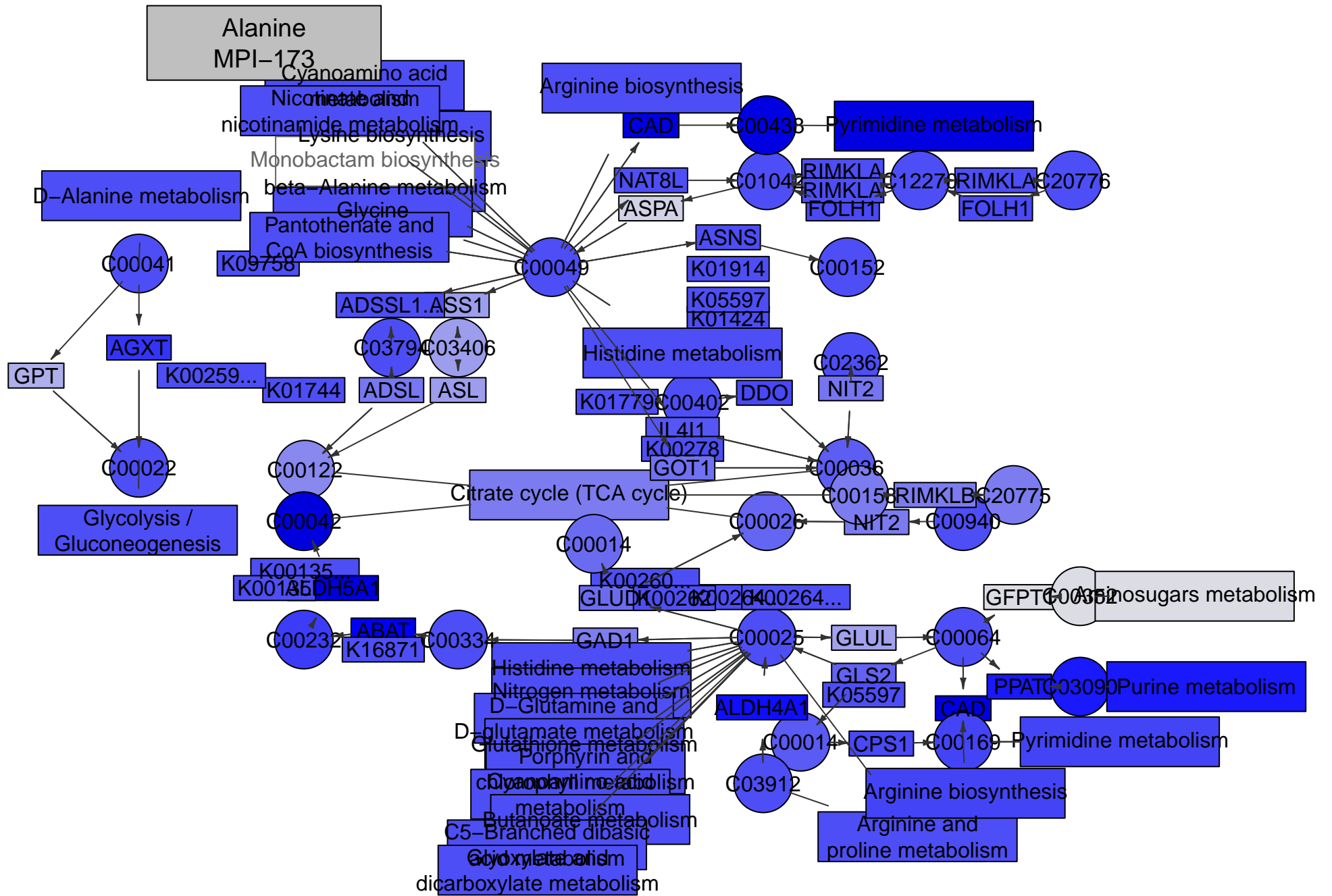


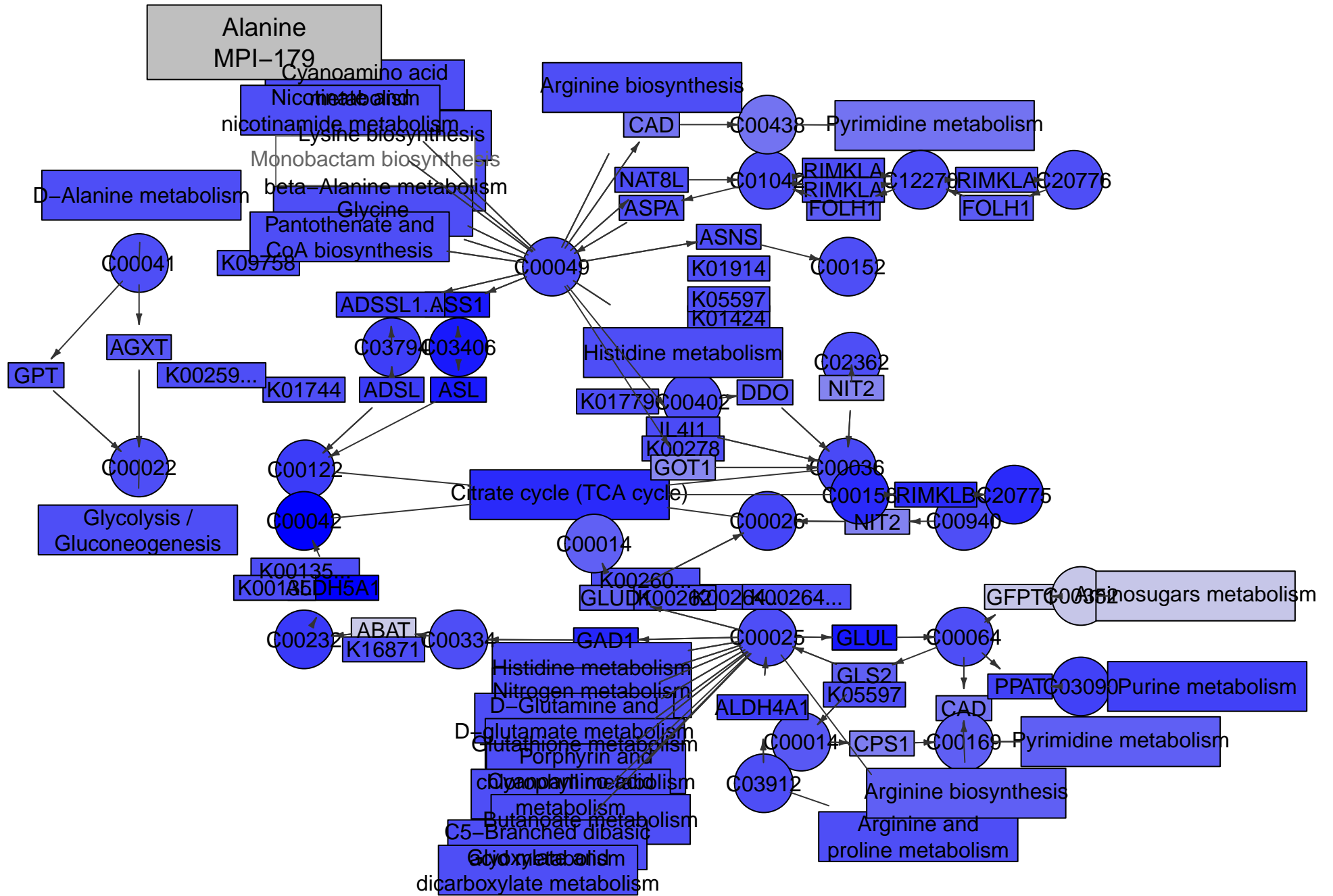


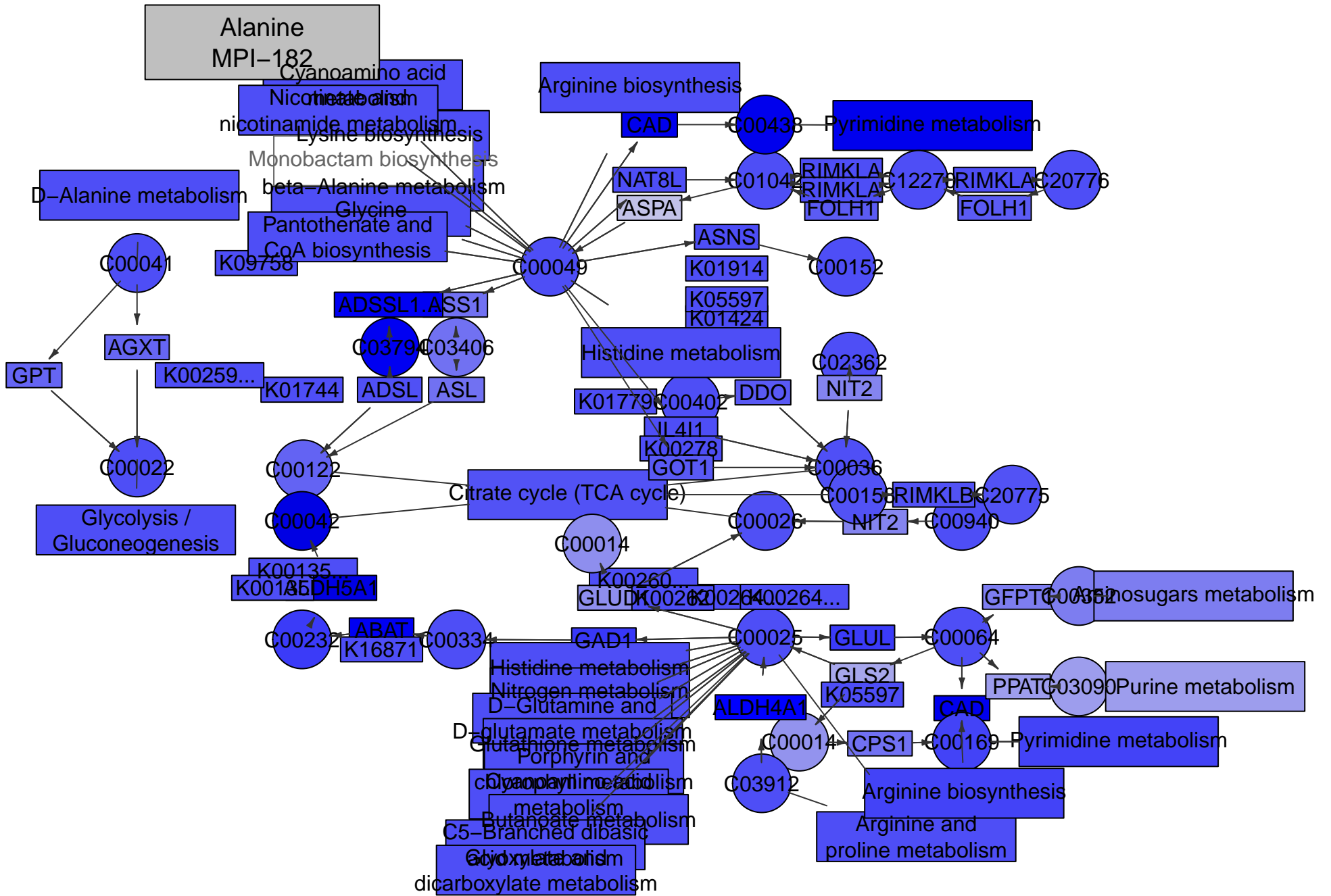


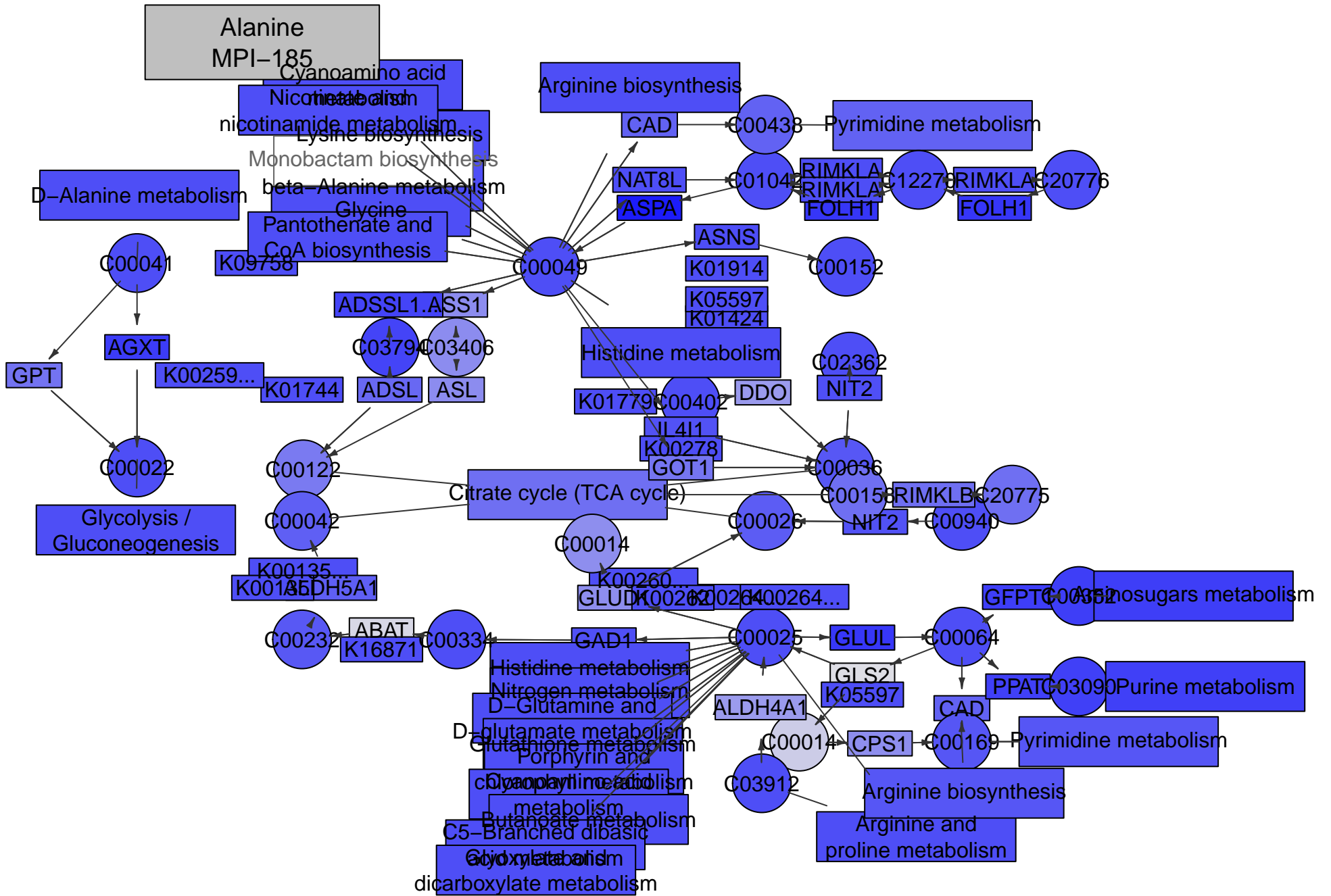


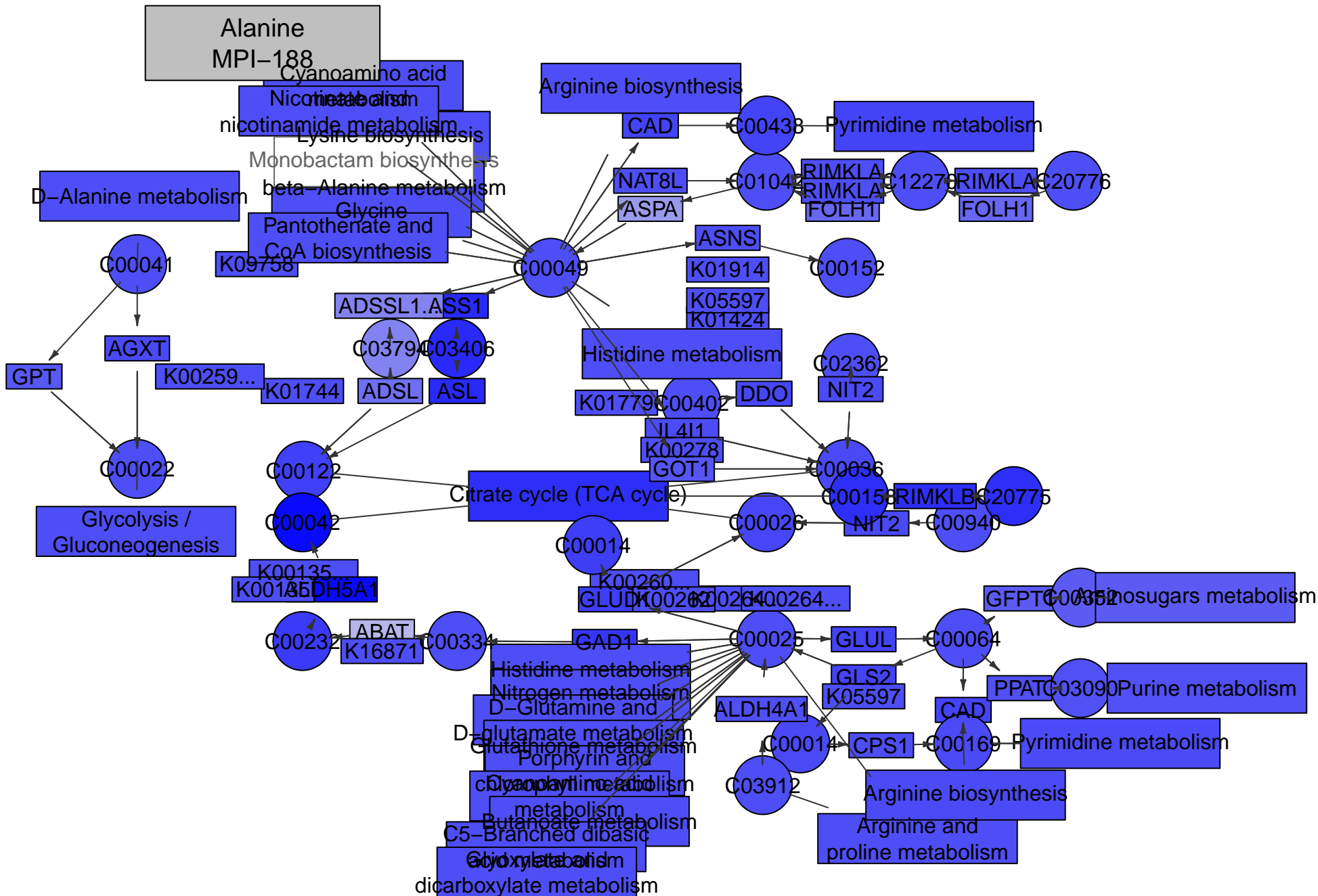


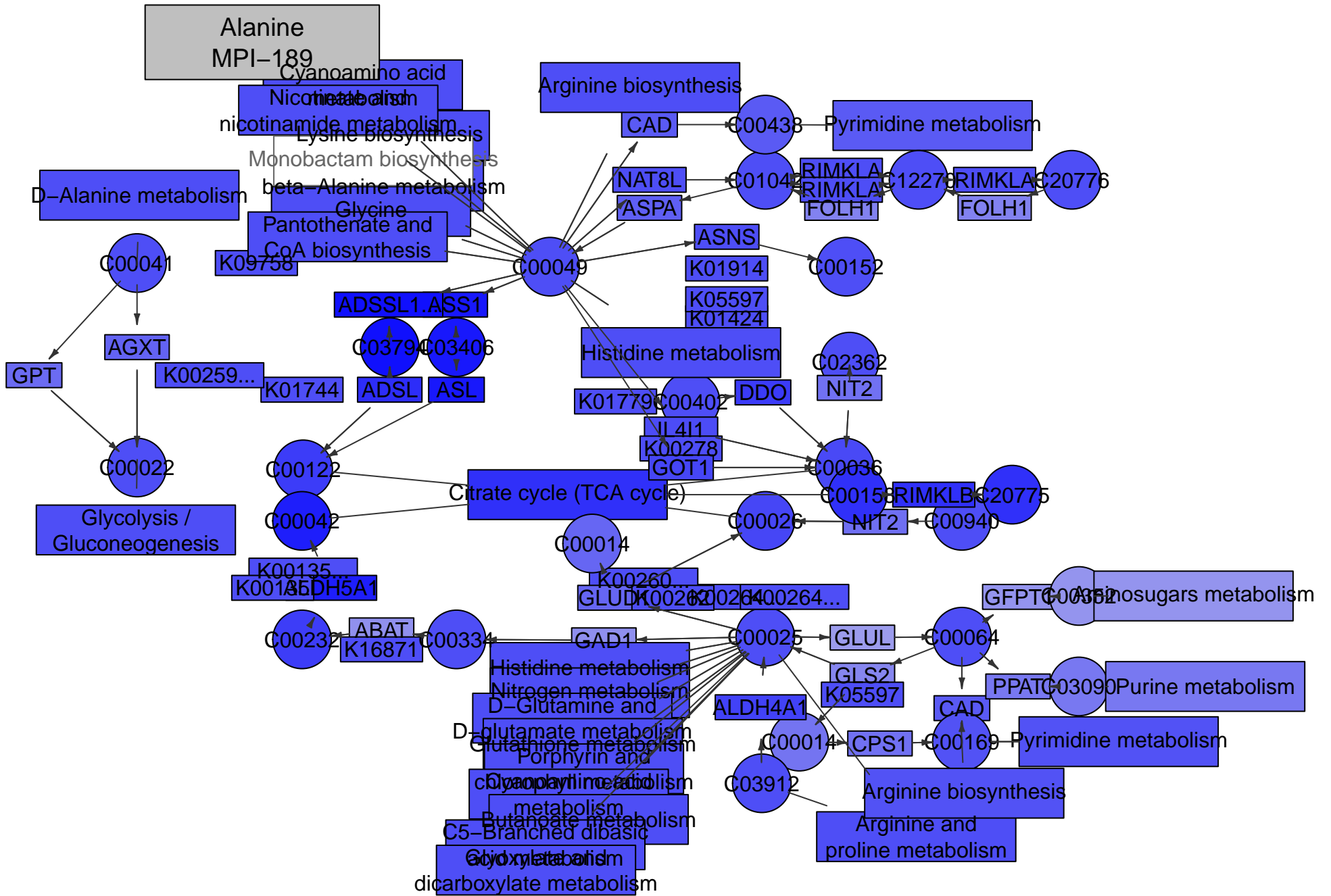


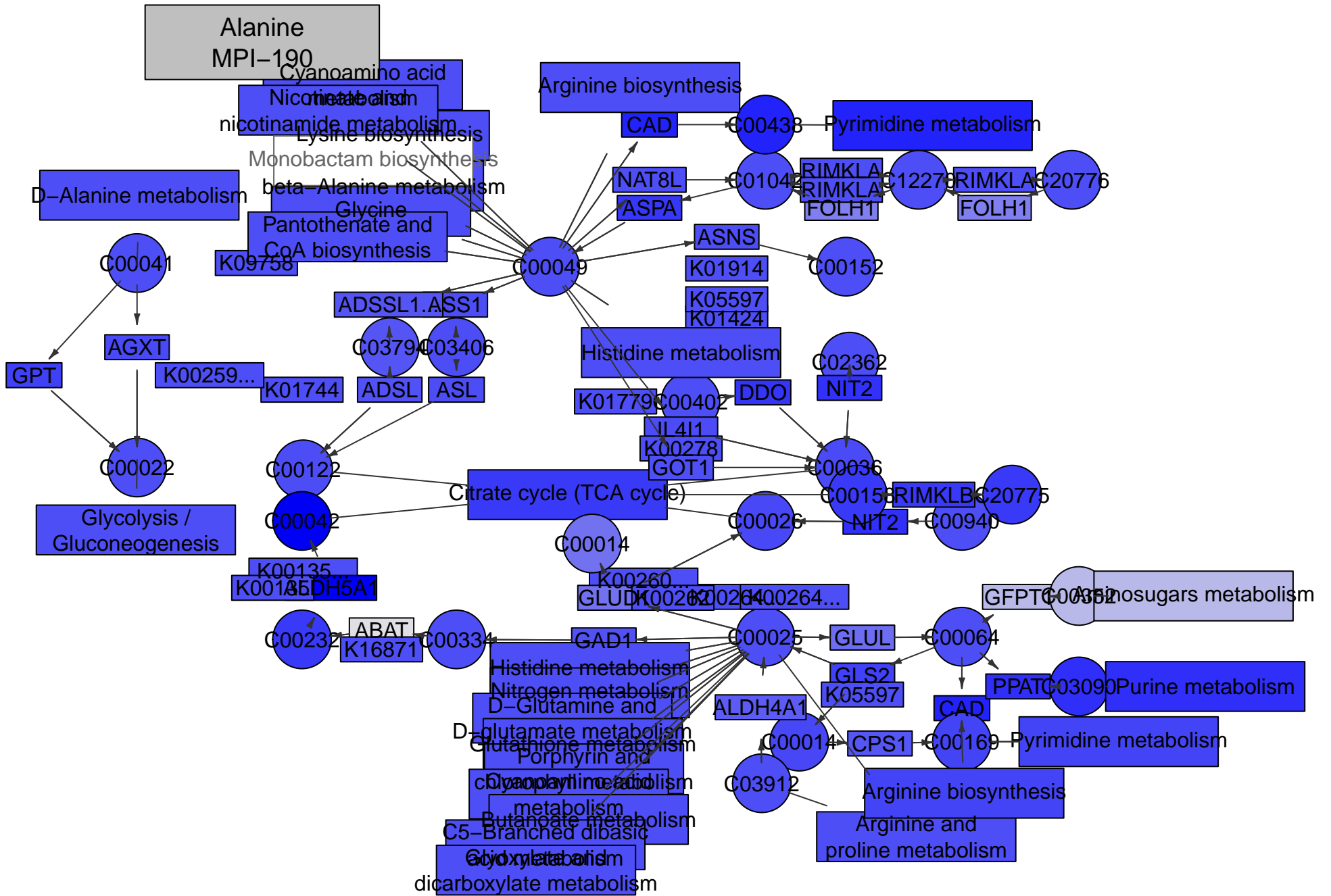


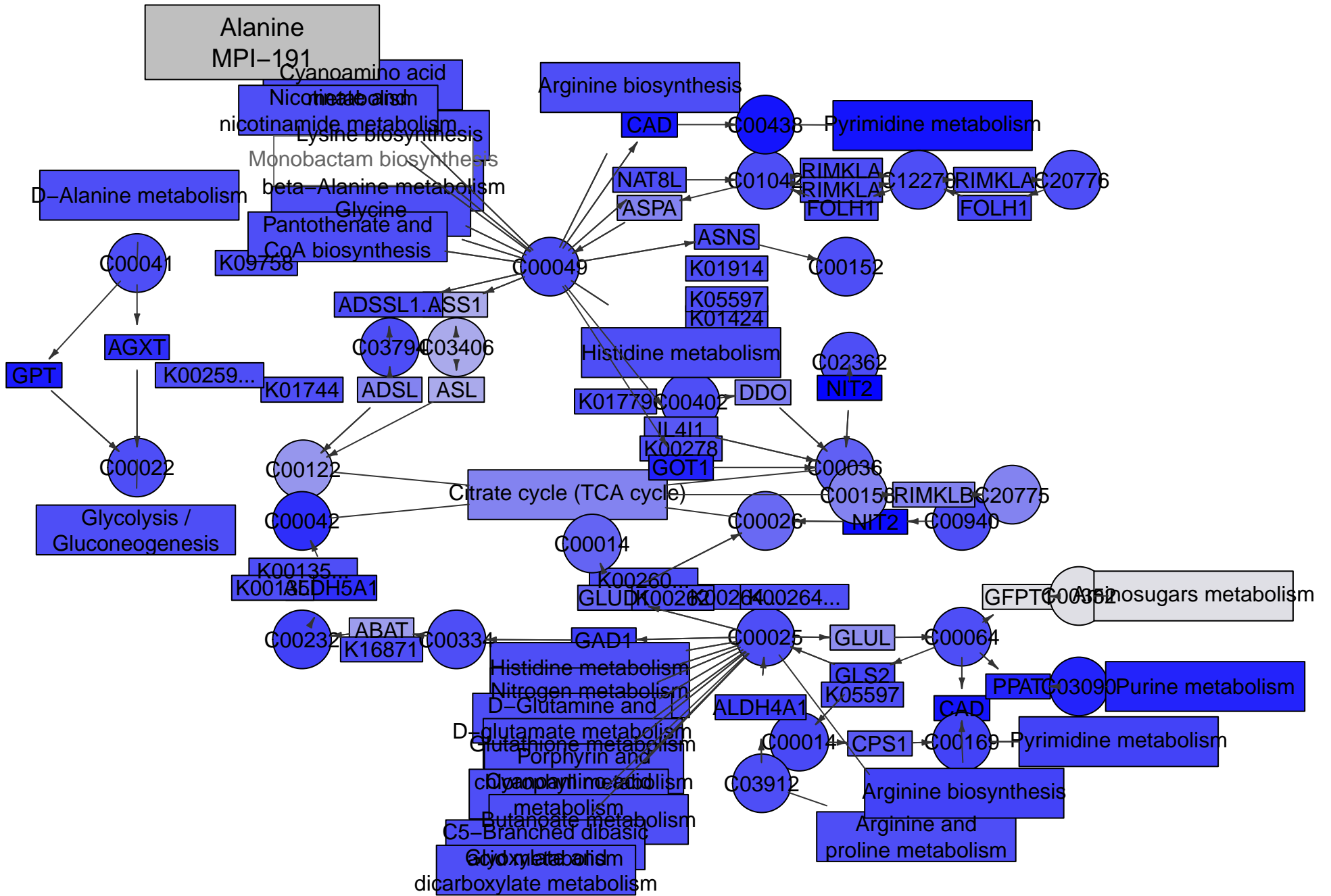


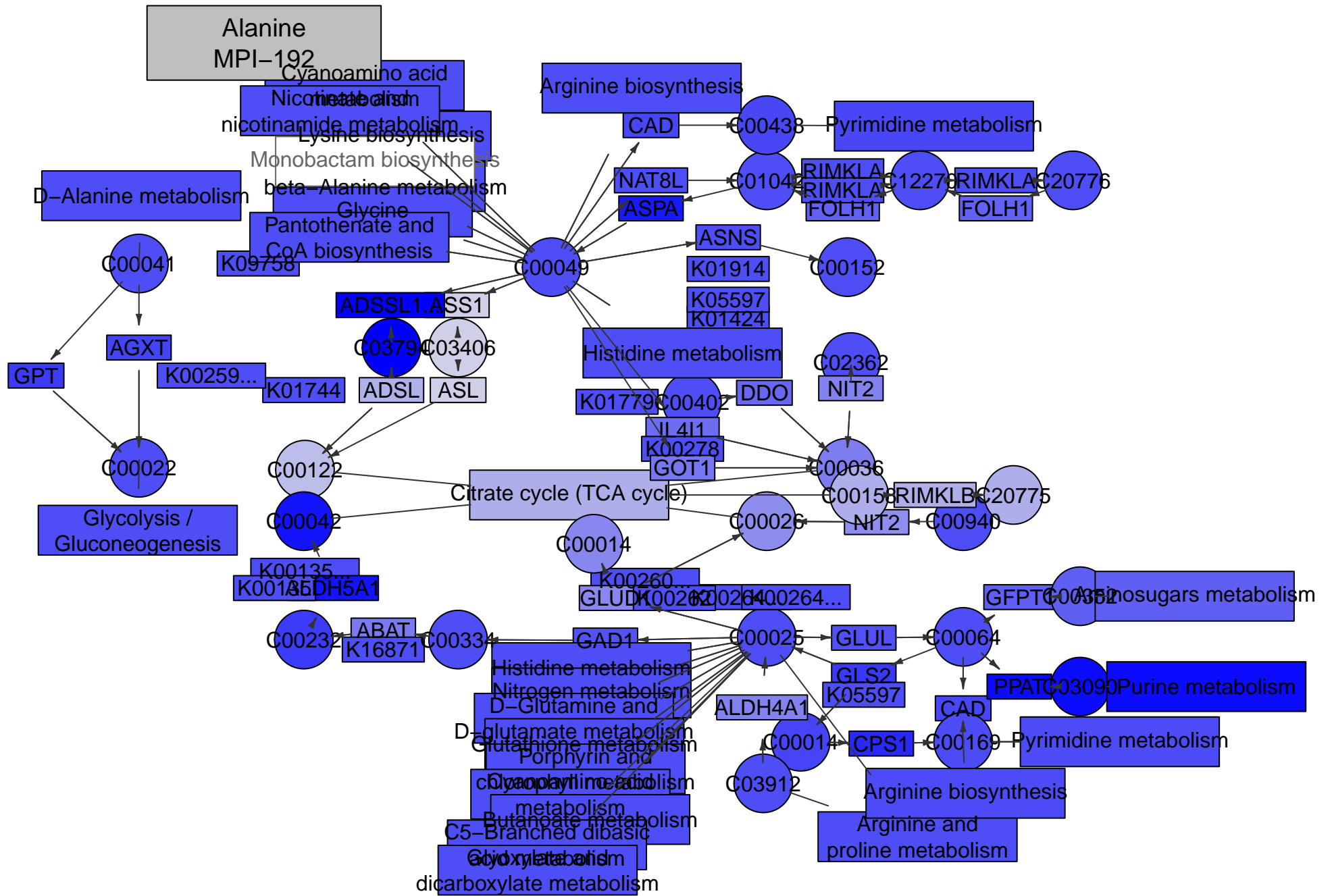


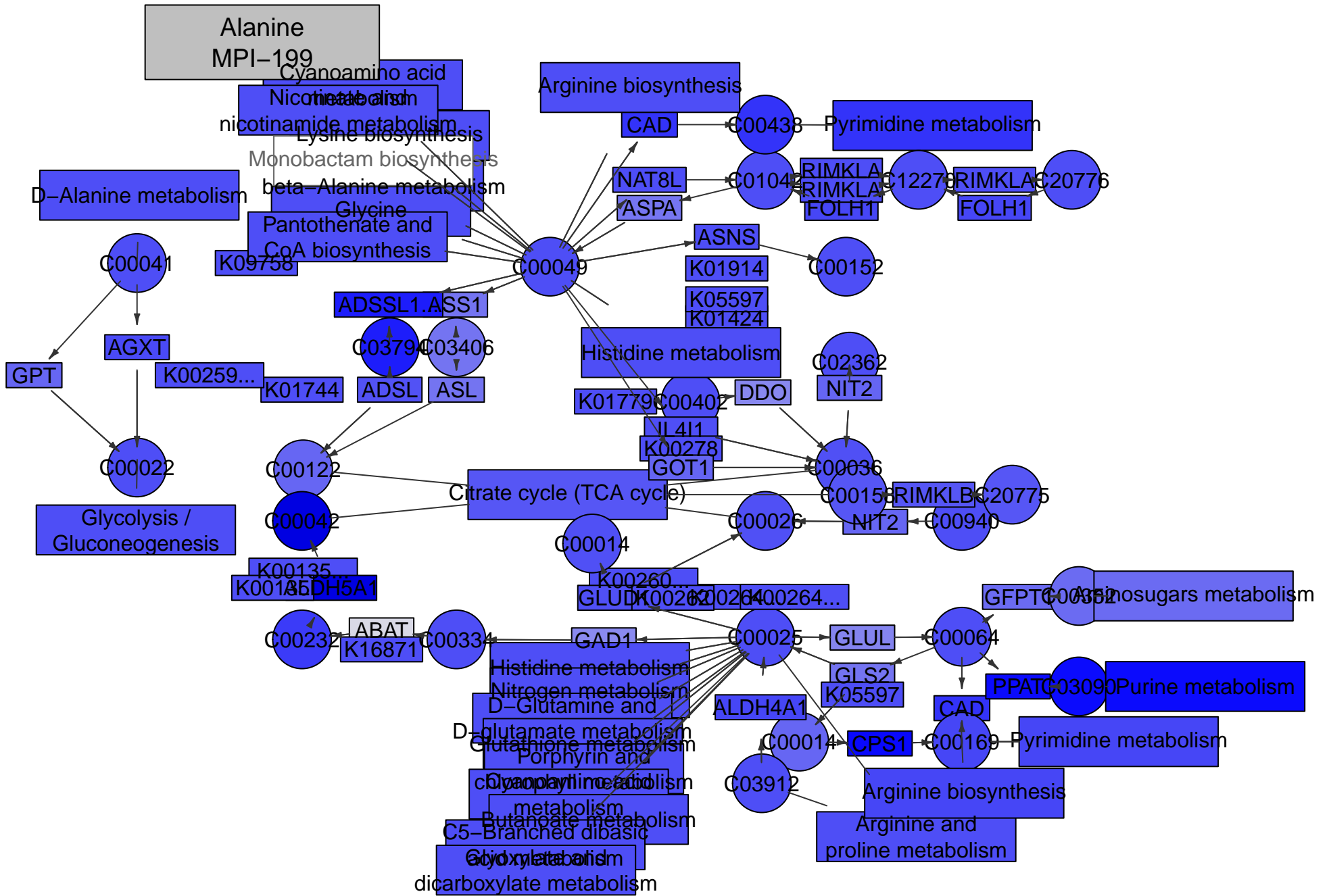


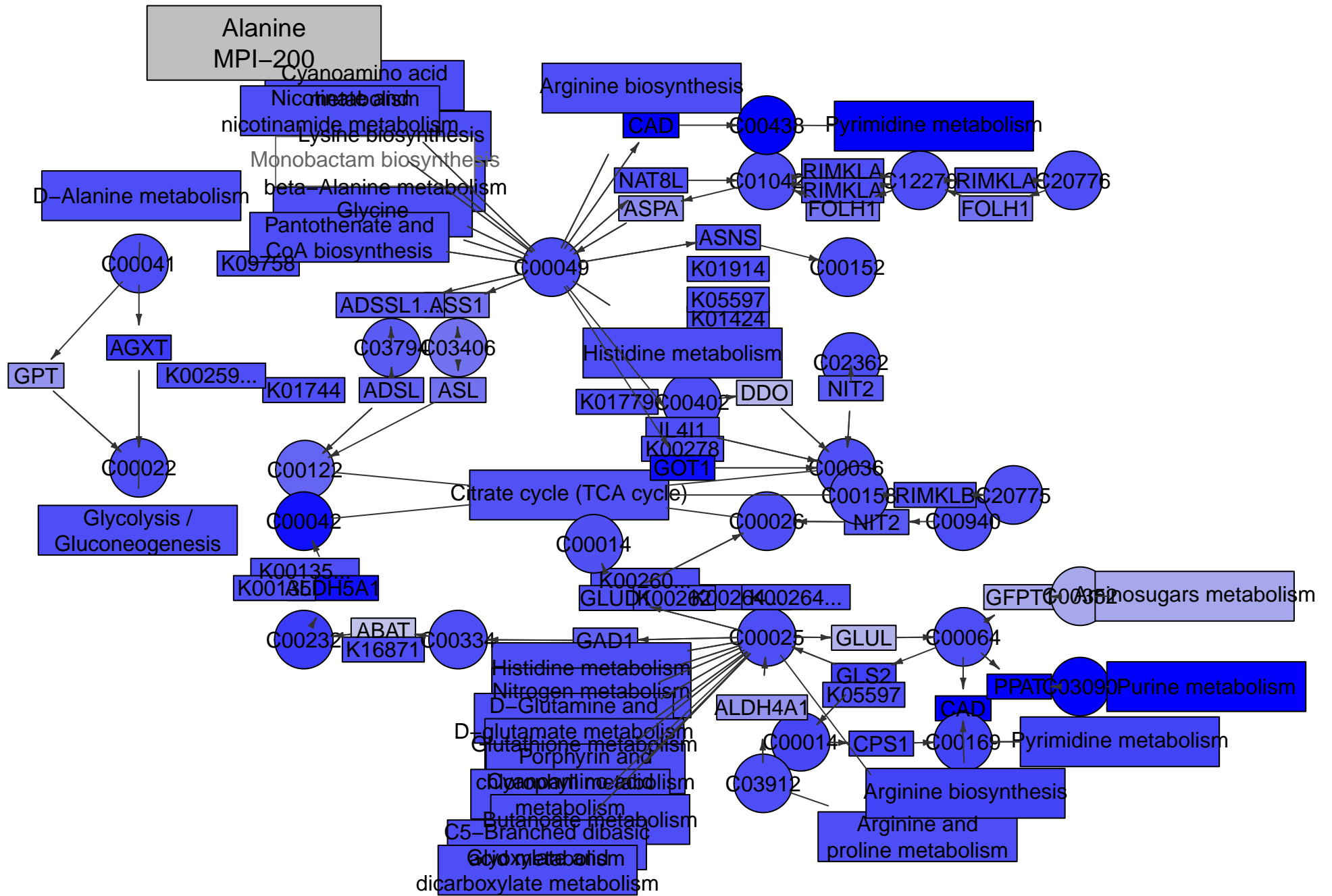


