

Curriculum Vitae

Dr. rer. nat. Daniel Petras

Functional Metabolomics Lab

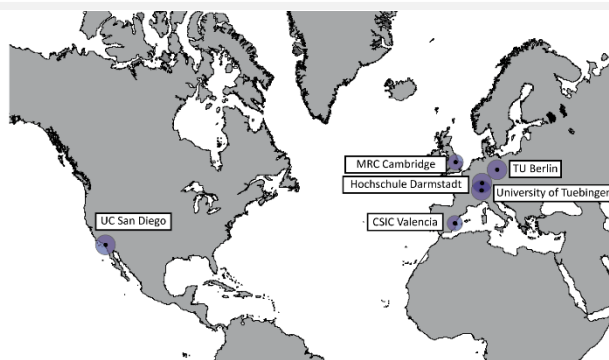
CMFI Cluster of Excellence

University of Tuebingen

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Research Interests

Analytical Chemistry, Natural Products, Chemical Ecology, Microbial Ecology, Environmental Chemistry

Education

- 02/2016 PhD in **Biochemistry (summa cum laude)**
Technische Universität Berlin, Germany
- 03/2012 Diploma (MS) in **Biotechnology**
Hochschule Darmstadt, Germany and Universidad Politécnica de Valencia, Spain
- 07/2005 High School Diploma and apprenticeship as Laboratory Assistant (**Chemistry**)
BBS Naturwissenschaften, Ludwigshafen, Germany

Research Experience

- Since 2021 **Junior Research Group Leader**
University of Tuebingen, Germany
- 2016-2021 **Postdoctoral Research Associate**
University of California, San Diego, USA (Dorrestein, Prather and Aluwihare Lab)
- 2012-2016 **PhD Student**
Technische Universität Berlin, Germany (Süssmuth Lab)
- 2008-2012 **Undergraduate Research**
Institute of Biomedicine, CSIC, Valencia, Spain (Calvete Lab, 18 months)
Hochschule Darmstadt, Germany (Hüttenhain Lab, 2 days/week, 3 years)
Medical Research Council HNR., Cambridge, UK (Volmer Lab, 6 months)
- 2005-2008 **Technical Laboratory Assistant**
Graffinity Pharmaceuticals GmbH, Heidelberg, Germany

Current Research Projects

- Since 2020 **Functional Metabolomics of microbial communities**
- Since 2016 **Chemical ecology of host-microbe and microbe-microbe interactions**
- Since 2012 **Discovery, structure elucidation and biosynthesis of antimicrobial natural products**
- Since 2010 **Proteomics analysis of venom toxins and venom-antivenom interaction**

Field Studies

- 2017-2020 **Study of Anthropogenic Influences along the San Diego Coast, USA (20+ weeks)**
Scripps Institution of Oceanography, University of California, San Diego, USA
- 2018 **Study of Stromatolites Biogeochemistry in Port Elizabeth, South Africa (3 weeks)**
In cooperation with Rhodes University, Grahamstown, South Africa
- 2017 **Coral Reef Research at the Moorea LTER side (3 weeks)**
In cooperation with UC Santa Barbara LTER station, Moorea, French Polynesia
- 2017 **Research cruise California Current Ecosystem LTER side, R/V Roger Revelle (5 weeks)**
Scripps Institution of Oceanography, University of California, San Diego, USA

Mentoring of Students

2020-2021	Albert Hernandez (Undergraduate researchers, 12 month)
2019-2021	James Garrafa-Luna (Undergraduate researchers, including CAMP summer program, 12 month)
2019	Zachary Quinlan (PhD rotation student, 3 months)
2019	Hannah Karp (SURP summer undergrad researcher, 2 months)
2019	Stephania Oritz (STARS summer undergrad researcher, 2 months)
2018	Carsten Simon (Visiting PhD student, 3 months)
2018	Robin Schmidt (Visiting PhD student, 3 months)
2017	Federica Agostini (Visiting PhD student, 4 months)
2016-2017	Garrett Lepine (Undergrad researcher, 12 months)
2015	Maurits Brandt (Master thesis, 6 months)
2014-2015	Paul Heiss (Diploma thesis, 12 months)
2014-2016	Tam Dang (Research internship; Master thesis, 18 months),
2013-2015	Benjamin Hempel (Bachelor thesis; Research internship; Master thesis, 24 months)

Scientific Outreach

2018-2019	Volunteering at Pier Walk, Science on the Beach and CAICE outreach events Monthly outreach event at the SIO pier with tours and presentations for the public. Scripps Institution of Oceanography, University of California, San Diego, USA
2015-2016	Volunteering at Long Night of the Sciences (Lange Nacht der Wissenschaft) Annual Event where Scientific Institutes in Berlin open their doors for the public. Technische Universität Berlin, Germany

Memberships






Since 2018	American Society of Mass Spectrometry (ASMS)
Since 2017	American Association for the Advancement of Science (AAAS)
Since 2016	Editorial Board Member, Journal of Proteomics
Since 2015	United States Human Proteome Organization (US HUPO)
Since 2013	German Association on Proteome Research (DGPF)
Since 2013	German Society for Mass Spectrometry (DGMS)
Since 2012	German Chemical Society (GDCh)

Grants and Awards

11.	US National Science Foundation (RAPID grant, 2020, Co-I, \$200K)
10.	US Department of Energy (ARPA-E grant, sub-award, 2019-2021, Co-I, \$150K)
9.	UC San Diego Postdoctoral Research Award (2017)
8.	German Research Foundation (DFG) Postdoctoral Research Grant (2017-2019, PI, \$100K)
7.	Travel Grant of the US-HUPO for the US-HUPO Annual Conference in Tempe (2015, \$500)
6.	Travel Grant of the GDCh for the US-HUPO Annual Conference in Tempe (2015, \$400)
5.	Travel Grant of the DGPF for the HUPO Annual Conference in Madrid (2014, \$500)
4.	Travel Grant of the DGMS for the IMSC in Geneva (2014, \$600)
3.	Travel Grant of VAAM for the 1 st European Conference on Natural Products in Frankfurt (2013, \$200)
2.	DAAD Erasmus Placement at C.S.I.C. Institute for Biomedicine Valencia (2011-2012, \$6K)
1.	DAAD Erasmus at Universidad Politécnic de Valencia (2009-2010, \$4K)

Publications

Key Publications

Functional Metabolomics:  Environmental Metabolomics:  Mass Spectrometry Tools: 
 Natural Products and Chemical Ecology:  Venom Proteomics: 

Articles under Peer-Review


(*denotes equal contribution; #denotes corresponding author)




