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Education

- 2005-2009 University of Leipzig, Leipzig, Germany; Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany.
- PhD in Computer Science
 - Dissertation title: *Basic considerations for improving interoperability between ontology-based biological information systems*
 - Advisors: Prof. Dr. Heinrich Herre and Dr. Janet Kelso
- 2001-2005 University of Leipzig, Leipzig, Germany.
- Diplom (M.Sc.) in Computer Science.
 - Thesis title: *Situoid theory - an ontological approach to situation theory*
 - Advisor: Prof. Dr. Heinrich Herre

Professional experience

- 2022–now *Interim Associate Director*, Computational Bioscience Research Center, King Abdullah University of Science and Technology.
- 2020–now *Associate Professor* in Computer Science, Computer, Electrical, and Mathematical Sciences & Engineering Division, King Abdullah University of Science and Technology.
- 2014–2020 *Assistant Professor* in Computer Science, Computer, Electrical, and Mathematical Sciences & Engineering Division, King Abdullah University of Science and Technology.
- 2013-2014 *Research Fellow* in Bioinformatics, Department of Computer Science, Aberystwyth University.

- 2012-2013 *Research Associate*, Department of Physiology, Development and Neuroscience, University of Cambridge.
- 2010-2012 *Research Associate*, Department of Genetics, University of Cambridge.
- 2009-2010 *Postdoctoral Fellow*, European Bioinformatics Institute.
- 2009 *Postdoctoral researcher*, Max Planck Institute for Evolutionary Anthropology.

Researcher identifiers

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- SCOPUS: 14319077100

Honors and awards

- 2022 *Leibniz AI Fellow* Leibniz University Hanover, Germany.
- 2022 *Bye Fellow* Elected Bye Fellow of Robinson College, University of Cambridge, Lent Term 2022.
- 2016 *First prize (shared)*. Ontology Alignment Evaluation Initiative 2016: Phenotype Track.
- 2009-2010 *Postdoctoral fellowship*, European Bioinformatics Institute, European Molecular Biology Laboratory, Hinxton, UK.
- 2005-2008 *PhD fellowship*, Graduate school “Knowledge Representation”, Department of Computer Science, University of Leipzig.

AWARDS OF STUDENTS

- 2022 *Best Poster Award*, International Conference on Biomedical Ontologies (ICBO) 2022, awarded to Sarah M. Alghamdi
- 2021 *Best Poster Award*, 2nd International Middle East Genetics and Metabolic Academy (MEGMA) Symposium, awarded to Azza T. Althagafi
- 2020 *KACST Almarai National Prize* for Creative Scientific Work for Students (Ph.D. Level), awarded to Imane Boudellioua for her dissertation on machine learning methods for the prioritization of candidate causative genomic variants of rare Mendelian diseases

Professional affiliations

2006–now International Society of Computational Biology (ISCB)

Publications

Names highlighted in bold are students or postdocs directly supervised by me; the corresponding author is indicated with an asterisk.

