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Supplementary materials

**Pathway Crosstalk between the Central Metabolic and Heme Biosynthetic Pathways
in *Phanerochaete chrysosporium***

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Running Title: Metabolic pathway crosstalk in *P. chrysosporium*.

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PcCS	- - - - - M S A T V L R S L A R Q - T P - R A A F G R S L R F A S T G K Q Q N L K E R L A E L I P V E L E H V K A V R	52
NcCS	M A P V M R L G S A A L R S S I H L T S R - Q T A F T A A - - R C Y S S K T Q T L K E R F A E L L P E N I E K I K A L R	57
SsCS	- - - - - M A L - - - - L T A A A R L F G A K N A S C L V L A A R H A S A S S T N L K D I L A D L I P K E Q A R I K T F R	52
HsCS	- - - - - M A L - - - - L T A A A R L L G T K N A S C L V L A A R H A S A S S T N L K D I L A D L I P K E Q A R I K T F R	52
PcCS	A E H G K K A F G P V V V D Q L Y G G M R G L P A L I W E G S V L D P E E G I R F R G K S I P E C Q E L L P K A P G G N	112
NcCS	K E H G S K V V D K V T L D Q V Y G G A R G I K C L V W E G S V L D A E E G I R F R G K T I P E C Q E L L P K A P G G K	117
SsCS	Q Q H G N T V V G Q I T V D M M Y G G M R G M K G L V Y E T S V L D P D E G I R F R G Y S I P E C Q K M L P K A K G G E	112
HsCS	Q Q H G K T V V G Q I T V D M M Y G G M R G M K G L V Y E T S V L D P D E G I R F R G F S I P E C Q K L L P K A K G G E	112
PcCS	E P L P E A L F W L L V T G E V P T Q E Q V T A L S K D W A A R A A I P E F V E E L L D R C P P T L H P M S Q F S L A V	172
NcCS	E P L P E G L F W L L L T G E V P S E Q Q V R D L S A E W A A R S D V P K F I E E L I D R C P S D L H P M A Q L S L A V	177
SsCS	E P L P E G L F W L L V T G Q I P T E E Q V S W L S K E W A K R A A L P S H V V T M L D N F P T N L H P M S Q L S A A I	172
HsCS	E P L P E G L F W L L V T G H I P T E E Q V S W L S K E W A K R A A L P S H V V T M L D N F P T N L H P M S Q L S A A V	172
PcCS	T A L N H D S N F A K A Y Q Q G I S K K D Y W G P V F E D C M D L I A K L P N I A G R I F R N V Y G K G K - L P A I D A	231
NcCS	T A L E H T S S F A R A Y A K G I N K K E Y W G Y T F E D S M D L I A K L P T I A A R I Y Q N V F K G G K - V A A V Q K	236
SsCS	T A L N S E S N F A R A Y A E G I H R T K Y W E L I Y E D C M D L I A K L P C V A A K I Y R N L Y R E G S - S I G A I D S	232
HsCS	T A L N S E S N F A R A Y A Q G I S R T K Y W E L I Y E D S M D L I A K L P C V A A K I Y R N L Y R E G S - S I G A I D S	232
PcCS	N K D Y S W N L A T L L G F G E N P A F V E L M R L Y I T I H S D H E G G N V S A H T G K L V G S A L S D P F L A F A A	291
NcCS	D K D Y S F N F A N Q L G F G D N K D F V E L L R L Y L T I H T D H E G G N V S A H T T H L V G S A L S S P F L S V A A	296
SsCS	K L D W S H N F T N M L G Y T D - A Q F T E L M R L Y L T I H S D H E G G N V S A H T S H L V G S A L S D P Y L S F A A	291
HsCS	N L D W S H N F T N M L G Y T D - H Q F T E L M R L Y L T I H S D H E G G N V S A H T S H L V G S A F S D P Y L S F A A	291
PcCS	S L N G L A G P L H G L A N Q E V L I W L R R M Q S K I G E N A S D E A V R E Y V W S T L K S G Q V V P G Y G H A V L R	351
NcCS	G L N G L A G P L H G L A N Q E V L N W L T E M K K V I G D D L S D E A I T K Y L W D T L N A G R V V P G Y A H A V L R	356
SsCS	A M N G L A G P L H G L A N Q E V L V W L T Q L Q K E V G K D V S D E K L R D Y I W N T L N S G R V V P G Y G H A V L R	351
HsCS	A M N G L A G P L H G L A N Q E V L V W L T Q L Q K E V G K D V S D E K L R D Y I W N T L N S G R V V P G Y G H A V L R	351
PcCS	K T D P R Y T A Q R E F A L K H L P N D P M F K L V G Q Q I Y N I V P G I L L E A G K A K N P W P N V D A H S G V L L T H	411
NcCS	K T D P R Y S A Q R K F A Q E H L P E D P M F Q L V S Q V Y K I A P K L I D R A V G A P I E R P K S Y S T D K W I E I C K K L -	416
SsCS	K T D P R Y T C Q R E F A L K H L P H D P M F K L V A Q L Y K I V P N V L L E Q G K A K N P W P N V D A H S G V L L Q Y	411
HsCS	K T D P R Y T C Q R E F A L K H L P N D P M F K L V A Q L Y K I V P N V L L E Q G K A K N P W P N V D A H S G V L L Q Y	411
PcCS	Y G L T Q M N F Y T V L F G V S R A F G V A A Q Q L I W D R A L G A P L E R P K S Y S T G A I E K M F K D K N -	465
NcCS	Y G L T E A N Y Y T V L F G V S R A I G V L P Q L I I D R A V G A P I E R P K S Y S T D K W I E I C K K L -	469
SsCS	Y G M T E M N Y Y T V L F G V S R A L G V L A Q L I W S R A L G F P L E R P K S M S T D G L I K L V D S K - -	464
HsCS	Y G M T E M N Y Y T V L F G V S R A L G V L A Q L I W S R A L G F P L E R P K S M S T E G L M K F V D S K S G	466