56. **Chemical Proportionality within Molecular Networks**
 (Postdoc)  Petras D^{*,*}, Caraballo-Rodríguez AM^{*}, Jarmusch AK, Molina-Santiago C, Gauglitz GM, Gentry EC, Belda-Ferre P, Romero D, Tsunoda SM, Dorrestein PC, Wang M[#]
 Under review (Analytical Chemistry), preprint: doi.org/10.26434/chemrxiv.14396105.v1
55. **GNPS Dashboard: Collaborative Analysis of Mass Spectrometry Data in the Web Browser**
 (Postdoc)  Petras D, Phelan VV, Acharya DD, Allen AE, Aron AT, Bandeira N, Belle-Oudry D, Boecker S, Bowen BP, Cummings DA, Deutsch JM, Fahy E, Garg N, Gregor R, Handelsman J, Navarro-Hoyos M, Jarmusch AK, Jarmusch SA, Louie KB, Maloney KN, Marty MT, Meijler MM, Mizrahi I, Molina-Santiago C, Neve RL, Northen TR, Panitchpakdi M, Pullman B, Puri AW, Schmid R, Subramaniam S, Thukral M, Vasquez-Castro F, Dorrestein PC, Wang M[#]
 Under review (Nature Methods), preprint: biorxiv.org/content/10.1101/2021.04.05.438475v1
54. **Chemical interplay and complementary adaptive strategies toggle bacterial antagonism and co-existence**
 (Postdoc) Molina-Santiago C, Vela-Corcía D, Petras D, Diaz-Martinez L, Perez-Lorente A, Sopena-Torres S, Pearson JR, Caraballo-Rodríguez AM, Dorrestein PC, De Vicente A, Romero D[#]
 Under review (Cell Reports), preprint: biorxiv.org/content/10.1101/2021.01.11.426172v1
53. **A mammalian commensal of the oropharyngeal cavity produces antibiotic and antiviral valinomycinin vivo**
 (Postdoc) Gaiser R, Ferrando M, Oddo A, Pereira M, Guan X, Molist F, Fernandez-Gutierrez M, Fredriksen S, Bryant C, Petras D, Dorrestein P, Boeren S, Medema M, Hill C, Kleerebezem M, Van Baarlen P, Wells J[#]
 Under review (Nature Communications), preprint: 10.21203/rs.3.rs-126949/v1
52. **The ant fungus garden acts as an external digestive system**
 (Postdoc) Caraballo-Rodríguez AM, Puckett SP, Kyle KE, Petras D, Da Silva R, Nothias LF, Ernst M, Van der Hooft JJJ, Tripathi A, Wang M, Balunas MJ, Klassen JL[#], Dorrestein PC[#]
 Under review (2nd round, Scientific Reports), preprint: biorxiv.org/content/10.1101/2020.11.18.389361v1
51. **Native Electrospray-based Metabolomics Enables the Detection of Metal-binding Compounds**
 (Postdoc)  Aron A, ^{*} Petras D^{*}, Schmid R, Gauglitz JM, Büttel I, Antelo L, Zhi H, Saak CC, Malarney KP, Thines E, Dutton RJ, Raffatellu M, Dorrestein PC[#]
 Under review (3rd round, Nature Chemistry), preprint: biorxiv.org/content/10.1101/824888v1
50. **Siderophore-mediated zinc acquisition enhances enterobacterial colonization of the inflamed gut.**
 (Postdoc) Zhi H, Behnsen J, Aron A, Subramanian V, Liu J, Gerner R, Petras D, Green K, Price S, Camacho J, Hillman H, Tjokrosurjo J, Montaldo N, Hoover E, Treacy-Abarca S, Gilston B, Skaar E, Chazin W, Garneau-Tsodikova S, Lawrenz M, Perry R, Nuccio S, Dorrestein P, Raffatellu M[#]
 Under revision (major, Nature Communications), preprint: biorxiv.org/content/10.1101/2020.07.20.212498v1



Peer-Reviewed Articles


(*denotes equal contribution; #denotes corresponding author)

2021

49. **Ion Identity Molecular Networking in the GNPS Environment**
 (Postdoc)  Schmid R^{*}, Petras D^{*}, Nothias L^{*}, Wang M, Aron AT, Jagels A, Tsugawa H, Rainer J, Garcia-Aloy M, Dührkop K, Korf A, Pluskal T, Kameník Z, Jarmusch AK, Caraballo-Rodríguez AM, Weldon K, Nothias-Esposito M, Aksenov AA, Bauermeister A, Albarracin Orio A, Grundmann CO, Vargas F, Koester I, Gauglitz JM, Gentry EC, Kalinina SA, Pendergraft MA, Panitchpakdi MW, Tehan R, Le Gouellec A, Aleti G, Mannocho Russo H, Arndt B, Hübner F, Hayen H, Zhi H, Raffatellu M, Prather KA, Aluwihare LI, Böcker S, McPhail KL, Humpf H, Karst U, Dorrestein PC[#]
 Nature Communications, 2021, accepted, preprint: biorxiv.org/content/10.1101/2020.05.11.088948v1