PEER-REVIEWED JOURNAL ARTICLES

Publications at KAUST

- [1] Abdelrahman, S., Ge, R., Susapto, H. H., Liu, Y., Samkari, F., Moretti, M., Liu, X., Hoehndorf, R., Emwas, A.-H., Jaremko, M., Rawas, R. H., and Hauser*, C. A. E. “The Impact of Mechanical Cues on the Metabolomic and Transcriptomic Profiles of Human Dermal Fibroblasts Cultured in Ultrashort Self-Assembling Peptide 3D Scaffolds”. In: *ACS Nano* 17.15 (July 2023), pp. 14508–14531.
- [2] **Alghamdi, S. M.** and Hoehndorf*, R. “Improving the classification of cardinality phenotypes using collections”. In: *Journal of Biomedical Semantics* 14.1 (Aug. 2023).
- [3] Hassanain, M., Liu, Y., Hussain, W., Binowayn, A., Barakeh, D., Alsolme, E., AlSaif, F., Almasaad, G., AlSwayyed, M., Alaqel, M., Aljunidel, R., Abdelrahman, S., Hauser, C. A. E., Alqahtani, S., Hoehndorf, R., and Abedalthagafi*, M. “Genomic landscape in Saudi patients with hepatocellular carcinoma using whole-genome sequencing: a pilot study”. In: *Frontiers in Gastroenterology* 2 (Aug. 2023).
- [4] Kafkas, Ş., **Abdelhakim, M.**, Uludag, M., **Althagafi, A.**, Alghamdi, M., and Hoehndorf*, R. “Starvar: symptom-based tool for automatic ranking of variants using evidence from literature and genomes”. In: *BMC Bioinformatics* 24.1 (July 2023).
- [5] Slater*, L. T., Williams, J. A., Schofield, P. N., Russell, S., Pendleton, S. C., Karwath, A., Fanning, H., Ball, S., Hoehndorf, R., and Gkoutos, G. V. “Klarigi: Characteristic explanations for semantic biomedical data”. In: *Computers in Biology and Medicine* (Dec. 2023), p. 106425.
- [6] **Alghamdi, S.**, Schofield, P. N., and Hoehndorf*, R. “Contribution of model organism phenotypes to the computational identification of human disease genes”. In: *Disease Models & Mechanisms* 15.7 (July 2022).
- [7] **Alshahrani, M.**, Almansour, A., Alkhaldi, A., Thafar, M. A., Uludag, M., Essack, M., and Hoehndorf*, R. “Combining biomedical knowledge graphs and text to improve predictions for drug-target interactions and drug-indications”. In: *PeerJ* 10 (Apr. 2022), e13061.
- [8] **Althagafi, A.**, Alsubaie, L., Kathiresan, N., Mineta, K., Aloraini, T., Mutairi, F. A., Alfadhel, M., Gojobori, T., Alfares, A., and Hoehndorf*, R. “DeepSVP: integration of genotype and phenotype for structural variant prioritization using deep learning”. In: *Bioinformatics* 38 (6 Dec. 2022). Ed. by Lu, Z., pp. 1677–1684. IF: 6.94.

- [9] He*, Y., Yu*, H., Huffman, A., Lin, A. Y., Natale, D. A., Beverley, J., Zheng, L., Perl, Y., Wang, Z., Liu, Y., Ong, E., Wang, Y., Huang, P., Tran, L., Du, J., Shah, Z., Shah, E., Desai, R., Huang, H.-h., Tian, Y., Merrell, E., Duncan, W. D., Arabandi, S., Schriml, L. M., Zheng, J., Masci, A. M., Wang, L., Liu, H., Smali, F. Z., Hoehndorf, R., Pendlington, Z. M., Roncaglia, P., Ye, X., Xie, J., Tang, Y.-W., Yang, X., Peng, S., Zhang, L., Chen, L., Hur, J., Omenn, G. S., Athey, B., and Smith, B. “A comprehensive update on CIDO: the community-based coronavirus infectious disease ontology”. In: *Journal of Biomedical Semantics* 13.1 (Oct. 2022).
- [10] **Kulmanov, M.** and Hoehndorf*, R. “DeepGOZero: improving protein function prediction from sequence and zero-shot learning based on ontology axioms”. In: *Bioinformatics* 38.Supplement_1 (June 2022), pp. i238–i245.
- [11] Slater, L. T., Russell, S., Makepeace, S., Carberry, A., Karwath, A., Williams, J. A., Fanning, H., Ball, S., Hoehndorf, R., and Gkoutos*, G. V. “Evaluating semantic similarity methods for comparison of text-derived phenotype profiles”. In: *BMC Medical Informatics and Decision Making* 22.1 (Feb. 2022).
- [12] **Zhapa-Camacho, F., Kulmanov, M.,** and Hoehndorf, R. “mOWL: Python library for machine learning with biomedical ontologies”. In: *Bioinformatics* 39.1 (Dec. 2022). Ed. by Wren, J.
- [13] **Chen, J., Althagafi, A.,** and Hoehndorf*, R. “Predicting candidate genes from phenotypes, functions and anatomical site of expression”. In: *Bioinformatics* 37.6 (Oct. 2021), pp. 853–860.
- [14] **Hinnerichs, T.** and Hoehndorf, R. “DTI-Voodoo: machine learning over interaction networks and ontology-based background knowledge predicts drug–target interactions”. In: *Bioinformatics* 37.24 (July 2021). Ed. by Wren, J., pp. 4835–4843.
- [15] **Kulmanov, M., Zhapa-Camacho, F.,** and Hoehndorf*, R. “DeepGOWeb: fast and accurate protein function prediction on the (Semantic) Web”. In: *Nucleic Acids Research* 49.W1 (May 2021), W140–W146. IF: 16.97.
- [16] **Liu-Wei, W., Kafkas, Ş., Chen, J.,** Dimonaco, N. J., Tegnér, J., and Hoehndorf*, R. “DeepViral: prediction of novel virus–host interactions from protein sequences and infectious disease phenotypes”. In: *Bioinformatics* 37 (17 Mar. 2021), pp. 2722–2729. IF: 6.94.
- [17] Slater*, L. T., Bradlow, W., Motti, D. F., Hoehndorf, R., Ball, S., and Gkoutos, G. V. “A fast, accurate, and generalisable heuristic-based negation detection algorithm for clinical text”. In: *Computers in Biology and Medicine* 130 (Jan. 2021), p. 104216. IF: 3.43.
- [18] Slater*, L. T., Karwath, A., Williams, J. A., Russell, S., Makepeace, S., Carberry, A., Hoehndorf, R., and Gkoutos, G. V. “Towards similarity-based differential diagnostics for common diseases”. In: *Computers in Biology and Medicine* 133 (June 2021), p. 104360. IF: 4.59.