Figure S1 Amino acid sequence alignment of CS isozymes and PcCS. Sequences of PcCS from *P. chrysosporium* (Protein ID; 6342608), NcCS from *Neurospora crassa* (Protein ID; P34085), SsCS from *Sus scrofa domesticus* (Protein ID; A0A0B8S099), and HsCS from *Homo sapiens* (Protein ID; O75390) are shown. The protein IDs of *Neurospora crassa*, *Sus scrofa domesticus*, and *Homo sapiens* were obtained from UniProt Knowledgebase (<http://beta.uniprot.org>) and the ID of *P. chrysosporium* was obtained from JGI Genome Portal (<http://genome.jgi.doe.gov>). The four His residues on the protein surface at the active site is boxed in red. Heme-responsive-motifs (HRM) conserved in fungal CS are bold and shaded in gray. The sequences were aligned using Clustal Omega program (<http://www.clustal.org/omega/>).

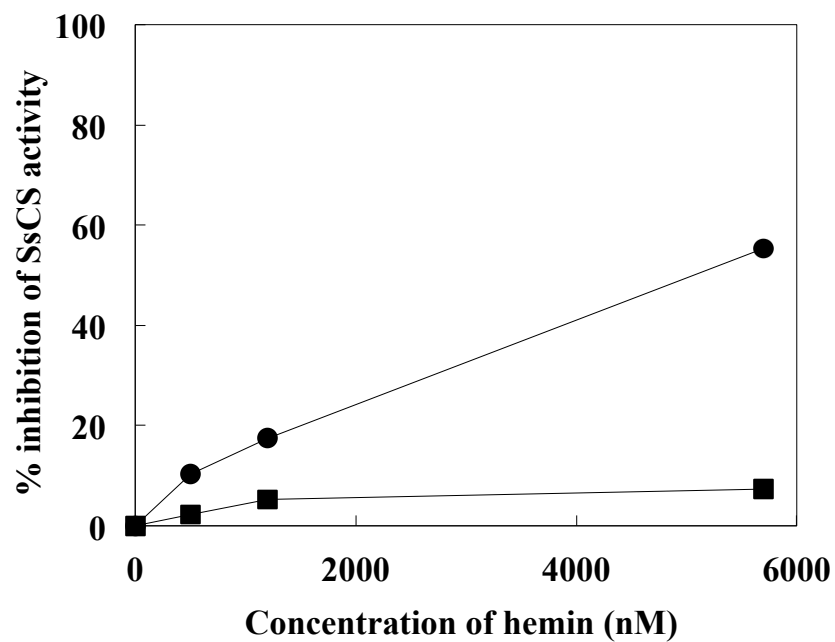


Figure S2 Inhibitory effect of hemin on SsCS reaction. Reaction mixtures containing 1.5 nM SsCS, 40 mM Tris/HCl (pH 8.5) and 0, 0.5, 1.2 and 5.7 μ M hemin were incubated for 0 (■) or 60 min (●) at 4°C, then 0.2 mM OAA, 0.2 mM AcCoA, and DTNB were added.