- 48.** **Three-dimensional molecular cartography of the Caribbean reef-building coral *Orbicella faveolata***
(Postdoc) Little M[#], George EE, Arts MGI, Shivak J, Huckeba J, Benler S, Quinlan ZA, Boscaro V, Mueller B, Cobián Güemes AGI, Rojas MI, White B, **Petras D**, Silveira CB, Haas AF, Wegley Kelly L, Vermeij M, Quinn RA, Keeling PJ, Dorrestein PC, Rohwer F, Roach TNF
Frontiers in Marine Science, 2021, 8, 135
- 47.** **A community resource for paired genomic and metabolomic data mining**
(Postdoc) Schorn MA, Verhoeven S, Ridder L, Huber F, Acharya DD, Aksenov A, Aleti G, Amiri Moghaddam J, Aron A, Aziz S, Bauermeister A, Bauman K, Baunach M, Beemelmans C, Beman M, Berlanga-Clavero MV, Blacutt A, Bode H, Boullie A, Brejnrod A, Bugni TS, Calteau A, Cao L, Carrion VJ, Castelo-Branco R, Chanana S, Chase AB, Chevrette MG, Costa-Lotufo L, Crawford JM, Crüsemann M, Currie C, Cuypers B, Dang T, de Rond T, Demko AM, Dittmann E, Dorrestein PC, Du C, Drozd C, Dujardin J, Duncan KR, Dutton RJ, Edlund A, Fewer DP, Garg N, Gauglitz JM, Gentry E, Gerwick L, Glukhov E, Gross H, Gugger M, Guillén Matus DG, Helfrich EJM, Hempel B, Huber F, Hur J, Iorio M, Jensen PR, Kang KB, Kaysser L, Kelleher N, Kim CS, Koester I, König GM, Leao T, Lee SR, Lee Y, Li X, Little J, Metcalf WW, Maloney KN, Männle D, Martin H. C, McAvoy AC, Medema MH, Mohimani H, Molina-Santiago C, Moore BS, Mullowney MW, Muskat M, Nothias LF, O'Neill E, Parkinson EI, **Petras D**, Piel J, Pierce EC, Pires K, Reher R, Ridder L, Rogers S, Romero D, Roper MC, Rust M, Saad H, Saenz C, Sanchez LM, Schorn MA, Sørensen SJ, Sosio M, uessmuth R, Sweeney D, Tahlan K, Tobias N, Trindade-Silva AE, van der Hooft JJJ, van Wezel GP, Verhoeven S, Wang M, Weldon K, Zhang F, Ziemert N, Duncan K, Crüsemann M, Rogers S, Dorrestein PC[#], Medema MH[#], van der Hooft JJJ[#]
Nature Chemical Biology, 2021, 10.1038/s41589-020-00724-z
- 46.** **Convergent Evolution of Pain-Inducing Defensive Venom Components in Spitting Cobras**
(Postdoc)  Kazandjian TD*, **Petras D***, Robinson SD*, van Thiel J, Greene HW, Ar buckle K, Barlow A, Carter DA, Wouters RM, Whiteley G, Wagstaff SC, Arias AS, Albulescu L-O, von Plettenberg Laing A, Hall C, Heap A, Penrhyn-Lowe S, McCabe CV, Ainsworth S, da Silva RR, Dorrestein PC, Richardson MK, Gutiérrez JM, Calvete JJ, Harrison RA, Vetter I, Undheim EAB, Wüster W, Casewell NR[#]
Science, 2021, 6527, 386-390
- 45.** **Non-targeted tandem mass spectrometry enables the visualization of organic matter chemotype shifts in coastal seawater**
(Postdoc)  **Petras D**[#], Minich JJ, Cancelada L, Torres R, Kunselman E, Wang M, White ME, Allen EE, Prather K, Aluwihare LI, Dorrestein PC
Chemosphere, 2021, doi.org/10.1016/j.chemosphere.2020.129450
- 2020**
- 44.** **Organic matter composition at Ocean Station Papa affects its bioavailability, bacterioplankton growth efficiency and the responding taxa**
(Postdoc) Stephens BM, Opalk K, **Petras D**, Liu S, Comstock J, Aluwihare LI, Hansell DA, Carlson CA[#]
Frontiers in Marine Science, 2020, 10.3389/fmars.2020.590273
- 43.** **Systematic classification of unknown metabolites using high-resolution fragmentation mass spectra**
(Postdoc) Dührkop K, Nothias LF, Fleischauer M, Reher R, Ludwig M, Hoffmann MA, **Petras D**, Gerwick WH, Rousu J, Dorrestein PC, Böcker S[#]
Nature Biotechnology, 2020, doi.org/10.1038/s41587-020-0740-8
- 42.** **Multimiomics Analysis Provides Insight into the Laboratory Evolution of *Escherichia coli* toward the Metabolic Usage of Fluorinated Indoles**
(Postdoc) Agostini F, Sinn L, **Petras D**, Schipp CJ, Kubyshkin V, Berger AA, Dorrestein PC, Rappsilber J, Budisa N[#], Koks B[#]
ACS Central Science, 2020, doi.org/10.1021/acscentsci.0c00679
- 41.** **Fungal–bacterial interaction selects for quorum sensing mutants with increased production of natural antifungal compounds**
(Postdoc)  Albarracín Orió AG, **Petras D**, Tobares RA, Aksenov AA, Wang M, Juncosa F, Sayago P, Moyano AJ, Dorrestein PC[#], Smania AM[#]
Communications Biology, 2020, 670

- 40.** **Auto-deconvolution and molecular networking of gas chromatography–mass spectrometry data**
(Postdoc)
Aksenov A, Laponogov I, Zhang Z, Doran S, Belluomo I, Veselkov D, Bittremieux W, Nothias-Esposito LF, Nothias M, Dorrestein KN, Maloney BB, Misra AV, Melnik KL, Jones K, Panitchpakdi M, Ernst M, Gonzalez JJ, Van der Hooft M, Carazzone C, Amézquita A, Callewaert C, Morton J, Quinn RA, Bouslimani A, Albarracin-Orio A, **Petras D**, Smania AM, Zink SP, Couvillion MC, Burnet CD, Nicora E, Artaev TO, Metz V, Humston-Fulmer E, Gregor R, Mizrahi MM, Meijler I, Eyal S, Anderson B, Lugan RJ, Dutton R, Guitton PL, Boulch Y, Prevost S, Poirier A, Dervilly G, Fait BL, Bizec A, Sikron N, Song C, Gashu K, Coras R, Guma M, Manasson J, Alseekh JU, Scher DK, Barupal S, Fernie A, Mirnezami AR, Fernie R, Vasiliou V, Schmid R, Knight R, Borisov LN, Kulikova R, Wang M, Hanna G, Dorrestein PC#, Veselkov K#
Nature Biotechnology, 2020, <https://doi.org/10.1038/s41587-020-0700-3>
- 39.** **Feature-Based Molecular Networking in the GNPS Analysis Environment**
(Postdoc)
 Nothias LF*, **Petras D***, Schmid R*, Dührkop K, Rainer J, Sarvepalli A, Protsyuk I, Ernst M, Tsugawa H, Aicheler F, Aksenov A, Alka O, Allard P, Cachet X, Barsch A, Caraballo-Rodríguez AM, Da Silva RR, Dang T, Nothias-Esposito M, Garg N, Gauglitz JM, Isaac G, Jarmusch AK, Kameník Z, Kang KB, Kessler N, Koester I, Le Gouellec A, Ludwig M, Martin C, McCall L, McSayles J, Meyer SW, Mohimani H, Morsy M, Moyne O, Neumann S, Neuweger H, Paolini J, Phelan VV, Pluskal T, Rogers S, Shrestha B, van der Hoft JJ, Vargas F, Weldon KC, Witting M, Yang H, Zhang Z, Zubeil F, Kohlbacher O, Böcker S, Alexandrov T, Bandeira N, Wang M#, Dorrestein PC#,
Nature Methods, 2020, 17, 905–908
- 38.** **ZODIAC: database-independent molecular formula annotation using Gibbs sampling reveals unknown small molecules**
(Postdoc)
Ludwig M, Nothias LF, Dührkop K, Koester I, Fleischauer M, Hoffmann MA, **Petras D**, Vargas F, Morsy M, Aluwihare L, Dorrestein P, Böcker S#
Nature Machine Intelligence, 2020, 2, 629–64
- 37.** **Repository-scale Co- and Re-analysis of Tandem Mass Spectrometry Data**
(Postdoc)
Jarmusch AK, Wang M, Aceves CM, Advani RS, Aguire S, Aksenov AA, Aleti G, Aron AT, Bauermeister A, Bolleddu S, Bouslimani A, Caraballo-Rodríguez AM, Chaar R, Coras R, Elijah EO, Ernst M, Gauglitz JM, Gentry EC, Husband M, Jarmusch SA, Jones II KL, Kamenik Z, Gouellec AL, McCall L, McPhail KL, Meehan MJ, Melnik AV, Menezes RC, Montoya-Giraldo YA, Nguyen NH, Nothias LF, Nothias-Esposito M, Panitchpakdi M, **Petras D**, Quinn R, Sikora N, van der Hooft JJJ, Vargas F, Vrbanac A, Weldon K, Knight R, Bandeira N, Dorrestein PC#
Nature Methods, 2020, 17, 901–904
- 36.** **Reproducible Molecular Networking of Untargeted Mass Spectrometry Data Using GNPS**
(Postdoc)
Aron AT, Gentry EC, McPhail KL, Nothias LF, Nothias-Esposito M, Bouslimani A, **Petras D**, Sikora N, Vargas F, van der Hooft JJJ, Ernst M, Kang KB, Aceves CM, Caraballo-Rodríguez AM, Koester I, Weldon KC, Bertrand S, Roullier C, Sun K, Tehan RM, Boya CA, Martin C, Gutiérrez M, Moreno Ulloa A, Tejada Mora JA, Mojica-Flores R, Lakey-Beitia J, Vásquez-Chaves V, Zhang Y, Calderon AI, Taylor N, Keyzers RA, Tugizimana F, Ndlovu N, Aksenov AA, Jarmusch A, Schmid R, Truman AW, Bandeira N, Wang M, Dorrestein PC#
Nature Protocols, 2020, 15, 1954–1991
- 35.** **Mass spectrometry searches using MASST**
(Postdoc)
Wang M, Jarmusch AK, Vargas F, Aksenov AA, Gauglitz JM, Weldon K, **Petras D**, Da Silva R, Quinn R, Melnik AV, Van der Hooft JJ, Caraballo-Rodríguez AM, Nothias LF, Aceves CM, Panitchpakdi M, Brown E, Di Ottavio F, Sikora N, Elijah EO, Labarta-Bajo L, Gentry EC, Shalpour S, Kyle KE, Puckett SP, Watrous JD, Carpenter CS, Bouslimani A, Ernst M, Swafford AD, Zúñiga EI, Balunas MJ, Klassen JL, Loomba R, Knight R, Bandeira N, Dorrestein PC#
Nature Biotechnology, 2020, 38, 23–26.
- 2019**
- 34.** **Solenodon genome reveals convergent evolution of venom in eulipotyphlan mammals**
(PhD)
 Casewell NR#, **Petras D**, Card DC, Suranse V, Mychajliw AM, Richards D, Koludarov I, Albulescu L-O, Slagboom J, Hempel B-F, Ngum NM, Kennerley RJ, Brocca JL, Whiteley G, Harrison RA, Bolton FMS, Debono J, Vonk FJ, Alföldi J, Johnson J, Karlsson EK, Lindblad-Toh K, Mellor IR, Süßmuth RD, Fry BG, Kuruppu S, Hodgson WC, Kool J, Castoe TA, Barnes I, Sunagar K, Undheim EA, Turvey ST
Proceedings of the National Academy of Sciences, 2019, 116, 25745–25755
- 33.** **The emerging field of venom-microbiomics for exploring venom as a microenvironment, and the corresponding Initiative for Venom Associated Microbes and Parasites (iVAMP)**
(Postdoc)
Ul-Hasan S, Rodríguez-Román E, Reitzel AM, Adams RMM, Herzig V, Trim SA, Saviola AJ, Nobile CJ, Stiers EE, Moschos SA, Keiser CN, **Petras D**, Moran Y, Colston TJ#
Toxicon: X, 2019, 100016