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- [23] **Kulmanov, M.** and Hoehndorf, R. “DeepGOPlus: improved protein function prediction from sequence”. In: *Bioinformatics* 36.2 (2020), pp. 422–429. IF: 6.94.
- [24] **Kulmanov, M.** and Hoehndorf*, R. “DeepPheno: Predicting single gene loss-of-function phenotypes using an ontology-aware hierarchical classifier”. In: *PLOS Computational Biology* 16.11 (Nov. 2020), pp. 1–22. IF: 4.43.
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- Yamamoto, N., Yarimizu, M., Kawamoto, S., and Takagi*, T. "BioHackathon series in 2013 and 2014: improvements of semantic interoperability in life science data and services". In: *F1000Research* 8.1677 (2019).
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- [49] **Rodriguez-Garcia, M.** and Hoehndorf*, R. “Inferring ontology graph structures using OWL reasoning”. In: *BMC Bioinformatics* 19.1 (2018), p. 7. IF: 3.17.
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- [18] Hoehndorf, R., Ngonga Ngomo, A.-C., and Kelso, J. “The application of an ontology design pattern for functional abnormalities to phenotype ontologies and the extraction of an ontology of anatomical functions”. In: *Proceedings of the The 3rd International Symposium on Languages in Biology and Medicine*. Oct. 2009.
- [19] Hoehndorf, R., Bacher, J., Backhaus, M., Gregorio, S. E., Loebe, F., Prüfer, K., Uciteli, A., Visagie, J., Herre, H., and Kelso, J. “BOWiki: An ontology-based wiki for annotation of data and integration of knowledge in biology”. In: *Proceedings of the 11th Annual Bio-Ontologies Meeting*. Ed. by Lord, P., Shah, N., Sansone, S.-A., and Cockerill, M. June 2008.
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- [22] Backhaus, M., Kelso, J., Bacher, J., Herre, H., Hoehndorf, R., Loebe, F., and Visagie, J. “BOWiki - a collaborative annotation and ontology curation framework”. In: *Proceedings of Workshop on Social and Collaborative Construction of Structured Knowledge*. May 2007.
- [23] Hoehndorf, R., Prüfer, K., Backhaus, M., Herre, H., Kelso, J., Loebe, F., and Visagie, J. “A proposal for a gene functions wiki”. In: *OTM Workshops 2006*. Ed. by Meersman, R., Tari, Z., and Herrero, P. LNCS 4277. Springer-Verlag, Nov. 2006, pp. 669–678.
- [24] Hoehndorf, R., Prüfer, K., Backhaus, M., Visagie, J., and Kelso, J. “The design of a wiki-based curation system for the Ontology of Functions”. In: *Proceedings of the Joint BioLINK and 9th Bio-Ontologies Meeting*. July 2006.