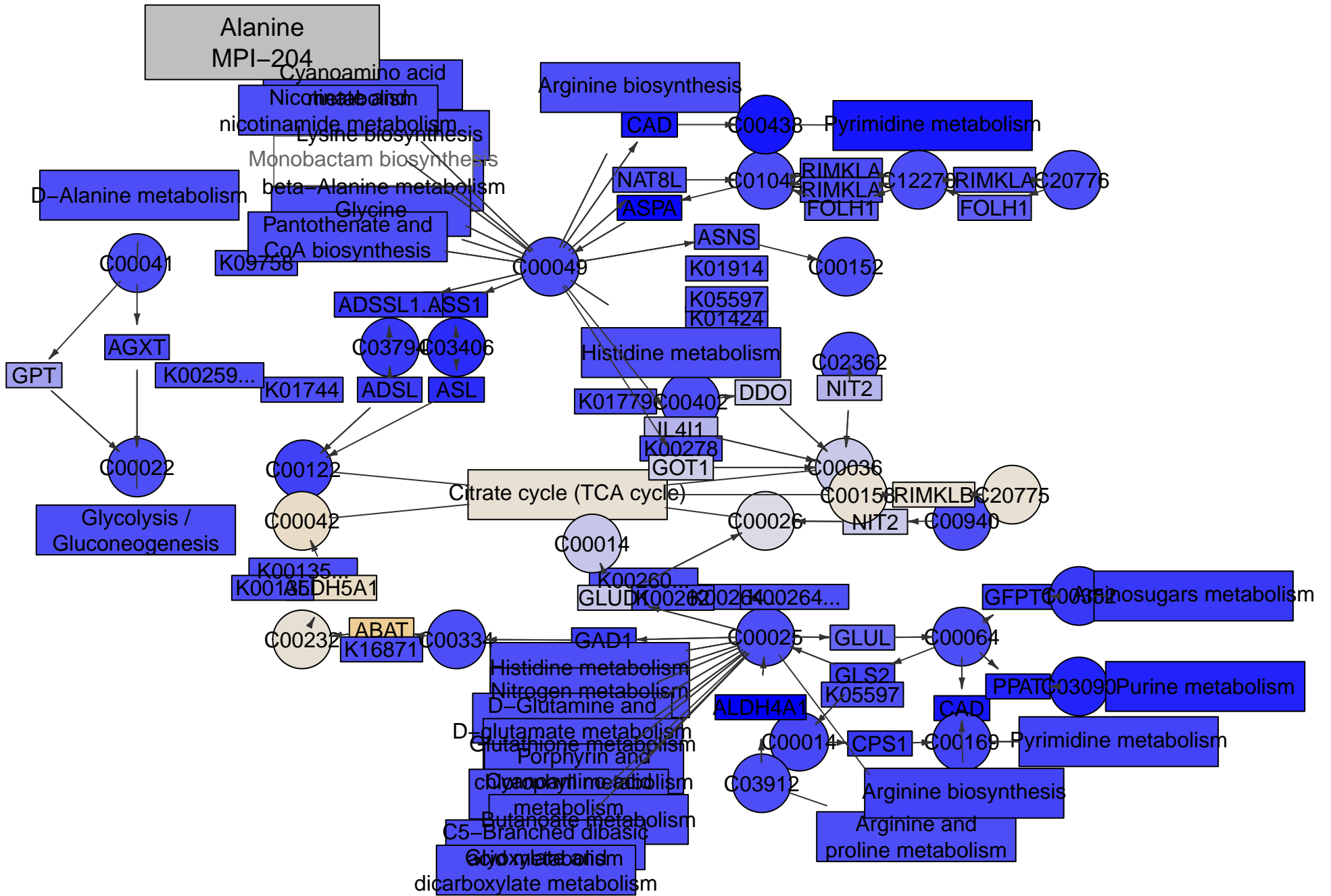


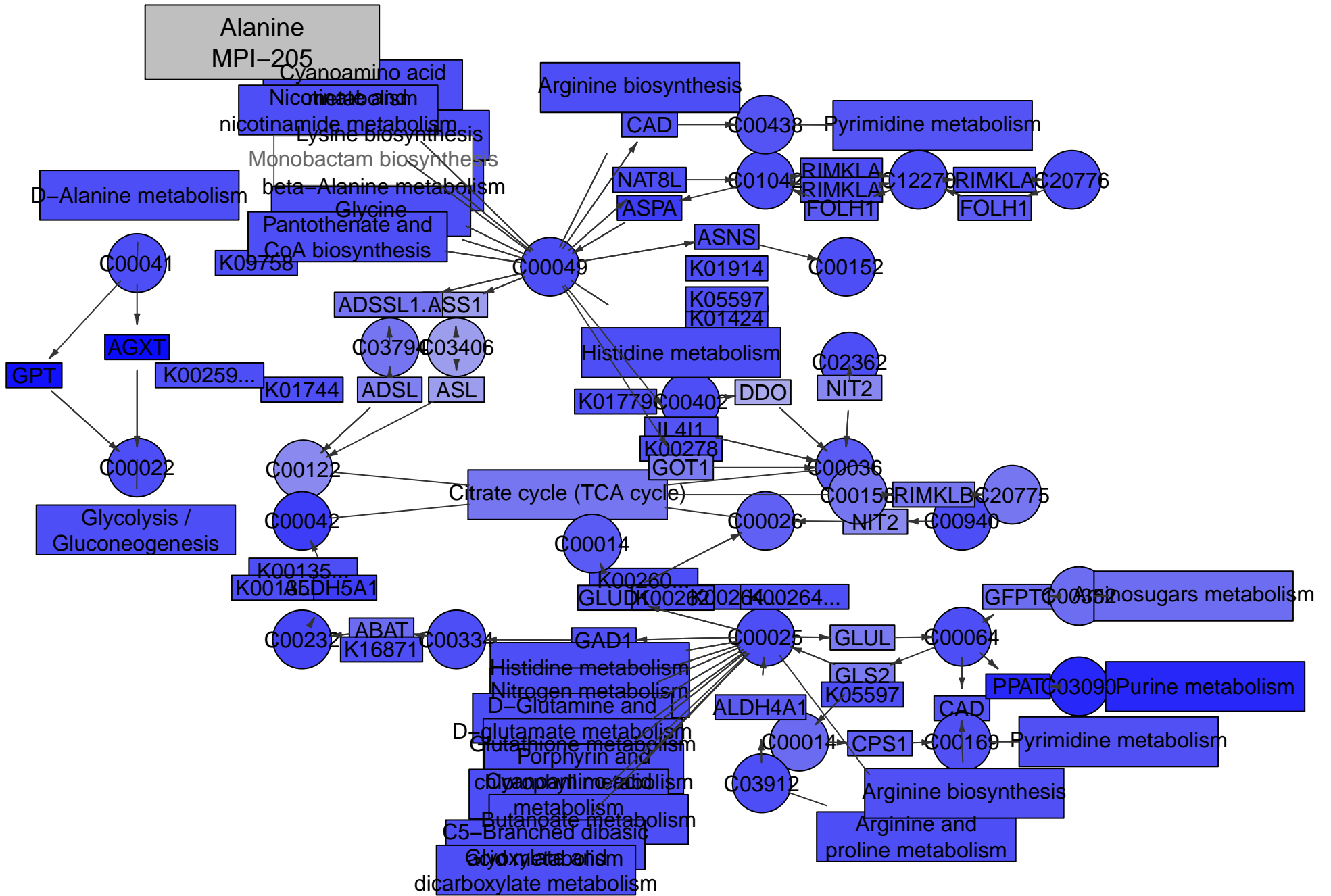


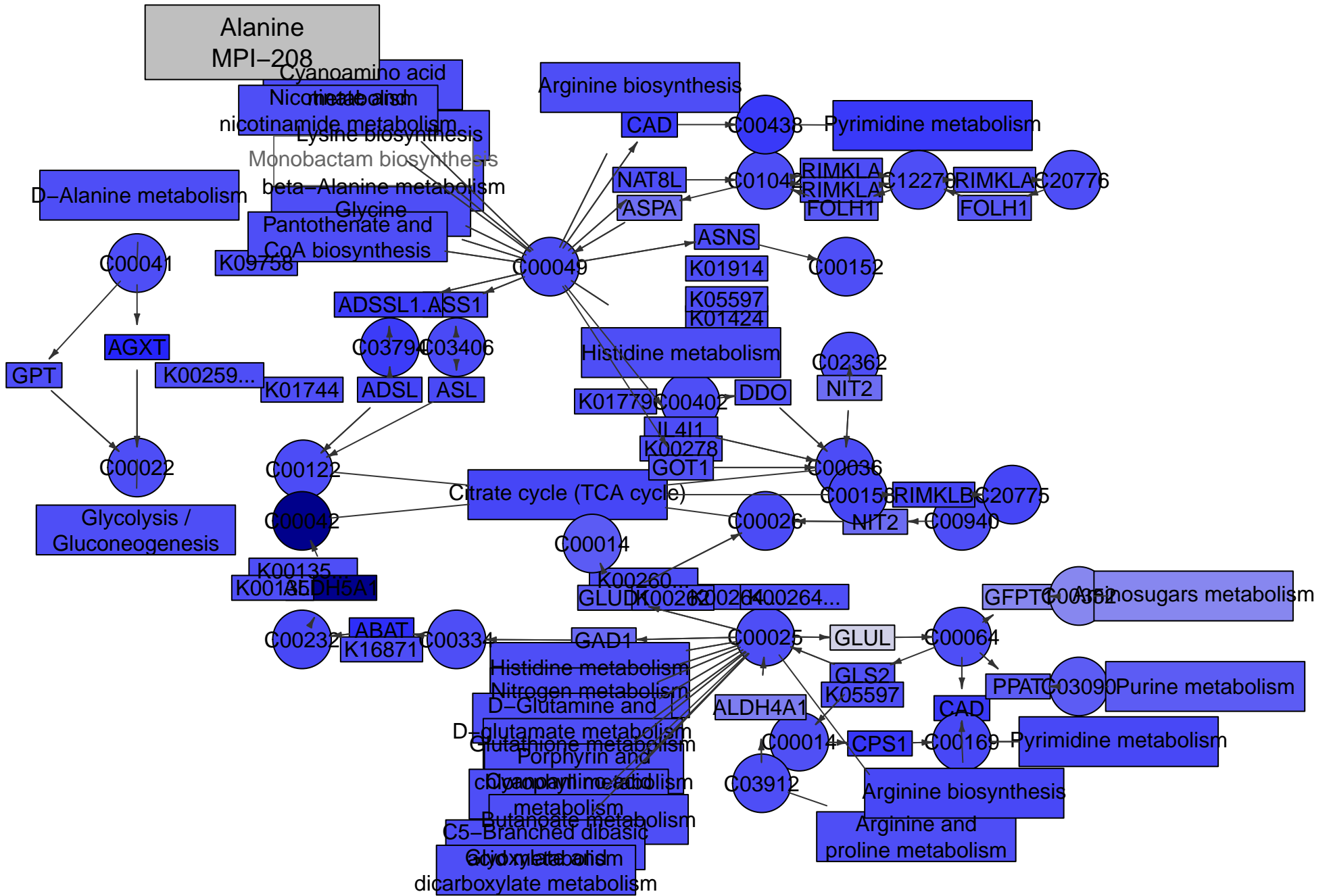


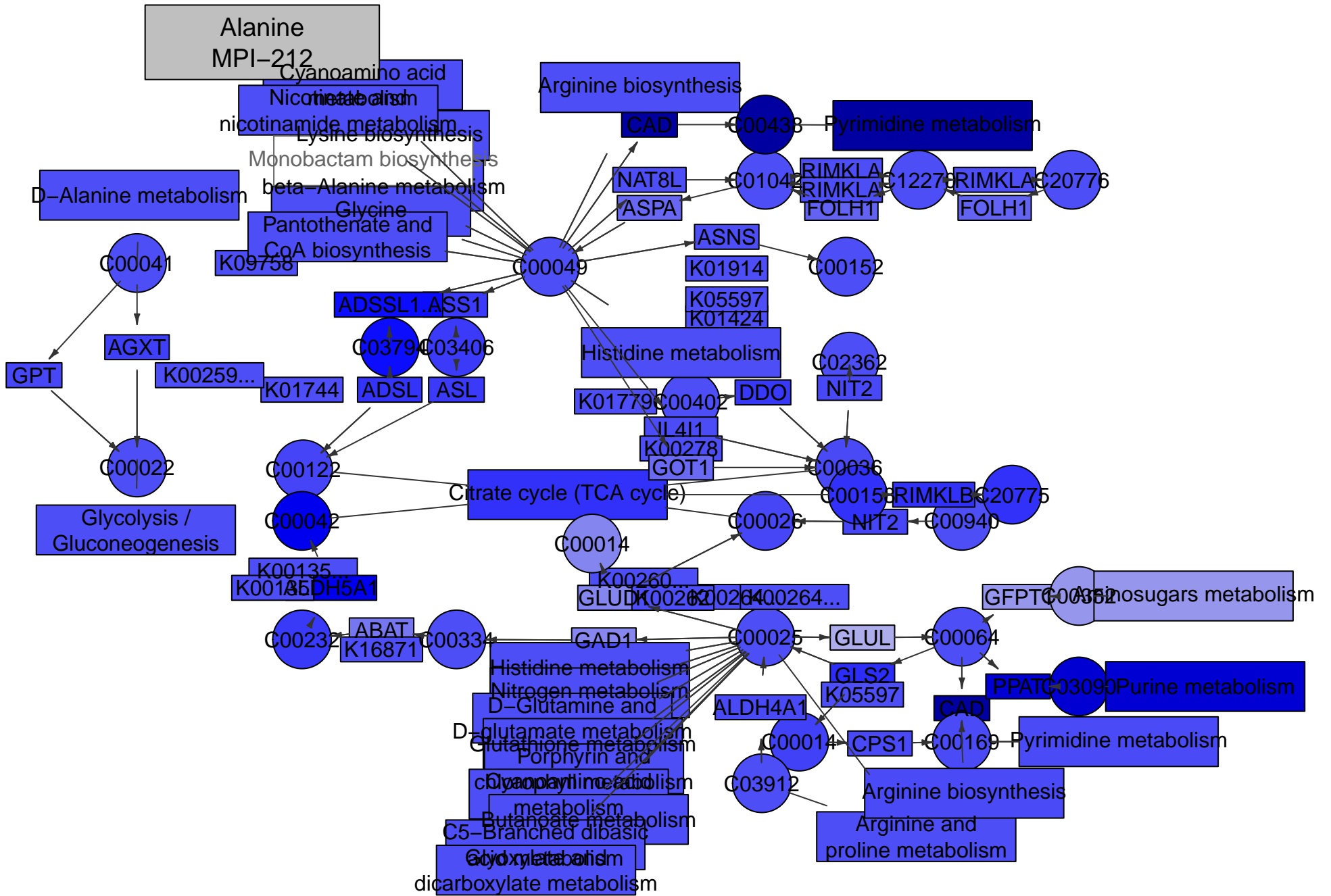


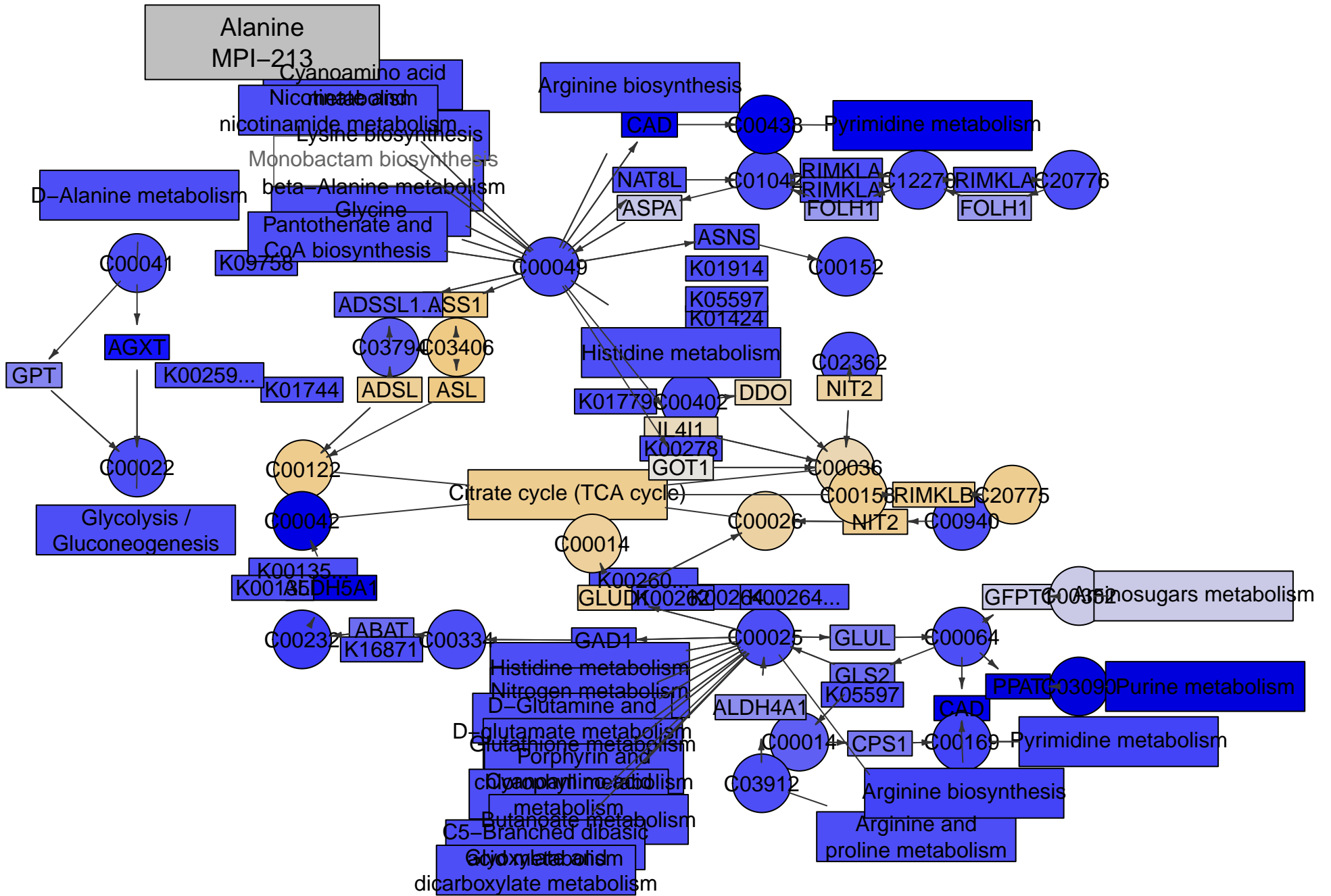


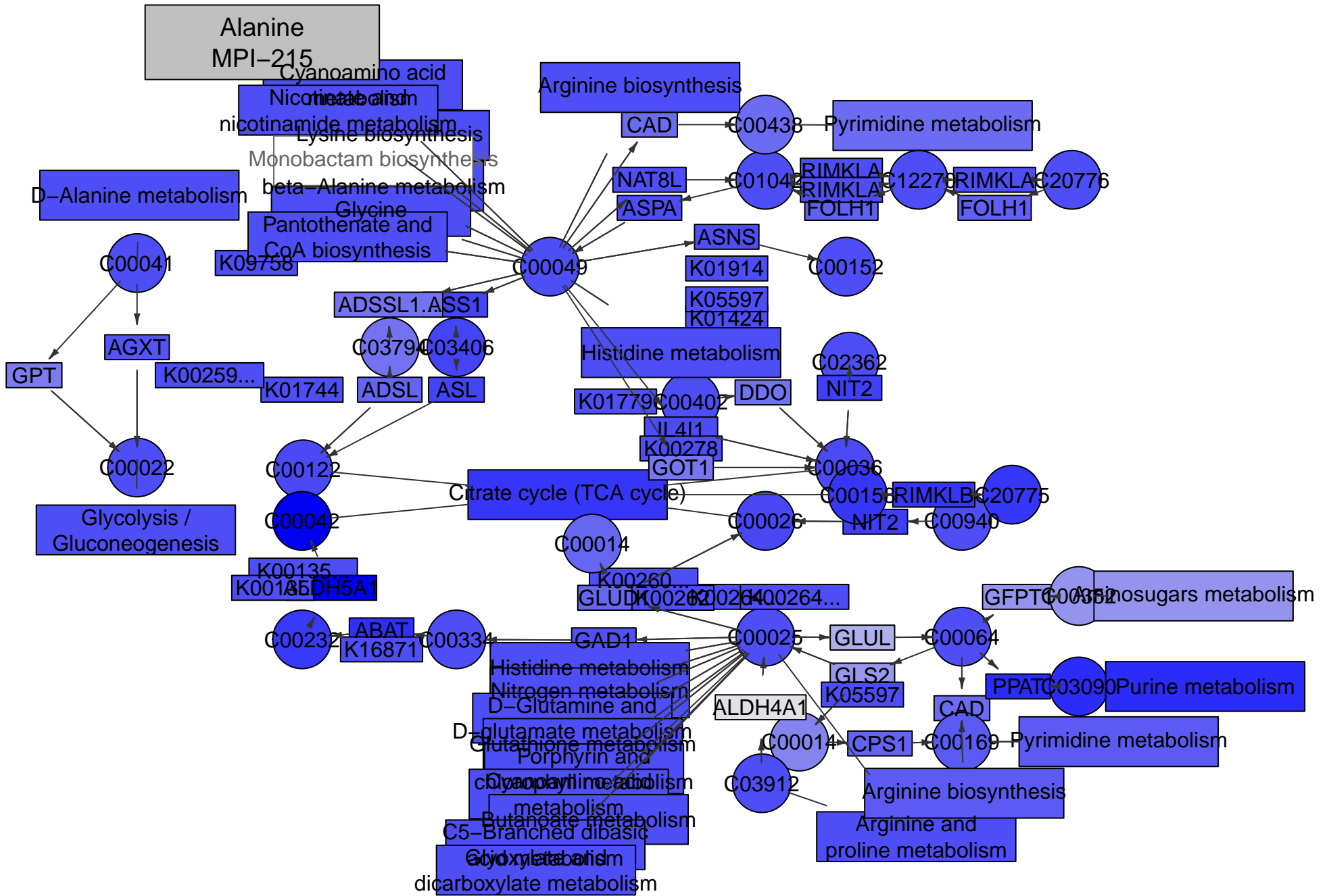












Alanine
MPI-215

Cyanoamino acid

metabolism

Nicotinamide

metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Pantothenate and

CoA biosynthesis

Arginine biosynthesis

CAD

C00438