32.
(PhD)
 **Intact protein mass spectrometry reveals intraspecies variations in venom composition of a local population of *Vipera kaznakovi* in Northeastern Turkey**
Petras D*[#], Hempel BF*, Göçmen B, Karis M, Whiteley G, Wagstaff S, Heiss P, Casewell N, Nalbantsoy A[#], Süßmuth RD[#]
Journal of Proteomics, 2019, 199, 31-50

31.
(Postdoc)
Reproducible, interactive, scalable and extensible microbiome data science using QIIME 2
Bolyen E, Rideout JR, Dillon MR, Bokulich NA, Abnet C, Al-Ghalith GA, Alexander H, Alm EJ, Arumugam M, Asnicar F, Bai Y, Bisanz JE, Bittinger K, Brejnrod A, Brislawn CJ, Brown CT, Callahan BJ, Caraballo-Rodríguez AM, Chase J, Cope E, Da Silva R, Dorrestein PC, Douglas GM, Durall DM, Duvallet C, Edwardson CF, Ernst M, Estaki M, Fouquier J, Gauglitz JM, Gibson DL, Gonzalez A, Gorlick K, Guo J, Hillmann B, Holmes S, Holste H, Huttenhower C, Huttley G, Janssen S, Jarmusch AK, Jiang L, Kaehler B, Kang KB, Keefe CR, Keim P, Kelley ST, Knights D, Koester I, Kosciulek T, Kreps J, Langille MG, Lee J, Ley R, Liu Y, Loffler E, Lozupone C, Maher M, Marotz C, Martin B, McDonald D, McIver LJ, Melnik AV, Metcalf JL, Morgan SC, Morton J, Naimey AT, Navas-Molina JA, Nothias LF, Orchanian SB, Pearson T, Peoples SL, **Petras D**, Preuss ML, Pruesse E, Rasmussen LB, Rivers A, Robeson, II MS, Rosenthal P, Segata N, Shaffer M, Shiffer A, Sinha R, Song SJ, Spear JR, Swafford AD, Thompson LR, Torres PJ, Trinh P, Tripathi A, Turnbaugh PJ, Ul-Hasan S, van der Hooft JJ, Vargas F, Vázquez-Baeza Y, Vogtmann E, von Hippel M, Walters W, Wan Y, Wang M, Warren J, Weber KC, Williamson CH, Willis AD, Xu ZZ, Zaneveld JR, Zhang Y, Knight R, Caporaso JG[#]
Nature Biotechnology, 2019, 37, 852–857

30.
(Postdoc)
The extracellular matrix protects *Bacillus subtilis* colonies from *Pseudomonas* invasion and modulates plant colonization
Molina-Santiago C, Pearson J, Navarro-García Y, Berlanga-Clavero MV, Caraballo-Rodríguez AM, **Petras D**, García-Martín LM, Lamon G, Haberstein B, Cazorla FM, De Vicente A, Loquet A, Dorrestein PC, Romero D[#]
Nature Communications, 2019, 10, 1919

29.
(Postdoc)
Untargeted Mass Spectrometry-Based Metabolomics Approach Unveils Molecular Changes in Raw and Processed Foods and Beverages
Gauglitz JM, Aceves CM, Aksenov AA, Aleti G, Almaliti J, Bouslimani A, Brown EA, Campeau A, Caraballo-Rodríguez AM, Char R, da Silva RR, Demko AM, Di Ottavio F, Elijah E, Ernst M, Ferguson LP, Holmes X, van der Hooft JJ, Jarmusch AK, Jiang L, Kang KB, Koester I, Kwan B, Ni B, Li J, Li Y, Melnik AV, Molina-Santiago C, Oom AL, Panitchpakdi MW, **Petras D**, Quinn R, Sikora N, Spengler K, Teke B, Tripathi A, Ul-Hasan S, Vargas F, Vrbanac A, Vu AQ, Wang SC, Weldon K, Wilson K, Wozniak JM, Yoon M, Bandeira N, Dorrestein PC[#]
Food Chemistry, 2019, 302, 125290