Tutorials

- 2022 *Semantic Similarity and Machine Learning with Ontologies*. AI in Biomedicine Summer School, Leibniz AI Lab, Hannover, Germany.
- 2022 *Machine Learning with Ontologies*. Semantic Web Applications & Technologies in Healthcare and Lifescience (SWAT4HCLS) (with Maxat Kulmanov, Fernando Zhapa, Sumyyah

Toonsi).

- 2019 *Semantic similarity and machine learning with ontologies*. Joint Ontology Workshops (JOWO) (with Maxat Kulmanov).
- 2019 *Machine learning with ontologies*. International Conference on Biomedical Ontologies (ICBO).
- 2018 *Ontologies in Computational Biology*. University of Cambridge, Bioinformatics Training Program (with Paul Schofield).
- 2018 *Semantic Similarity*. Aberystwyth University, Bioinformatics Course.
- 2018 *Ontologies in Computational Biology*. 26th Conference on Intelligent Systems in Molecular Biology (ISMB) (with Michel Dumontier).
- 2017 *Ontologies in Computational Biology*. 25th Conference on Intelligent Systems in Molecular Biology (ISMB) (with Michel Dumontier).
- 2016 *Bio-ontologies and their role in analyzing personal genome data*. 15th European Conference on Computational Biology (with Paul Schofield, Luke Slater, Imene Boudelloua).
- 2011 *Reasoning over biomedical ontologies*. 19th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB) and 10th European Conference on Computational Biology (ECCB) (with Michel Dumontier).
- 2011 *A little semantics goes a long way: getting more from Linked Data with OWL*. OWL: Experiences and Directions (OWLED) 2011 (with Michel Dumontier).

Invited talks

- 2023 *Interpreting text, data, and knowledge... all at once* Biocuration Workshop on Machine Learning and Biocuration, International Biocuration Society, Virtual.
- 2023 *Machine learning with biomedical ontologies* Knowledge Graphs and Semantic Computing Speaker Series, School of Information Sciences, University of Illinois at Urbana-Champaign, USA.
- 2023 *Machine learning with biomedical ontologies* Data Science and Analytics Thrust Seminar, Hong Kong University of Science and Technology, Hongkong, China.
- 2023 *The neuro-symbolic method in biology* Keynote lecture, Empowering Education in Sciences with AI Workshop, University of Sharjah, Sharjah, UAE.
- 2022 *Machine learning with Semantic Web ontologies* Research seminar, National and Kapodistrian University of Athens, Athens, Greece.
- 2022 *The coevolution of ontologies and knowledge-based analytics in bioinformatics* Keynote Lecture, Chinese Conference on Biomedical Ontology and Terminology (CCBOT), Beijing, China.

- 2022 *The coevolution of ontologies and knowledge-based analytics in bioinformatics* Special Invited Lecture, International Conference of Biomedical Ontologies (ICBO), Ann Arbor, MI, USA.
- 2022 *Machine learning with Semantic Web ontologies* CS Seminar, University of Paderborn, Germany.
- 2022 *The quest for general AI through research in bioinformatics.* ZB-MED Research Seminar, German Central Library of Medicine, Cologne, Germany.
- 2022 *Machine learning with biomedical ontologies.* Summer Journal Club, University of Pittsburgh, USA.
- 2022 *Machine learning and semantic similarity with (biomedical) ontology.* CCB Seminar, Harvard Medical School, Boston, USA.
- 2022 *Embeddings for Semantic Web ontologies.* L3S Seminar, Leibniz University Hannover, Germany.
- 2022 *Embeddings for Semantic Web ontologies.* Goethe Center for Scientific Computing, Goethe-University Frankfurt, Germany.
- 2022 *Beyond knowledge graphs: machine learning with ontologies.* Data Science Institute, Maastricht University, Netherlands.
- 2022 *Machine learning with OWL ontologies.* Data Science and Computational Statistics Seminar, University of Birmingham, UK.
- 2022 *Next steps in machine learning with ontologies.* Logic seminar, Dept. of Computer Science, University of Oxford.
- 2022 *A biased story of diagnosing rare disease and finding the drugs to treat them.* Computational Biology Seminar, University of Birmingham, UK.
- 2022 *Machine learning with biomedical ontologies: applications to precision health.* Seminar Series on Computational & Systems Biology, University of Cambridge, Cambridge, UK.
- 2021 *Machine learning with biomedical ontologies for precision health.* Indian Symposium on Machine Learning (IndoML), Virtual.
- 2021 *Artificial intelligence (AI) methods for precision health in rare disease research.* 2nd International Middle East Genetics and Metabolic Academy (MEGMA) Symposium, Dubai, UAE.
- 2021 *Machine learning with biomedical ontologies for precision health.* Workshop on Harnessing Big Data for Precision Medicine and Healthcare, Leibniz AI Labs, Hanover, Germany.
- 2019 *Evaluating ontology modules from the perspective of machine learning.* Keynote lecture, 4th International Workshop on Ontology Modularity, Contextuality, and Evolution, Graz, Austria.
- 2019 *AI in Genomics: Analyzing large and complex datasets.* 2nd AI Week Middle East, Dubai,