Pyrimidine metabolism

NAT8L

C01042

RIMKLA

C12276

RIMKLA

C20776

ASPA

FOLH1

FOLH1

ASNS

C00152

K01914

K0597

K01424

Histidine metabolism

C02362

NIT2

K01779

C00402

DDO

NI 411

K00278

GOT1

C00036

C00158

RIMKLB

C20775

NIT2

C00940

Citrate cycle (TCA cycle)

C00014

C00026

K00260

GLUDK

K00262

K00264

K00264...

GFPT

C00352

Disaccharides metabolism

C00232

ABAT

K16871

C00334

GAD1

C00025

GLUL

C00064

Histidine metabolism

Nitrogen metabolism

D-Glutamine and

D-glutamate metabolism

Glutathione metabolism

Porphyrin and

heme metabolism

Cyanocobalamin

metabolism

Butanoate metabolism

C5-Branched dibasic

dicarboxylate metabolism

ALDH4A1

C00014

CPS1

C00169

Pyrimidine metabolism

C03912

Arginine biosynthesis

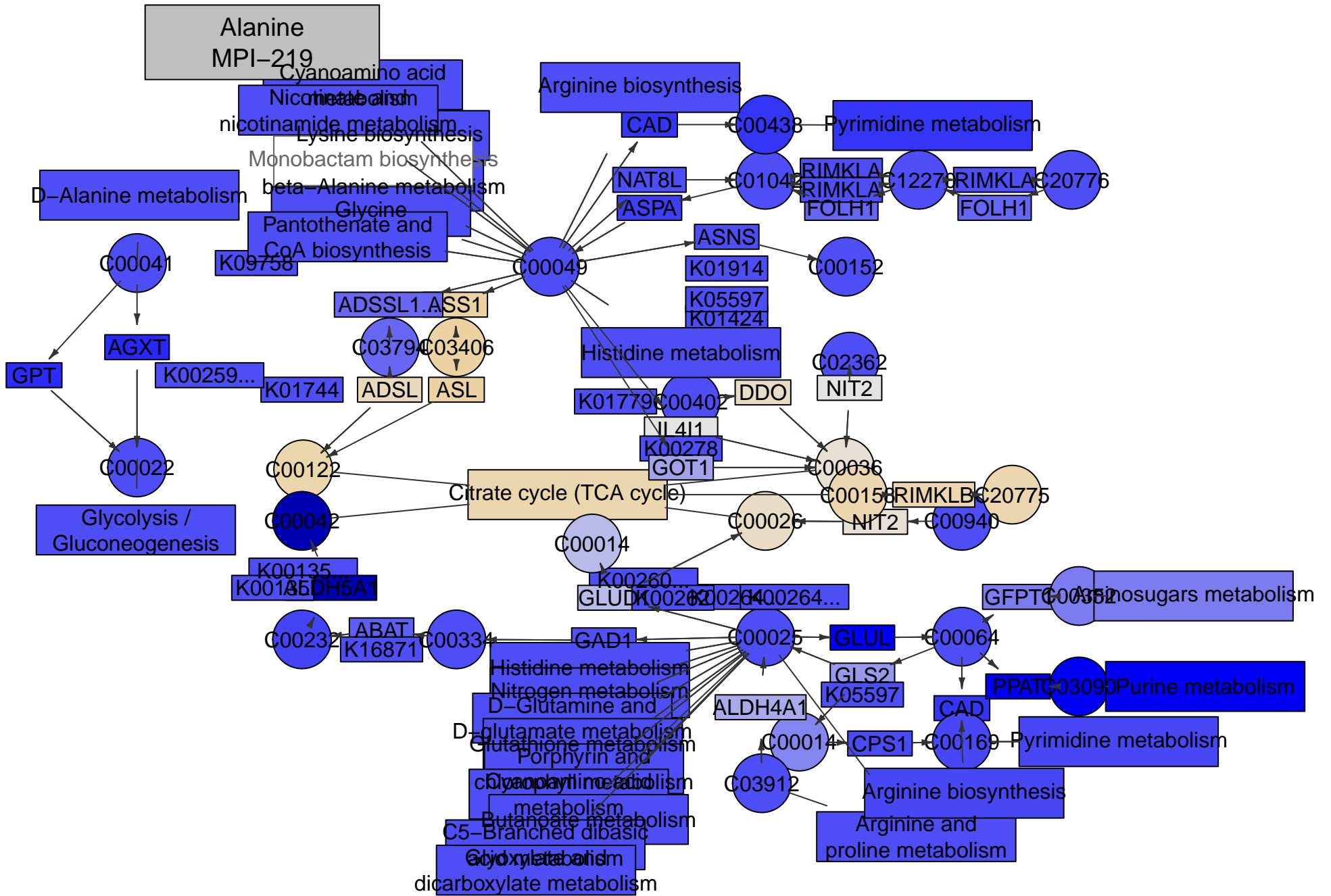
Arginine and

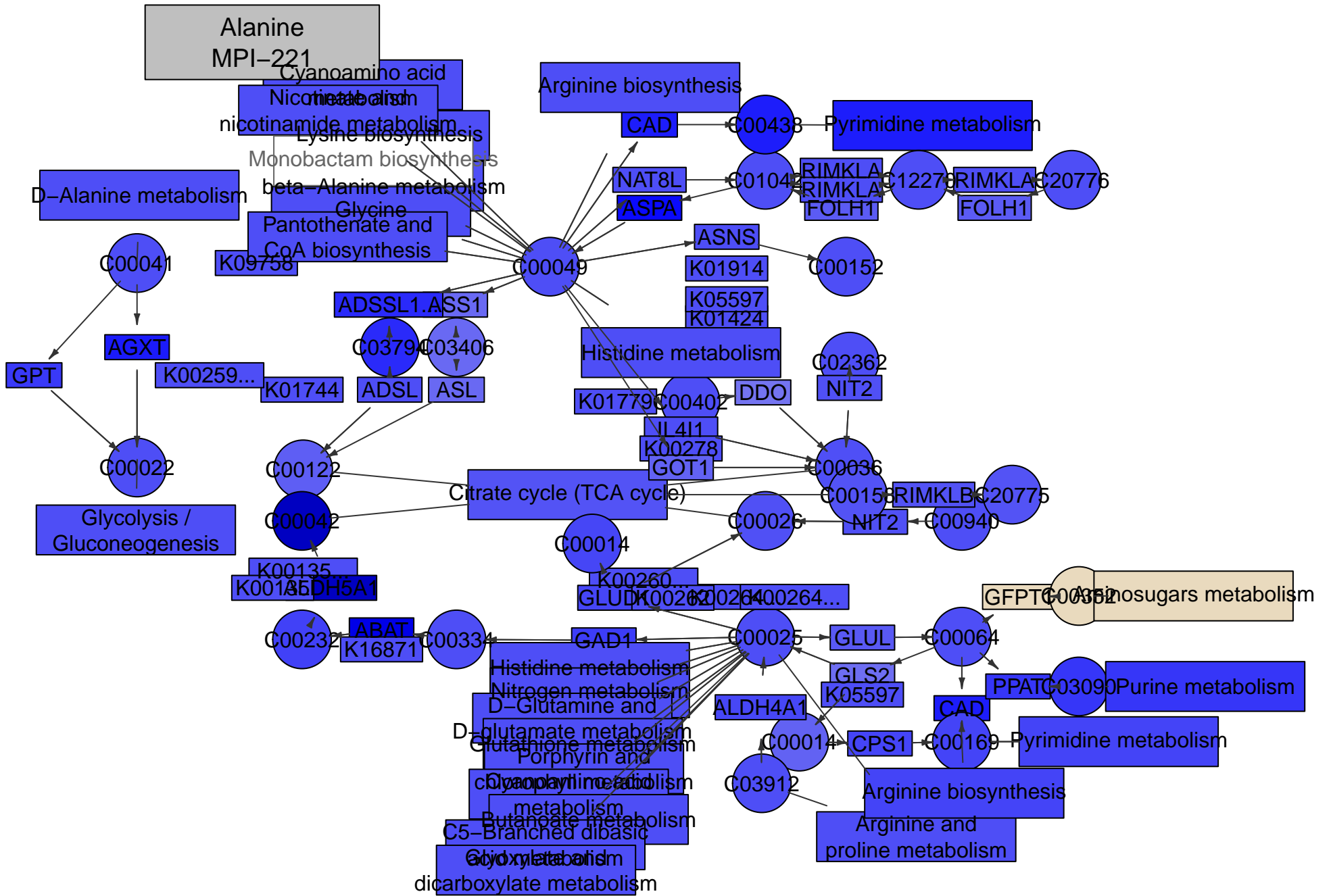
proline metabolism

PPATC

C03090

Purine metabolism





Alanine
MPI-221

Cyanoamino acid

metabolism

Nicotinamide

metabolism

nicotinamide metabolism

Lysine biosynthesis

Monobactam biosynthesis

beta-Alanine metabolism

Glycine

Pantothenate and

CoA biosynthesis

Arginine biosynthesis

CAD

C00438

Pyrimidine metabolism

NAT8L

C01042

RIMKLA

C12276

RIMKLA

C20776

ASPA

FOLH1

FOLH1

ASNS

C00152

K01914

K0597

K01424

Histidine metabolism

C02362

NIT2

K01779

C00402

DDO

NI 411

K00278

GOT1

C00036

Citrate cycle (TCA cycle)