2018

28.
(PhD)
 **The medical threat of mamba envenoming in sub-Saharan Africa revealed by genus-wide analysis of venom composition, toxicity and antivenomics profiling of available antivenoms**
Ainsworth S*, **Petras D***, Engmark M, Süßmuth RD, Whiteley G, Albulescu LO, Kazandjian TD, Wagstaff SC, Rowley P, Wüster W, Dorrestein PC, Arias AS, Gutiérrez JM, Harrison RA, Casewell NR, Calvete JJ[#]
Journal of Proteomics, 2018, 172, 173-189







27.
(Postdoc)
Transcriptomics-guided bottom-up and top-down venomomics of neonate and adult specimens of the arboreal rear-fanged Brown Treesnake, *Boiga irregularis*, from Guam
Pla D*, **Petras D***, Saviola AJ*, Modahl CM*, Sanz L, Perez A, Juarez E, Frieze S, Dorrestein PC, Mackessy SP, Calvete JJ[#]
Journal of Proteomics, 2018, 174, 71–84

26.
(Postdoc)
Tundrenone: An Atypical Secondary Metabolite from Bacteria with Highly Restricted Primary Metabolism
Puri AW*, Mevers E*, Ramadhar TR*, **Petras D**, Liu D, Piel J, Dorrestein PC, Greenberg P, Lidstrom ME, Clardy J[#]
Journal of the American Chemical Society, 2018, 140, 2002-2006

25.
(PhD)
***Aspergillus niger* is a superior expression host for the production of bioactive fungal cyclodepsipeptides**
Boecker S, Grätz S, Kerwat D, Adam L, Schirmer D, Richter L, Schütze T, **Petras D**, Süßmuth RD[#] and Meyer V[#]
Fungal Biology and Biotechnology, 2018, 5, 4

24.
(PhD)
Molecular insights into antibiotic resistance: how a binding protein traps albicidin
Rostock L, Janke R, Grätz S, Kerwat D, Von Eckardstein L, **Petras D**, Kunert M, Alingns C, Schmitt FJ, Friedrich T, Wahl M, Loll B, Mainz A, Süßmuth RD[#]
Nature Communications, 2018, 9, 3095

2017

- 23.** **High-resolution liquid chromatography tandem mass spectrometry enables large scale molecular characterization of dissolved organic matter**
 (Postdoc)  **Petras D**[#], Koester I, Da Silva RR, Stephens B, Haas AF, Nelson CE, Kelly LW, Aluwihare LI, Dorrestein PC
 Frontiers in Marine Science, 2017, published online, doi: 10.3389/fmars.2017.00405
- 22.** **Meta-mass shift chemical profiling of metabolomes from coral reefs**
 (Postdoc)  Hartmann AC, **Petras D**, Quinn RA, Protsyuk I, Archer FI, Ransome EJ, Williams GJ, Bailey B, Vermeij MJA, Alexandrov TA, Dorrestein PC, Rohwer FL[#]
 Proceedings of the National Academy of Sciences, 2017, 114, 11685-11690
- 21.** **Total synthesis and biological assessment of novel albicidins discovered by mass spectrometric networking**
 (PhD)  Von Eckardstein L*, **Petras D***, Dang T, Cociancich S, Sabri S, Grätz S, Kerwat D, Seidel M, Pesic A, Dorrestein PC, Royer M, Weston JB, Süßmuth RD[#]
 Chemistry – A European Journal, 2017, 23, 15316-15321
- 20.** **From single cells to our planet - Recent advances in using mass spectrometry for spatially resolved metabolomics**
 (Postdoc) **Petras D***, Jarmusch A*, Dorrestein PC[#]
 Current Opinion in Chemical Biology, 2017, 36, 24–31
- 19.** **Combined venom profiling and cytotoxicity screening of the Radde's mountain viper (*Montivipera raddei*) and Mount Bulgar Viper (*Montivipera bulgardaghica*) with potent cytotoxicity against human A549 lung carcinoma cells**
 (PhD) Nalbantsoy A*, Hempel BF*, **Petras D**, Heiss P, Gocmen B, Igic N, Yildiz MZ, Süßmuth RD[#]
 Toxicon, 2017, 135, 71-83
- 18.** **Protein-species quantitative venomics: looking through a crystal ball**
 (Postdoc) Calvete J[#], **Petras D**, Calderón-Celis F, Lomonte B, Ruiz Encinar J, Sanz-Medel A
 Journal of Venomous Animals and Toxins including Tropical Diseases, 2017, 23:27
- 17.** **Natural Products as Mediators of Disease**
 (Postdoc) Garg N*, Luzzatto-Knaan T, Melnik AV, Caraballo-Rodríguez AM, Floros DJ, **Petras D**, Gregor G, Dorrestein PC, Phelan VV*,[#]
 Natural Products Reports, 2017, 34, 194-219.
- 16.** **Significance estimation for large scale metabolomics annotations by spectral matching**
 (Postdoc) Scheubert K*, Hufsky F*, **Petras D**, Wang M, Nothias LF, Duehrkop K, Bandeira N, Dorrestein PC, Boecker S[#]
 Nature Communications, 2017, 8, 1494
- 15.** **Mass spectrometry based molecular 3D-cartography of plant metabolites**
 (Postdoc) Floros DJ, **Petras D**, Kapono CA, Melnik AV, Ling TJ, Knight R, Dorrestein PC[#]
 Frontiers in Plant Science, 2017, published online, doi: 10.3389/fpls.2017.00429
- 2016**
- 14.** **Mass Spectrometry-Based Visualization of Molecules Associated with Human Habitats**
 (Postdoc)  **Petras D***, Nothias L-F*, Quinn RA*, Alexandrov T, Bandeira N, Bouslimani A, Castro-Falcón G, Chen L, Dang T, Floros DJ, Hook V, Garg, N, Hoffner N, Jiang Y, Kapomo CA, Koester I, Knight R, Leber CA, Ling TJ, Luzzatto-Knaan T, McCall LI, McGrath AP, Meehan MJ, Merritt JK, Mills RH, Morton J, Podvin S, Protsyuk I, Purdy T, Satterfield K, Searles S, Shah S, Shires S, Steffen D, White M, Todoric J, Tuttle R, Wojnicz A, Sapp V, Vargas F, Yang J, Zhang C, Dorrestein PC[#]
 Analytical Chemistry, 2016, 88 (22), 10775–10784
- 13.** **Top-down venomics of the east African green mamba, *Dendroaspis angusticeps*, and the black mamba, *Dendroaspis polylepis*, highlights the complexity of their toxin arsenals**
 (PhD)  **Petras D**, Heiss P, Harrison RA, Süßmuth RD, Calvete JJ.
 Journal of Proteomics, 2016, 146, 148–164
- 12.** **The O-carbamoyltransferase Alb15 is responsible for the modification of albicidin**
 (PhD)  **Petras D**, Kerwat D, Pesic A, Hempel BF, Von Eckardstein L, Semsary S, Arasté J, Marguerettaz M, Cociancich S, Royer M, Süßmuth RD[#].
 ACS Chemical Biology, 2016, 11, 1198-1204.
- 11.** **Leader peptide-free in vitro reconstitution of microviridin biosynthesis enables design of synthetic protease-targeted libraries**
 (PhD) Reyna-González E, Schmid B, **Petras D**, Süßmuth RD, Dittmann E[#]
 Angewandte Chemie International Edition, 2016, 128, 1–5

