

Publications

- Scharf DH, Chankhamjon P, Scherlach K, Dworschak J, Heinekamp T, Roth M, Brakhage AA, Hertweck C (2021) N-heterocyclization in gliotoxin biosynthesis is catalyzed by a distinct cytochrome P450 monooxygenase. *Chembiochem* 22(2), 336-339.
- Scherlach K, Kuttenlochner W, Scharf DH, Brakhage AA, Hertweck C, Groll M, Huber EM (2021) Structural and mechanistic insights into C-S bond formation in gliotoxin. *Angew Chem Int Ed* 60(25), 14188-14194.
- Scharf DH, Dworschak JD, Chankhamjon P, Scherlach K, Heinekamp T, Brakhage AA, Hertweck C (2018) Reconstitution of enzymatic carbon-sulfur bond formation reveals detoxification-like strategy in fungal toxin biosynthesis. *ACS Chem Biol* 13(9), 2508-2512.
- Dunbar KL, Scharf DH, Litomska A, Hertweck C (2017) Enzymatic Carbon-Sulfur Bond Formation in Natural Product Biosynthesis. *Chem Rev* 117(8), 5521-5577. (Review)
- Johns A†, Scharf DH†, Gsaller F, Schmidt H, Heinekamp T, Straßburger M, Oliver JD, Birch M, Beckmann N, Dobb KS, Gilsean J, Rash B, Bignell E, Brakhage AA*, Bromley MJ* †shared first authors, *corresponding authors (2017) A nonredundant phosphopantetheinyl transferase, PptA, is a novel antifungal target that directs secondary metabolite, siderophore, and lysine biosynthesis in *Aspergillus fumigatus* and is critical for pathogenicity. *MBio* 8(4), e01504-e01516.
- Marion A, Groll M, Scharf DH, Scherlach K, Glaser M, Sievers H, Schuster M, Hertweck C, Brakhage AA, Antes I, Huber EM (2017) Gliotoxin Biosynthesis: Structure, Mechanism, and Metal Promiscuity of Carboxypeptidase GliJ. *ACS Chem Biol* 12(7), 1874-1882.
- Scharf DH, Brakhage AA, Mukherjee PK (2016) Gliotoxin- bane or boon? *Environ Microbiol* 18(4), 1096-1109. (Review)
- Horn F, Habel A, Scharf DH, Dworschak J, Brakhage AA, Guthke R, Hertweck C, Linde J (2015) Draft Genome Sequence and Gene Annotation of the Entomopathogenic Fungus *Verticillium hemipterigenum*. *Genome Announc* 3(1), e01439-14.
- Kalb D, Heinekamp T, Lackner G, Scharf DH, Dahse HM, Brakhage AA, Hoffmeister D (2015) Genetic engineering activates biosynthesis of aromatic fumaric acid amides in the human pathogen *Aspergillus fumigatus*. *Appl Environ Microbiol* 81, 1594-1600.
- Bacher P, Kniemeyer O, Teutschbein T, Thoen M, Vödisch M, Wartenberg D, Scharf DH, Koester-Eiserfunke N, Schütte M, Dübel S, Assenmacher M, Brakhage AA, Scheffold A (2014) Identification of immunogenic antigens from *Aspergillus fumigatus* by direct multi-parameter characterization of specific conventional and regulatory CD4+ T cells. *Journal of Immunology* 197(7), 3332-3343.
- Scharf DH, Groll M, Habel A, Heinekamp T, Hertweck C, Brakhage AA, Huber EM (2014) Flavoenzyme-catalyzed formation of disulfide bonds in natural products. *Angew Chem Int Ed* 53(8), 2221-2224.
- Scharf DH, Habel A, Heinekamp T, Brakhage AA, Hertweck C (2014) Opposed effects of enzymatic gliotoxin N- and S-methylations. *J Am Chem Soc* 136(33), 11674-11679.

Scharf DH, Heinekamp T, Brakhage AA (2014) Human and plant fungal pathogens: the role of secondary metabolites. *PLOS Pathog* 10(1), e1003859. (Review)

Knop K, Pavlov GM, Rudolph T, Martin K, Pretzel D, Jahn BO, Scharf DH, Brakhage AA, Makarov V, Möllmann U, Schacher FH, Schubert US (2013) Amphiphilic star-shaped block copolymers as unimolecular drug delivery systems: Investigations using a novel fungicide. *Soft Matter* 3(9), 715-726.

Knop K, Pretzel D, Urbanek A, Rudolph T, Scharf DH, Schallon A, Wagner M, Schubert S, Kiehntopf M, Brakhage AA, Schacher FH, Schubert US (2013) Star-shaped drug carriers for doxorubicin with POEGMA and POEtOxMA brush-like shells: A structural, physical, and biological comparison. *Biomacromolecules* 14(8), 2536-2548.

Scharf DH, Brakhage AA (2013) Engineering fungal secondary metabolism: A roadmap to novel compounds. *J Biotechnol* 163(2), 179-183. (Review)

Scharf DH, Chankhamjon P, Scherlach K, Heinekamp T, Willing K, Brakhage AA, Hertweck C (2013) Epidithiodiketopiperazine biosynthesis: A four-enzyme cascade converts glutathione conjugates into transannular disulfide bridges. *Angew Chem Int Ed* 52(42), 11092-11095.

Huber EM, Scharf DH, Hortschansky P, Groll M, Brakhage AA (2012) DNA minor groove sensing and widening by the CCAAT-binding complex. *Structure* 20(10), 1757-1768.

Scharf DH, Chankhamjon P, Scherlach K, Heinekamp T, Roth M, Brakhage AA, Hertweck C (2012) Epidithiol formation by an unprecedented twin carbon-sulfur lyase in the gliotoxin pathway. *Angew Chem Int Ed* 51(40), 10064-10068.

Scharf DH, Heinekamp T, Remme N, Hortschansky P, Brakhage AA, Hertweck C (2012) Biosynthesis and function of gliotoxin in *Aspergillus fumigatus*. *Appl Microbiol Biotechnol* 93(2), 467-472.

Scharf DH, Remme N, Habel A, Chankhamjon P, Scherlach K, Heinekamp T, Hortschansky P, Brakhage AA, Hertweck C (2011) A dedicated glutathione S-transferase mediates carbon-sulfur bond formation in gliotoxin biosynthesis. *J Am Chem Soc* 133(32), 12322-12325.

Scharf DH, Remme N, Heinekamp T, Hortschansky P, Brakhage AA, Hertweck C (2010) Transannular disulfide formation in gliotoxin biosynthesis and its role in self-resistance of the human pathogen *Aspergillus fumigatus*. *J Am Chem Soc* 132(29), 10136-10141.

Thön M, Al Abdallah Q, Hortschansky P, Scharf DH, Eisendle M, Haas H, Brakhage AA (2010) The CCAAT-binding complex coordinates the oxidative stress response in eukaryotes. *Nucleic Acids Res* 38(4), 1098-1113.

Brakhage AA, Thön M, Spröte P, Scharf DH, Al-Abdallah Q, Wolke SM, Hortschansky P (2009) Aspects on evolution of fungal beta-lactam biosynthesis gene clusters and recruitment of trans-acting factors. *Phytochemistry* 70(15-16), 1801-1811.

Spröte P, Hynes MJ, Hortschansky P, Shelest E, Scharf DH, Wolke SM, Brakhage AA (2008) Identification of the novel penicillin biosynthesis gene *aatB* of *Aspergillus nidulans* and its putative evolutionary relationship to this fungal secondary metabolism gene cluster. *Mol Microbiol* 70(2), 445-461.

*equal contribution #corresponding author