C00158

RIMKLB

C20775

NIT2

C00940

Glycolysis /
Gluconeogenesis

Disaccharides metabolism

GFPT

C00352

C00232

ABAT

K16871

C00334

GAD1

C00025

GLUL

C00064

Histidine metabolism

Nitrogen metabolism

D-Glutamine and

D-glutamate metabolism

Glutathione metabolism

Porphyrin and

heme metabolism

Cyanocobalamin

metabolism

Butanoate metabolism

C5-Branched dibasic

dicarboxylate metabolism

ALDH4A1

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CAD

C00036

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Purine metabolism

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Arginine biosynthesis

Arginine and
proline metabolism

C03912

C00014

CPS1

C00169

CAD

PPATC

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Purine metabolism

Pyrimidine metabolism

Arginine biosynthesis

Arginine and
proline metabolism

C03912

C00014

CPS1

C00169

CAD

PPATC

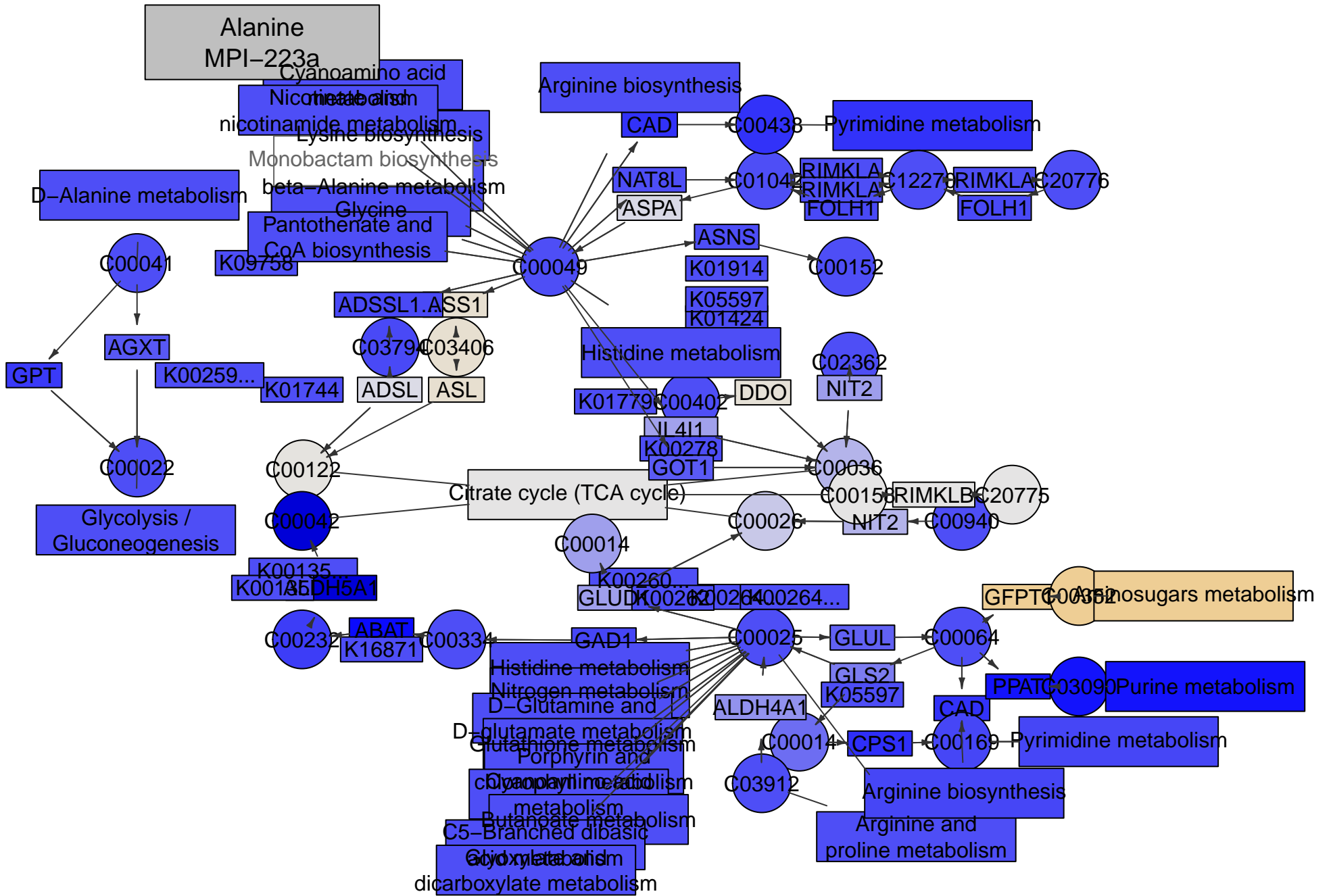
C03090

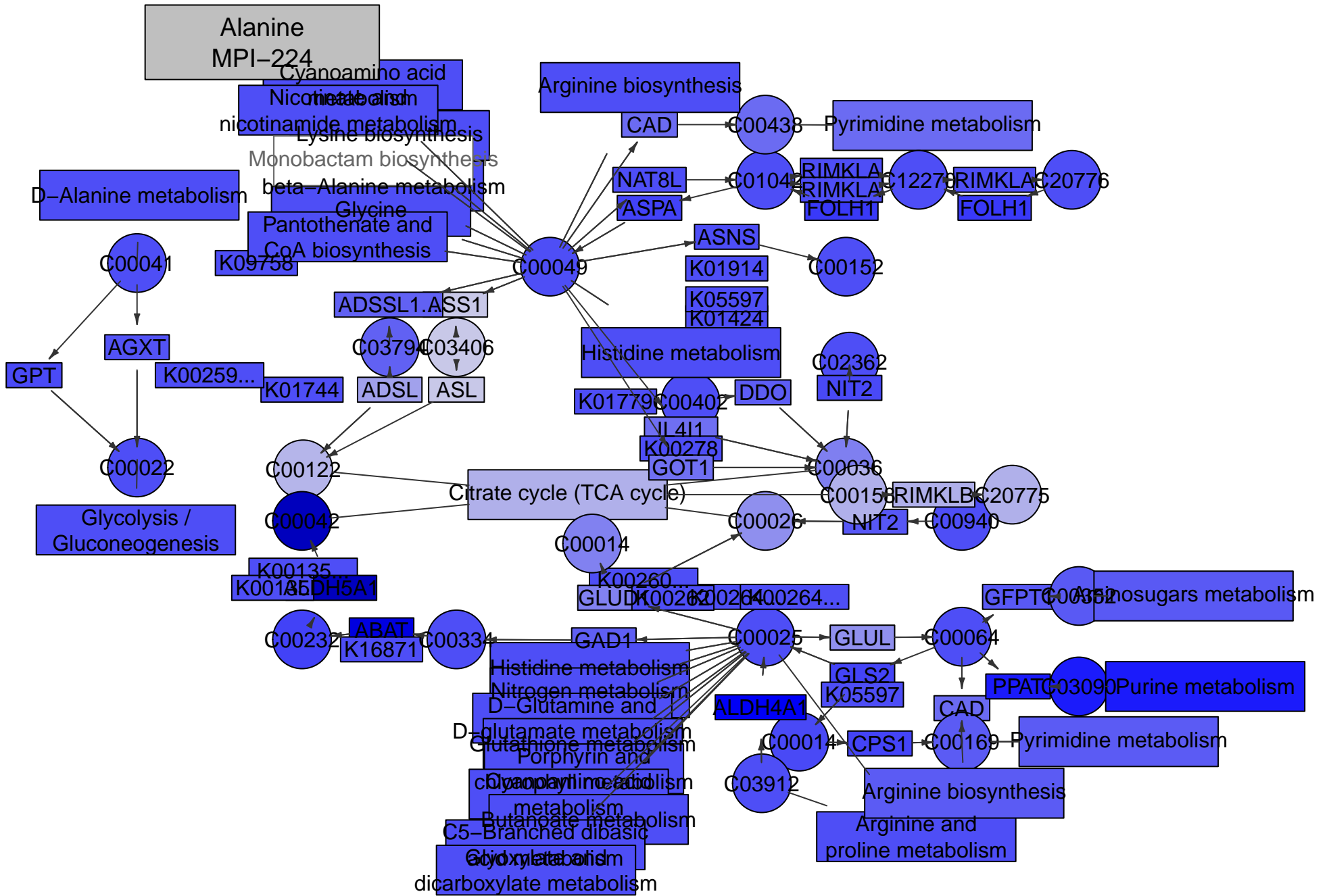
Purine metabolism

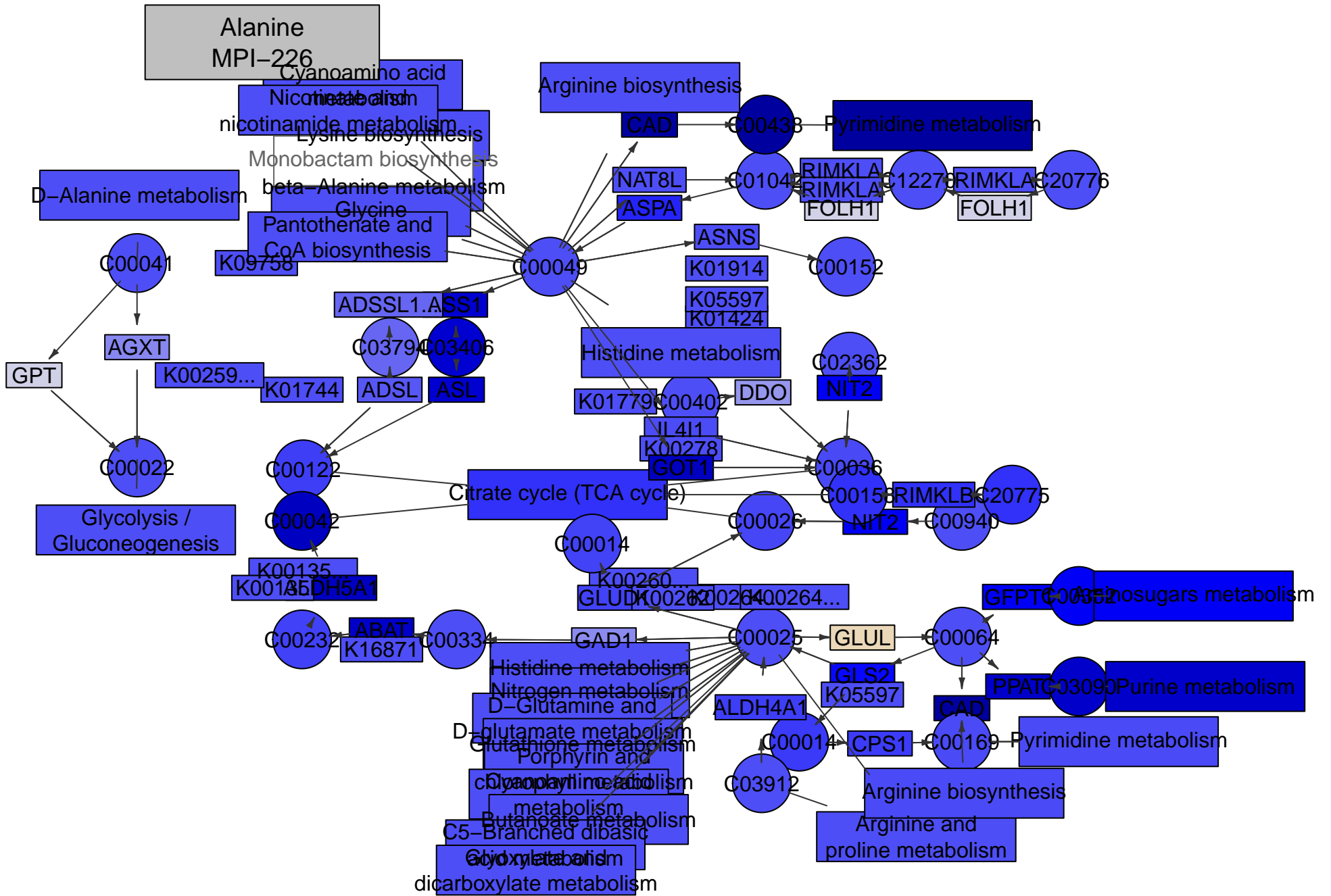
Pyrimidine metabolism

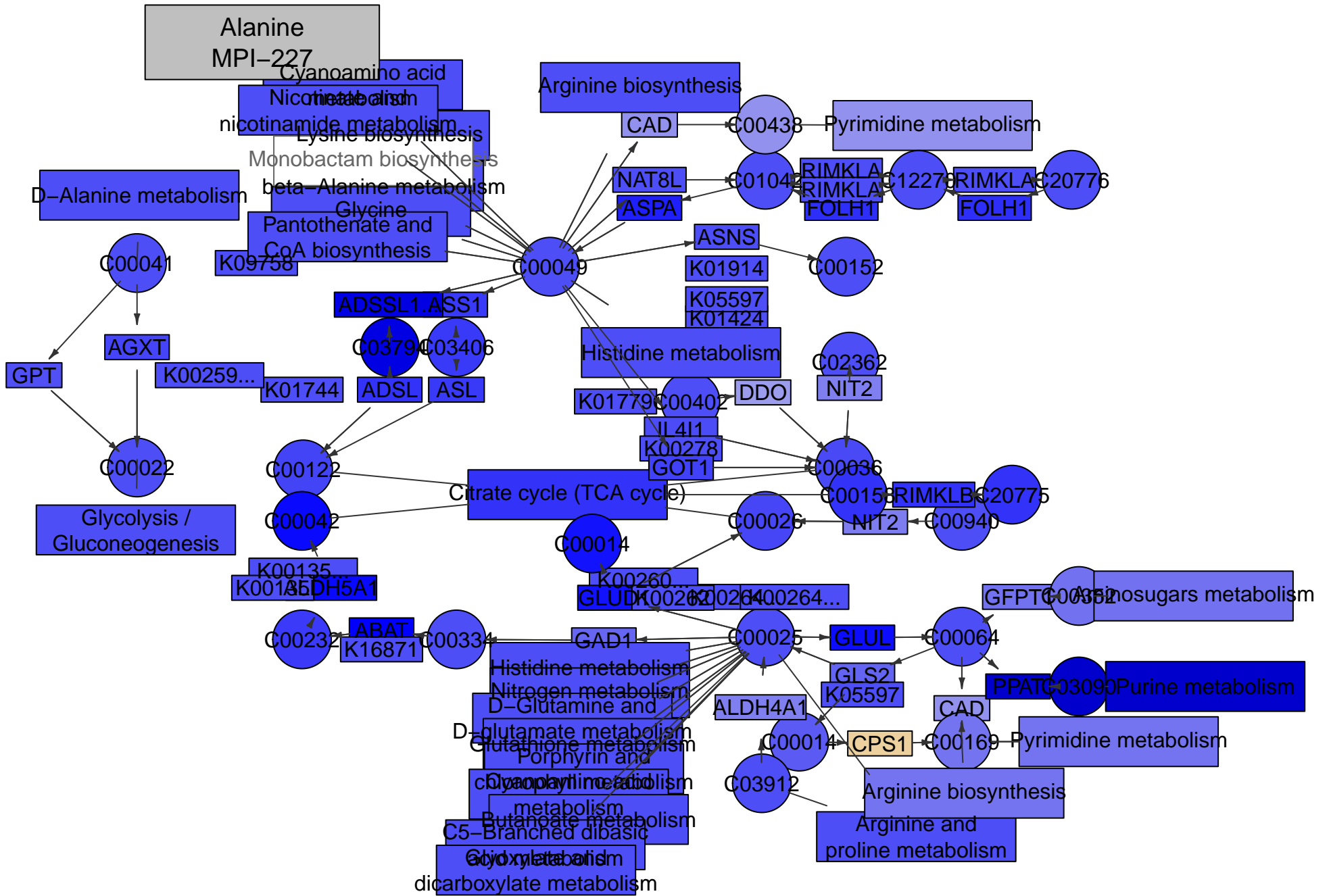
Arginine biosynthesis

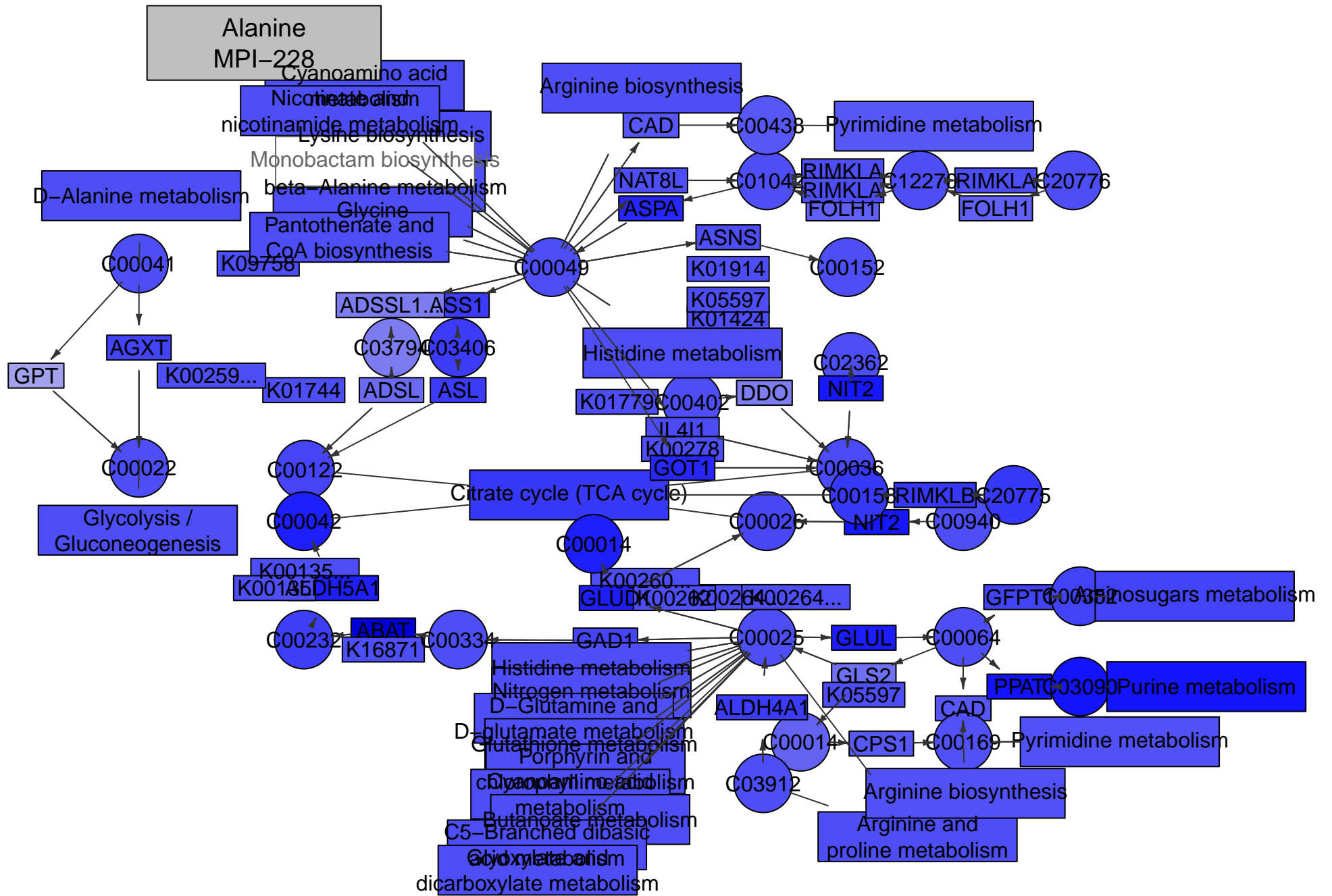
Arginine and
proline metabolism

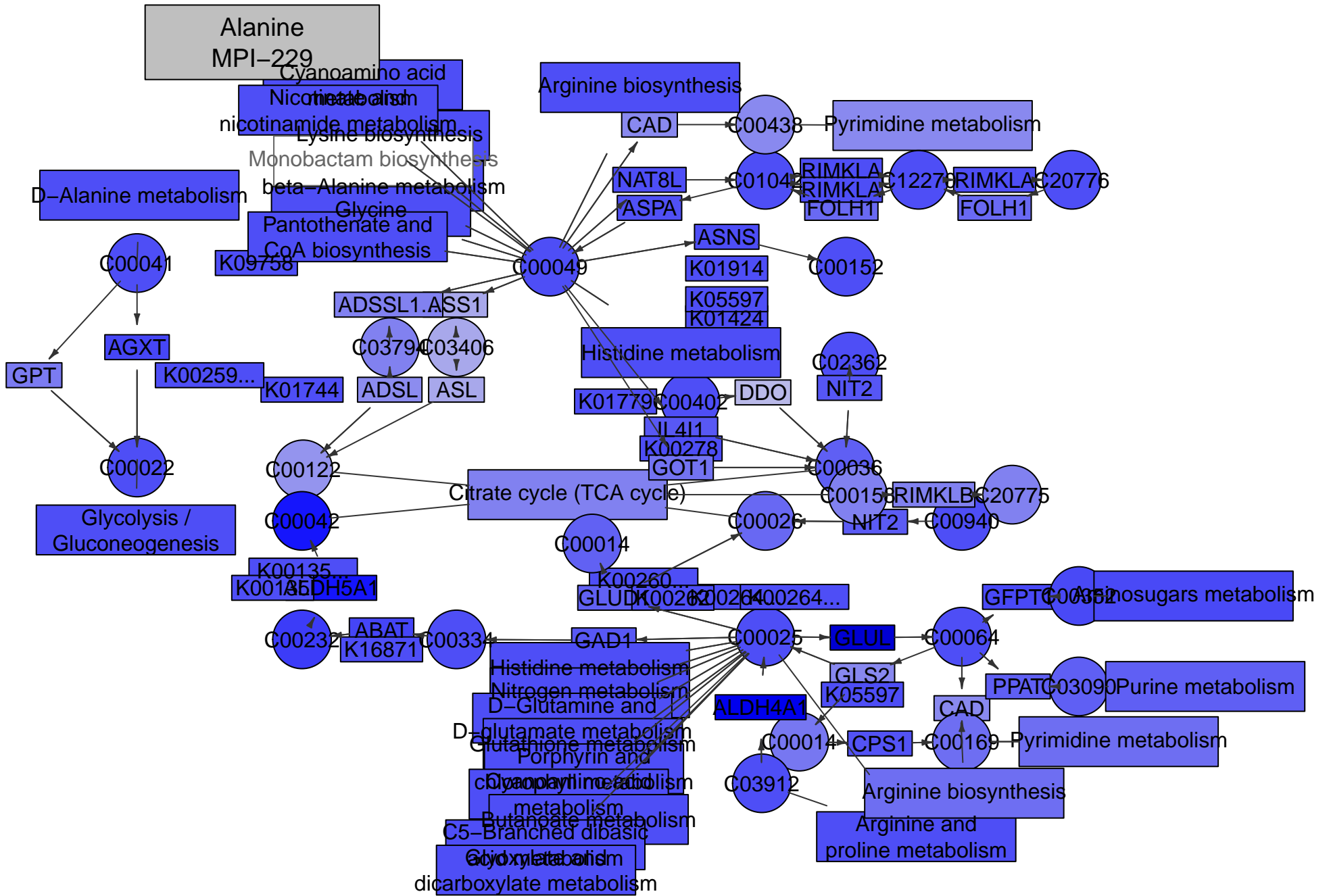


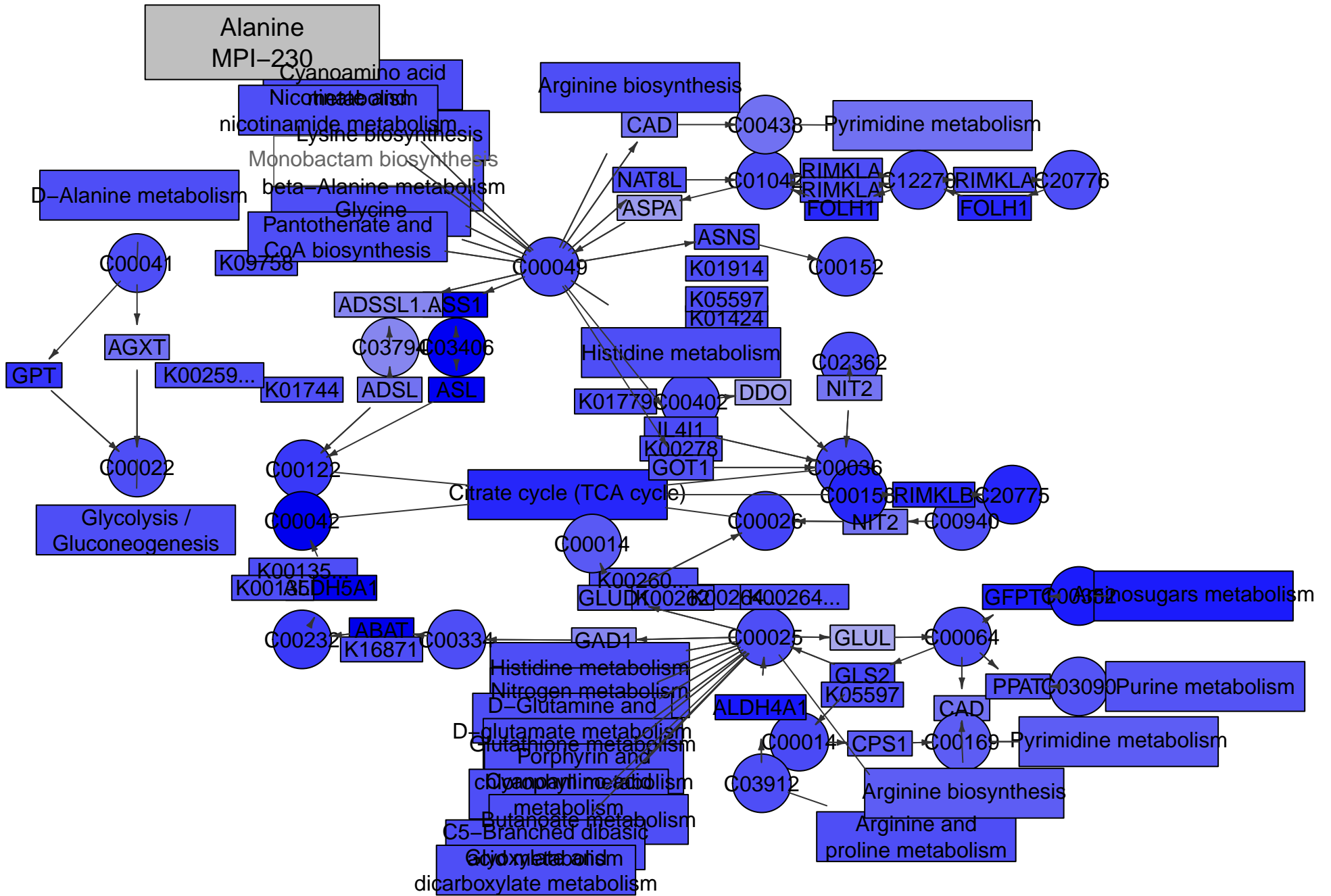


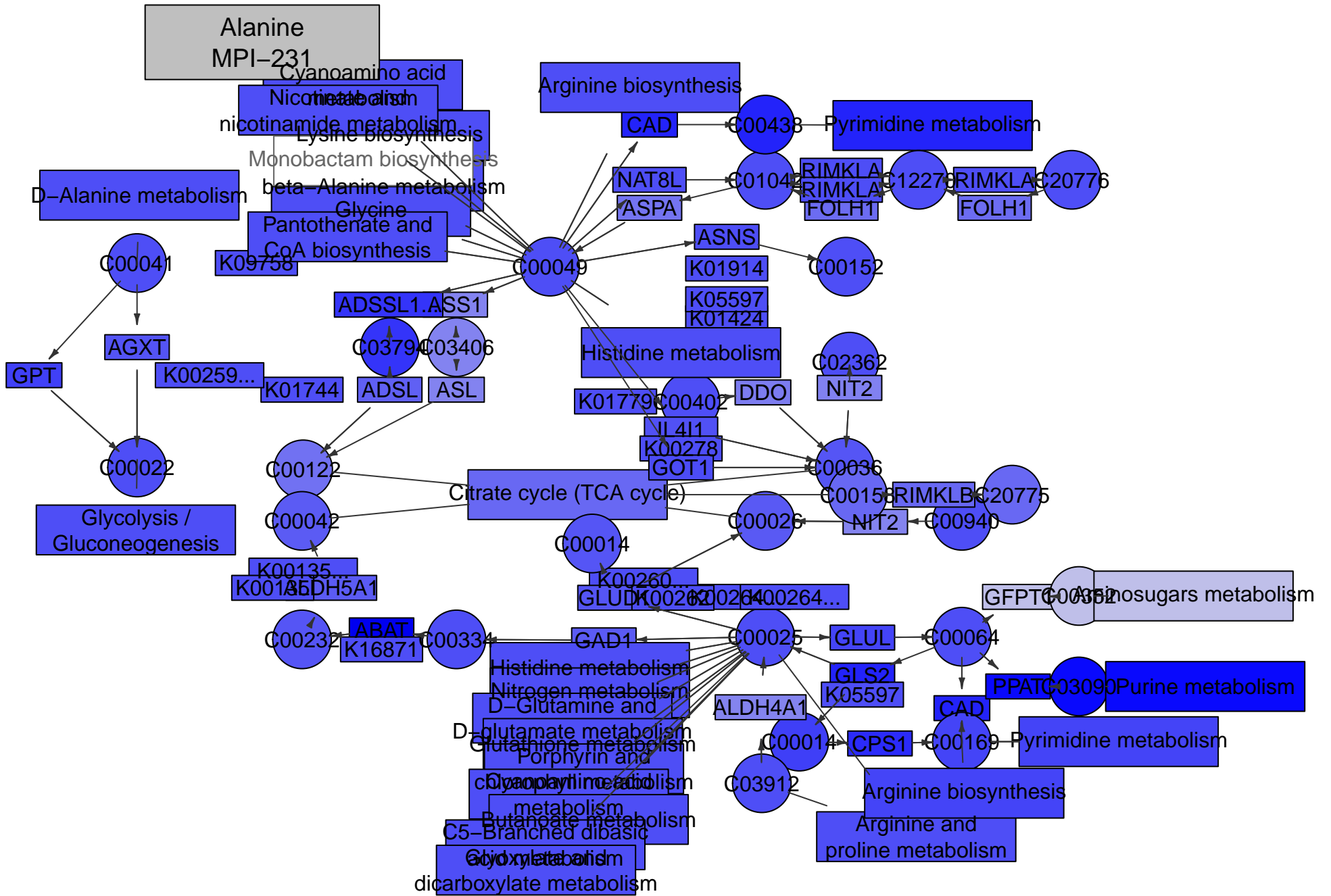