10. **Deuterium-labeled precursor feeding reveals a new pABA-containing meroterpenoid from the mango pathogen *Xanthomonas citri* pv. *mangiferaeindicae***
 Saleh H, Petras D, Mainz A, Kerwat D, Nalbantsoy A, Erzurumlu Y, Süßmuth RD#
 Journal of Natural Products, 2016, published online, doi: 10.1021/acs.jnatprod.5b01049

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9. **Biochemical dissection of the natural diversification of microcystin provides lessons for synthetic biology of NRPS**
 Meyer S*, Kehr JC*, Mainz A, Dehm D, Petras D, Süßmuth RD, Dittmann E#
 Cell Chemical Biology, 2016, 23 (4), 462–471

8. **Mass spectrometry guided venom profiling and bioactivity screening of the Anatolian Meadow Viper, *Vipera anatolica***
 Gocmen B*, Heiss P*, Petras D, Nalbantsoy A, Süßmuth RD#
 Toxicon, 2015, 107, 163-174.

7. **The Minimum Information about a Biosynthetic Gene cluster (MIBiG) specification**
 Medema MH#, Kottmann R, Yilmaz P, Cummings M, Biggins JB, Blin K, de Bruijn I, Chooi YH, Claesen J, Coates RC, Cruz-Morales P, Duddela S, Düsterhus S, Edwards DJ, Fewer DP, Garg N, Geiger C, Gomez-Escribano JP, Greule A, Hadjithomas M, Haines AS, Helfrich EJ, Hillwig ML, Ishida K, Jones AC, Jones CS, Jungmann K, Kegler C, Kim HU, Kötter P, Krug D, Masschelein J, Melnik AV, Mantovani SM, Monroe EA, Moore M, Moss N, Nützmänn HW, Pan G, Pati A, Petras D, Reen FJ, Rosconi F, Rui Z, Tian Z, Tobias NJ, Tsunematsu Y, Wiemann P, Wyckoff E, Yan X, Yim G, Yu F, Xie Y, Aigle B, Apel AK, Balibar CJ, Balskus EP, Barona-Gómez F, Bechthold A, Bode HB, Borriss R, Brady SF, Brakhage AA, Caffrey P, Cheng YQ, Clardy J, Cox RJ, De Mot R, Donadio S, Donia MS, van der Donk WA, Dorrestein PC, Doyle S, Driessen AJ, Ehling-Schulz M, Entian KD, Fischbach MA, Gerwick L, Gerwick WH, Gross H, Gust B, Hertweck C, Höfte M, Jensen SE, Ju J, Katz L, Kaysser L, Klassen JL, Keller NP, Kormanec J, Kuipers OP, Kuzuyama T, Kyrpidis NC, Kwon HJ, Lautru S, Lavigne R, Lee CY, Lincun B, Liu X, Liu W, Luzhetskyy A, Mahmud T, Mast Y, Méndez C, Metsä-Ketelä M, Micklefield J, Mitchell DA, Moore BS, Moreira LM, Müller R, Neilan BA, Nett M, Nielsen J, O'Gara F, Oikawa H, Osbourn A, Osburne MS, Ostash B, Payne SM, Pernodet JL, Petricek M, Piel J, Ploux O, Raaijmakers JM, Salas JA, Schmitt EK, Scott B, Seipke RF, Shen B, Sherman DH, Sivonen K, Smanski MJ, Sosio M, Stegmann E, Süßmuth RD, Tahlan K, Thomas CM, Tang Y, Truman AW, Viaud M, Walton JD, Walsh CT, Weber T, van Wezel GP, Wilkinson B, Willey JM, Wohlleben W, Wright GD, Ziemert N, Zhang C, Zotchev SB, Breitling R, Takano E, Glöckner FO
 Nature Chemical Biology, 2015; 11(9):625-631.

6. **What makes *Xanthomonas albilineans* unique amongst xanthomonads?**
 Pieretti I, Pesic A, Petras D, Royer M, Süßmuth RD, Cociancich S#
 Frontiers in Plant Science. 2015, 6:289. doi:10.3389/fpls.2015.00289

5. **Venom proteomics of Indonesian king cobra, *Ophiophagus hannah*: integrating top-down and bottom-up approaches**
 Petras D#, Heiss P, Süßmuth RD and Calvete JJ#
 Journal of Proteome Research, 2015, 14 (6): 2539–2556

4. **The gyrase inhibitor albicidin consists of para-aminobenzoic acids and cyanoalanine**
 Cociancich S*, Pesic A*, Petras D*, Uhlmann S, Kretz J, Schubert V, Vieweg L, Duplan S, Marguerettaz M, Noëll J, Pieretti I, Hügelland M, Kemper S, Mainz A, Rott P, Royer M#, Süßmuth RD#
 Nature Chemical Biology, 2015, 11 (3):195-197

2009-2012

3. **Hydrolysis of Fatty Acid Esters by *Candida Antarctica* Lipase B (Novozym435) Dissolved in Anhydrous Triethylamine**
 Braner M, Zielonka S, Grzeschik J, Krah S, Lieb S, Petras D, Wagner X, Ahmed I, Hüttenhain SH#
 ChemCatChem, 2012; 12 (4), 2050–2054

2. **Snake venomomics of African spitting cobras: toxin composition and assessment of congeneric cross-reactivity of the pan-African EchiTAB-Plus-ICP antivenom by venomomics and neutralization approaches**
 Petras D, Sanz L, Segura A, Herrera M, Villalta M, Solano D, Vargas M, León G, Warrell DA, Theakston RD, Harrison RA, Durfa N, Nasidi A, Gutiérrez JM, Calvete JJ#
 Journal of Proteome Research, 2011; 10(3):1266-80

1. **Comparative high-speed profiling of carboxylic acid metabolite levels by differential isotope-coded MALDI mass spectrometry**
 Koulman A, Petras D, Narayana VK, Wang L, Volmer DA#
 Analytical Chemistry, 2009; 81 (18):7544-51