UAE.

- 2019 *AI in Healthcare*. MILE Leadership Forum, Madinah, KSA.
- 2019 *AI for Genomics and Health*. CIPM Seminar, King Abdulaziz University, Jeddah, KSA.
- 2019 *AI Technologies for Variant Interpretation*. Saudi Society of Human Genetics Conference, King Abdullah University of Science and Technology, Thuwal, KSA.
- 2018 *Symbolic AI in Computational Biology*. Keynote lecture, the Eighth BEAR PGR Conference & Users Forum, University of Birmingham, UK.
- 2018 *Genomics and AI*. AI Week Middle East, Dubai, UAE.
- 2018 *Learning from Semantic Biological Data*. Research Seminar, Warwick University, UK.
- 2018 *Learning from Semantic Biological Data*. Research Seminar, Swansea University, UK.
- 2018 *Learning from Semantic Biological Data*. Research Seminar, Aberystwyth University, UK.
- 2018 *Learning from Semantic Biological Data*. Research Seminar, Bangor University, UK.
- 2018 *Semantic prioritization of causative variants in oligogenic disease*. Research Seminar, Leiden University Hospital, Holland.
- 2018 *Learning from Semantic Biological Data*. Research Seminar, Northeastern University, US.
- 2018 *Symbolic AI in Computational Biology*. Bioinformatics Research Seminar, University of Cambridge, UK.
- 2017 *Combining symbolic and statistical AI methods for biomedical data analysis*. Research seminar, IIS, Tsinghua University.
- 2017 *Semantic prioritization of novel causative variants*. Research seminar, Peking University.
- 2017 *The Semantic Web – Bioinformatics applications*. Lecture in CS, Tsinghua University.
- 2017 *Symbolic AI in Computational Biology*. Special Research Seminar, Scripps Research Institute.
- 2017 *Symbolic AI in Computational Biology*. Biomedical Informatics Research Seminar, Stanford University.
- 2017 *Symbolic AI in Computational Biology*. Special Research Seminar, University of Colorado Denver.
- 2017 *Symbolic AI in Computational Biology*. Research Seminar, Maastricht University.
- 2017 *Ontologies in Biology*. Colloquium in Honor of Prof. Dr. Heinrich Herre on the Occasion of his 75th Birthday, University of Leipzig.
- 2016 *Ontologies of phenotypes and their applications in personalized medicine*. CS Seminar, University of Murcia.