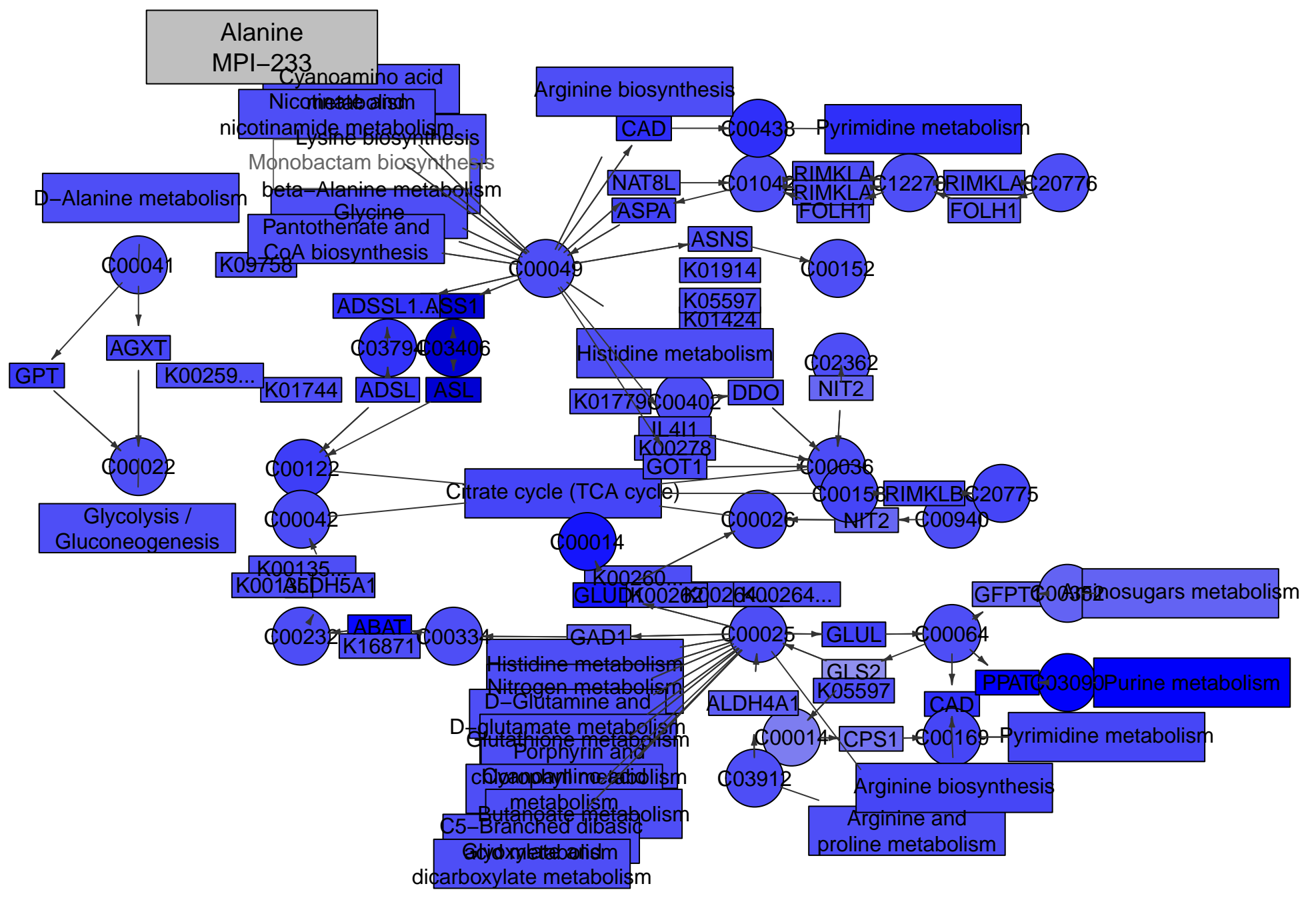


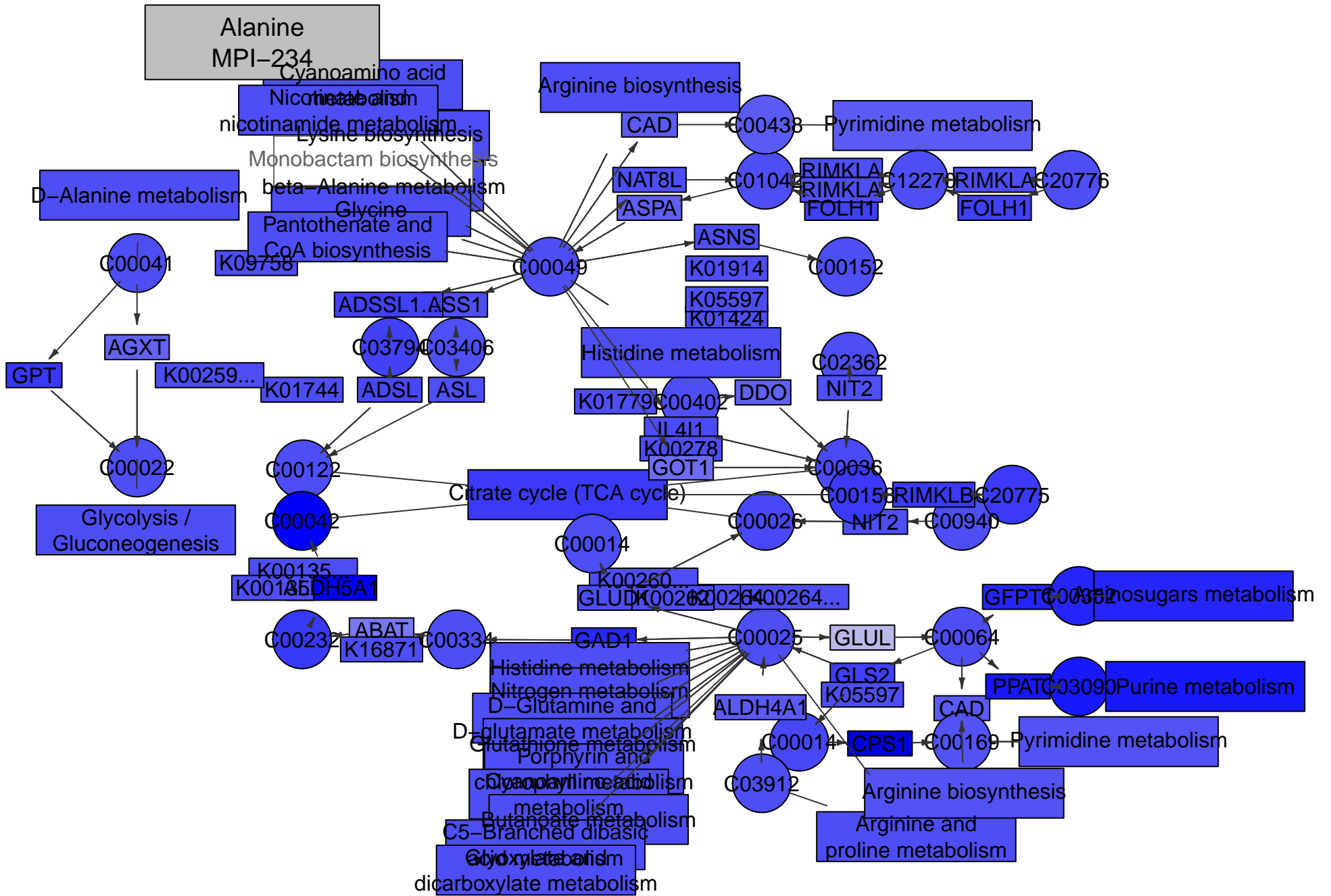












Alanine
MPI-234

Arginine biosynthesis

Pyrimidine metabolism

D-Alanine metabolism

beta-Alanine metabolism

Pantothenate and
CoA biosynthesis

C00041

K09758

C00049

CAD

C00438

NAT8L

C01042

RIMKLA

C12276

RIMKLA

C20776

ASPA

FOLH1

FOLH1

ASNS

C00152

K01914

K05597

K01424

Histidine metabolism

C02362

NIT2

GPT

AGXT

C00022

K00259...

K01744

ADSSL1.ASS1

C03790

C03406

ADSL

ASL

K01779

C00402

DDO

NI 411

K00278

GOT1

C00036

Citrate cycle (TCA cycle)

C00158

RIMKLB

C20775

Glycolysis /
Gluconeogenesis

C00122

C00042

C00014

C00026

NIT2

C00940

K00135...

K00135...
DH5A1

C00014

K00260...

GLUDK

K00260...

K00264...

K00264...

Disaccharides metabolism

GFPT

C00352

C00232

ABAT

C00334

GAD1

C00025

GLUL

C00064

Histidine metabolism

Nitrogen metabolism

D-Glutamine and
D-glutamate metabolism

Glutathione metabolism

Porphyrin and
heme metabolism

Cyanocobalamin
metabolism

Butanoate metabolism

C5-Branched dibasic
dicarboxylate metabolism

ALDH4A1

C00014

CPS1

C00169

Pyrimidine metabolism

C03912

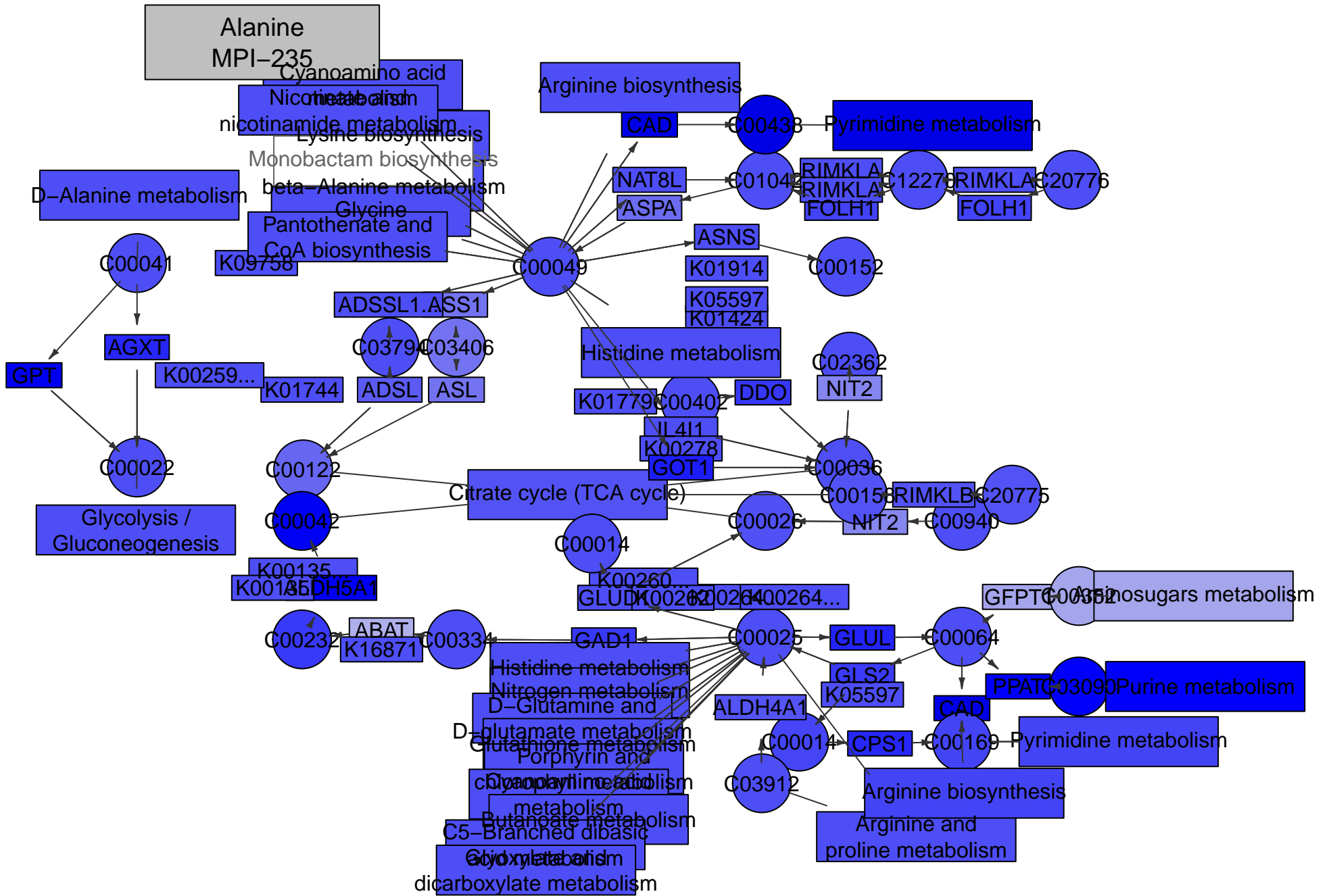
Arginine biosynthesis

Arginine and
proline metabolism

Purine metabolism

PPATC

C03090



Alanine
MPI-235

Arginine biosynthesis