Seminars and Guest Lectures

16. **How Natural Products Shape Ecosystems: A Functional Metabolomics Approach to Understand and Utilize Microbial Communities**
Petras D
University of Tuebingen, TRR261 Colloquium (online), 2020, Tuebingen, Germany
15. **Decomplexing Dissolved Organic Matter - Linking Exo-Metabolomes to Ecosystems**
Petras D
Technical University Munich, Chemistry Department Research Seminar (online), 2020, Munich, Germany
14. **How Natural Products Shape Ecosystems - Linking Microbial Communities to Exo-Metabolome**
Petras D
University Marburg, Pharmacy Department Research Seminar (online), 2020, Marburg, Germany
13. **Decomplexing Dissolved Organic Matter - Linking Exo-Metabolomes to Ecosystems**
Petras D
Leibnitz Institute for Freshwater Ecology, Research Symposium (online), 2020, Berlin, Germany
12. **How do Small Molecules Shape Ecosystems? - Illuminating the Ocean's Community Metabolome**
Petras D
University of California Davis, ETOX Science Seminar (online), 2020, Davis, USA
11. **How do Natural Products Shape Ecosystems? - Illuminating the Ocean's Community Metabolome**
Petras D
Scripps Institution of Oceanography, University of California San Diego, 2020, San Diego, USA
10. **Decomplexing Dissolved Organic Matter: Linking Exometabolomes to Ecosystems**
Petras D
University of California Santa Barbara, Marine Science Seminar, 2020, Santa Barbara, USA
9. **The Chemistry of Marine Microbial Communities - Linking Exo-Metabolomes to Ecosystems**
Petras D
Scripps Research Institute, 2019, San Diego, USA
8. **Planetary Scale Metabolomics - Creating a Molecular Inventory of the Pacific Ocean**
Petras D
Humboldt-Universität Berlin, Chemistry Department Research Seminar, 2018, Berlin, Germany
7. **Planetary Scale Metabolomics - Creating a Molecular Inventory of the Pacific Ocean**
Petras D
Nelson Mandela University, 2018, Port Elizabeth, South Africa
6. **Planetary Scale Metabolomics - Creating a Molecular Inventory of the Pacific Ocean**
Petras D
Rhodes University, 2018, Grahamstown, South Africa
5. **Marine Environmental Metabolomics – Molecular Imaging of Dissolved Organic Matter**
Petras D
Schmidt Ocean Institute, Coral Reef Health Planning Workshop, 2018, San Diego, USA
4. **Marine Environmental Metabolomics - Spatial Imaging of a Phytoplankton Bloom in the California Current Ecosystem**
Petras D
Royal Netherlands Institute for Sea Research, 2018, Texel, The Netherlands
3. **Planetary Scale Metabolomics - Molecular Imaging of the Pacific Ocean**
Petras D
Technische Universität Berlin, 2018, Berlin, Germany
2. **Environmental Metabolomics of an Algal Bloom in the California Current Ecosystem**
Petras D
University of California San Diego, Skaggs Seminar Series, 2017, San Diego, USA
1. **Top-down venomomics – An introduction to proteoform-resolved venom profiling**
Petras D
Pre-congress, 18th World Congress of the International Society on Toxinology 2015, Oxford, UK

Conference Contributions

Oral Presentations (as presenting author)

17. **Native Metabolomics – A Functional View of Natural Products in Marine Microbial Communities**
Petras D, Aron A, Reher R, Aluwihare L, Dorrestein PC
(Selected Talk), SoCalMS meeting (online), 2020, San Diego, USA
16. **The Chemistry of Marine Microbial Communities – Linking Exometabolomes to Ecosystems**
Petras D
(Invited Talk), XIV Congreso Argentino de Microbiología General 2019, Buenos Aires, Argentina
15. **Large-Scale Top-Down Venomics - A Bird's-Eye View of Genus Wide Venom Composition**
Petras D
(Invited Talk) 20th World Congress of the International Society on Toxinology, 2019, Buenos Aires, Argentina
14. **Decomplexing Dissolved Organic Matter: Linking Exometabolomes to Ecosystems**
Petras D
(Invited Talk) Gordon Research Conferences – Chemical Oceanography, 2019, Holderness, USA
13. **Visualization of the chemical interaction of marine microbial communities**
Petras D, Koester I, Minich J, Da Silva RR, Ernst M, Stephens B, Haas AF, Nelson CE, Kelly LW, Knight R, Aluwihare LI, Dorrestein PC
(Invited Talk), Natural Product Symposia Panama, 2019, Panama City, Panama
12. **Planetary Scale Metabolomics - Molecular Imaging of the Pacific Ocean**
Petras D, Koester I, Minich J, Da Silva R, Ernst M, Stephens B, Haas AF, Nelson C, Kelly LW, Knight R, Aluwihare L, Dorrestein PC
(Invited Talk) American Association for the Advancement of Science – Pacific Conference, 2018, Pomona, USA
11. **Planetary Scale Metabolomics - Molecular Imaging of the Pacific Ocean**
Petras D, Koester I, Minich J, Da Silva R, Ernst M, Stephens B, Haas A, Nelson C, Kelly LW, Knight R, Aluwihare L, Dorrestein PC
(Selected Talk) American Society of Mass Spectrometry – Annual Conference, 2018, San Diego, USA
10. **Planetary Scale Metabolomics - Molecular Imaging of a Phytoplankton Bloom in the California Current Ecosystem**
Petras D, Stephens B, Rivera SR, Dorrestein PC, Aluwihare LI
(Selected Talk) 1st European Mass Spectrometry Conference, 2018, Saarbrücken, Germany
9. **Molecular Imaging of the Community Metabolome of a Phytoplankton Bloom in the California Current Ecosystem**
Petras D, Stephens B, Rivera SR, Dorrestein PC, Aluwihare LI
(Selected Talk) Ocean Science Meeting, 2018, Portland, USA
8. **Molecular Imaging of a Phytoplankton Bloom in the California Current Ecosystem**
Petras D, Stephens BM, Rivera SR, Ernst M, Dorrestein PC, Aluwihare LI
(Selected Talk) UC San Diego Postdoc Research Symposium, 2017, San Diego, USA
7. **Development of an high resolution LC-MS/MS workflow for the high throughput analysis of dissolved metabolites in marine environments**
Petras D, Koester I, Stephens B, Da Silva RR, Aluwihare L, Dorrestein PC
(Selected Talk) Association for the Sciences of Limnology and Oceanography, 2017, Honolulu, Hawaii, USA
6. **Top-down mass spectrometry paves the way for a proteoform resolved high-throughput analysis of snake venoms**
Petras D, Süßmuth RD, Dorrestein PC, Calvete JJ
(Invited Talk) 8th World Congress of Herpetology (WCH8), 2016, Hangzhou, China
5. **Pushing the limits - Integrating Top-down mass spectrometry into snake venomics**
Petras D, Süßmuth RD, Calvete JJ
(Selected Talk) 18th World Congress of the International Society on Toxinology, 2015, Oxford, UK
4. **The biosynthesis of albicidins**
Petras D, Hempel B, Kerwart D, Mainz A, Cociancich S, Royer M, Süßmuth RD
(selected Talk) 2nd European Conference on Natural Products, 2015, Frankfurt, Germany

3. **Next generation venomics – Integrating Top-down mass spectrometry as a fast and accurate tool for the profiling of snake venoms**
Petras D, Süßmuth RD, Calvete JJ
(Selected Talk), United States Human Proteome Organization - Annual Conference, 2015, Tempe, USA
2. **High resolution mass spectrometry of intact proteins - A precise tool for the rapid venom profiling of snakes**
Petras D
(Selected Talk), COST CM1004 Spring Meeting, 2014, Cambridge, UK
1. **Top-down venomics**
Petras D, Süßmuth RD, Calvete JJ
(Selected Talk), Human Proteome Organization - Annual Conference, 2014, Madrid, Spain

Poster Presentations (as presenting author)

7. **Non-targeted tandem-mass spectrometry enables the tracking of anthropogenic pollutants from coastal seawater to sea spray aerosol**
Petras D, Pendergraft M, Belda-Ferre P, Morris C, Mitts BA, Aron A, Minich J, Knight R, Aluwihare L, Dorrestein PC, Prather KA
Ocean Science Meeting 2020, San Diego, California, USA
6. **Spatial Metabolomics visualizes the chemical interaction between *Bacillus subtilis* and the microbial community in the corn rhizosphere**
Petras D, Minich J, Lepine GJ, Albarracin A, Knight R, Dorrestein PC
Keystone Symposium on Natural Products and Synthetic Biology, 2018, Olympic Valley, California, USA
5. **The biosynthesis of albicidin**
Petras D, Mainz A, Cociancich S, Royer M, Süßmuth RD
10th Status Seminar Chemical Biology, 2015, Frankfurt, Germany
4. **Top-down venomics - High resolution mass spectrometry as a fast and accurate tool for the profiling of snake venoms**
Petras D, Süßmuth RD, Calvete JJ
International Mass Spectrometry Conference, 2014, Geneva, Switzerland
3. **Venomic profiling of the Caucasus viper by high resolution mass spectrometry**
Petras D, Nalbantsoy A, Igci N, Gocmen B and Süßmuth RD
DGMS Annual Meeting, 2014, Frankfurt, Germany
2. **Venomic profiling of *Vipera kaznakovi* by LC-HR-MS**
Petras D, Nalbantsoy A, Igci N, Gocmen B and Süßmuth RD
Treffen der Fachgruppe FT-MS und hochauflösende Massenspektrometrie der DGMS, 2013, Heidelberg, Germany
1. **Development of a stable isotope-tag based labeling method for the relative quantification of proteins from snake venoms**
Petras D, Hüttenhain SH and Calvete JJ
17th Congress of the European Section of the International Society on Toxinology, 2011, Valencia, Spain

Teaching Portfolio**Workshops on mass spectrometry-based metabolomics and data analysis**

- 2020 GNPS LCMS Browser, (online), workshop (1h)
- 2020 ChemDir - Chemical Directionality for Longitudinal Molecular Networking, (online), workshop (2 h)
- 2020 Feature Based Molecular Networking (Español) Part 2, (online), workshop (3 h)
Recording: <https://www.youtube.com/watch?v=I90j5T8EQbw>
- 2020 Feature Based Molecular Networking (Español) Part 1, (online), workshop (3 h)
Recording: <https://www.youtube.com/watch?v=0xWMAwM8x3U>
- 2020 Classical Molecular Networking (Español), (online), workshop (3 h)
Recording: <https://www.youtube.com/watch?v=hTzZi3PtR0>
- 2020 GNPS Ion-Identity Networking, Native Metabolomics, (online), workshop (3 h)
Recording: <https://www.youtube.com/watch?v=tb7LxaeNvcw>
- 2020 Feature Based Molecular Networking – Part 2, (online), workshop (3 h)
Recording: <https://www.youtube.com/watch?v=MwdJ6mVkdJY>
- 2020 Feature Based Molecular Networking – Part 2, (online), workshop (3 h)
- 2019 Molecular Networking with MZmine and GNPS, MIT, Boston, USA, workshop (8 h)
- 2019 Natural products dereplication using tandem mass spectrometry and molecular networking with GNPS, Natural Products Symposium, Panama City, Panama, workshop (16 h)
- 2018 From Tandem Mass Spectra to Molecular Networks - An Introduction to GNPS, Rhodes University, Grahamstown, South Africa, workshop (8 h)
- 2018 Feature Based Molecular Networking, Royal Netherlands Institute for Sea Research, Texel, the Netherlands, workshop (4h)
- 2018 CCMS School - Natural Product Training, University of California, San Diego, USA, workshop (3 h)
- 2017 Metabolomics data analysis with GNPS and METASPACE, European Mass Spectrometry Conference, Saarbrücken, Germany, workshop (3 h)
- 2016-2018 Introduction to GNPS and Qiita, University of California, San Diego, USA, multiple workshops (24 h)

Lectures in mass spectrometry based metabolomics and proteomics at University of California, San Diego, USA

- 2021 Discovery of Targets by Systems Biology, SPPS 263 A, winter 2021 (online), lecture (1 h)
- 2021 Systems Wide Mass Spectrometry, SPPS268, spring quarter, two lectures (4 h)
- 2020 Introduction to Molecular Networking and GNPS, SIO262, winter quarter (online), lecture (1 h)
Recording: <https://www.youtube.com/watch?v=DlItacY4VaE>
- 2019 Environmental Chemistry, Chem173, summer quarter, two lectures (3h)
- 2018 Systems Wide Mass Spectrometry, SPPS268, spring quarter, two lectures (4 h)
- 2017 Marine Biotechnology I: Tools and Methods, fall quarter, lecture (1 h)
- 2016 Systems Wide Mass Spectrometry, SPPS268, spring quarter, two lectures (4 h)

Lectures and seminars in biological and bioanalytical chemistry at Technische Universität Berlin, Germany

- 2015 Bioanalytical Chemistry, summer semester, three lectures and seminars (9 h)
- 2015 Biological Chemistry III, winter semester, lecture and seminar (3 h)
- 2014 Bioanalytical Chemistry, summer semester, three lectures and seminars (9 h)
- 2013 Bioanalytical Chemistry, summer semester, three lectures and seminars (9 h)

Teaching assistant in practical classes in analytical chemistry and organic chemistry at Hochschule Darmstadt, Germany

- 2011 Analytical Chemistry, winter semester, practical course (30 h)
- 2009 Analytical Chemistry, winter semester, practical course (30 h)
- 2008 Organic Chemistry, winter semester, practical course (60 h)