Pyrimidine metabolism

D-Alanine metabolism

beta-Alanine metabolism

CAD

C00438

RIMKLA

C12276

RIMKLA

C20776

C00041

K09758

C00049

ASNS

C00152

ADSSL1.ASS1

K01914

K05597

K01424

Histidine metabolism

C02362

GPT

AGXT

K00259...

K01744

ADSL

ASL

K01779

C00402

DDO

NIT2

C00022

Glycolysis /
Gluconeogenesis

C00122

Citrate cycle (TCA cycle)

C00036

C00158

RIMKLB

C20775

C00042

C00014

C00026

NIT2

C00940

K00135...

K00135

K00135

C00014

K00260...

GLUDK

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

K00260

C00232

ABAT

K16871

C00334

GAD1

C00025

GLUL

C00064

GFPT

C00352

Sugars metabolism

Histidine metabolism

Nitrogen metabolism

D-Glutamine and

D-glutamate metabolism

Glutathione metabolism

Porphyrin and

heme metabolism

Cyanocobalamin

metabolism

Butanoate metabolism

C5-Branched dibasic

amino acid

metabolism

Glyoxylate and

dicarboxylate metabolism

ALDH4A1

C00014

CPS1

C00169

Arginine biosynthesis

Arginine and

proline metabolism

GLS2

K05597

PPATC

C03090

Purine metabolism

CAD

C00169

Pyrimidine metabolism

C03912

Arginine biosynthesis

Arginine and

proline metabolism

Arginine and

proline metabolism

Arginine and

proline metabolism

Arginine and

proline metabolism

Arginine and

proline metabolism

Arginine and

proline metabolism