- 2016 *Mobilizing and integrating phenotype data.* Biodiversity-Informatics Seminar, Senckenberg Institute for Biodiversity.
- 2013 *From ontologies to translational medicine.* CS Seminar, University of Rostock.
- 2012 *From ontologies to translational medicine.* Invited External Speaker, European Bioinformatics Institute.
- 2012 *Phenotype informatics and translational research.* IMISE Kolloquium, Institute for Medical Informatics, Statistics and Epidemiology, University of Leipzig.
- 2012 *Ontologies for integrating and analyzing phenotypes.* Department of Computer Science, University of Birmingham.
- 2012 *My ontology is better than your! Building and evaluating ontologies for integrative research.* Keynote lecture, Bio-Ontologies Meeting (co-located with ISMB 2012)
- 2011 *Exploring phenotype data for information about rare diseases.* Department of Computer Science, University of Capetown.
- 2011 *Ontologies for representing, integrating and analyzing phenotypes.* AIC Seminar, Stanford Research Institute.
- 2011 *Towards integration of biomedical ontologies and systems biology.* Computational Modeling in Biology Network (COMBINE).
- 2011 *Integrating systems biology and biomedical ontologies.* Workshop on Modelling interoperability, European Bioinformatics Institute.
- 2010 *Interoperability between biomedical ontologies.* Knowledge Representation and Knowledge Management Research Group, University Mannheim.
- 2010 *The ontology of biomedical sequences.* IMISE Kolloquium, Institute for Medical Informatics, Statistics and Epidemiology, University of Leipzig.
- 2010 *Perspectives for the ontology of phenotypes.* Ontology Interest Group, European Bioinformatics Institute.
- 2010 *An introduction to formal ontology.* Ontology Interest Group, European Bioinformatics Institute.
- 2008 *Towards interoperability between anatomy and phenotype ontologies.* Dagstuhl seminar *Ontologies and Text Mining for Life Sciences : Current Status and Future Perspectives.*
- 2007 *Interoperability, non-monotonicity and core ontologies.* Dagstuhl seminar *Towards Interoperability of Biomedical Ontologies.*

Research funds

- 2023-2025 *Enabling desert revegetation by AI-tailored soil microbiome fortification*

- Funding body: KAUST (Near Term Grand Challenge)
 - PI: Heribert Hirt
 - Co-Investigators: Robert Hoehndorf, Gabriel Wittum, Arne Nägel
 - Amount: 1,000,000 USD (150,000 USD to Robert Hoehndorf)
- 2023 *Enabling mangrove restoration by AI-tailored microbiome fortification*
- Funding body: KAUST Climate and Livability Initiative
 - PI: Heribert Hirt
 - Co-Investigators: Robert Hoehndorf
 - Amount: 100,000 USD (25,000 USD to Robert Hoehndorf)
- 2022-2024 *Metagenomics-based surface prospecting*
- Funding body: Saudi Aramco (industry)
 - PI: Robert Hoehndorf
 - Co-Investigators: Takashi Gojobori
 - Amount: 177,812 USD (177,812 USD to Robert Hoehndorf)
- 2022-2025 *Evolutionary potential of corals to adapt to climate warming*
- Funding body: KAUST (Competitive Research Grant)
 - PI: Manuel Aranda
 - Co-Investigators: Robert Hoehndorf
 - Amount: 1,044,509 USD (150,000 USD to Robert Hoehndorf)
- 2022-2024 *Computational methods for functional metagenomics: from protein functions to multi-scale interactions*
- Funding body: KAUST (Competitive Research Grant)
 - PI: Robert Hoehndorf
 - Co-Investigators: Takashi Gojobori
 - Amount: 347,500 USD (247,500 USD to Robert Hoehndorf)
- 2021-2023 *IBNSINA-QI: Integrating Biomedical Networks and Semantic Information for Neural network Analysis of Quantitative Information*
- Funding body: KAUST (Competitive Research Grant)
 - PI: Robert Hoehndorf

- Co-Investigators: Paul N Schofield, Georgios V Gkoutos
 - Amount: 400,000 USD (239,999 USD to Robert Hoehndorf)
- 2021-2023 *Development of Algorithms for Biotechnology and Biomedical Applications*
- Funding body: KAUST (Center Competitive Fund)
 - PI: Robert Hoehndorf
 - Amount: 360,000 USD (360,000 USD to Robert Hoehndorf)
- 2019-2021 *CompleX: Variant Prioritization in Complex Disease*
- Funding body: KAUST (Competitive Research Grant)
 - PI: Robert Hoehndorf
 - Co-Investigators: Paul N Schofield, Georgios V Gkoutos
 - Amount: 399,998 USD (240,000 USD to Robert Hoehndorf)
- 2019-2021 *Improving health of Saudi population*
- Funding body: KAUST (Center Competitive Fund)
 - PI: Robert Hoehndorf
 - Amount: 324,000 USD (324,000 USD to Robert Hoehndorf)
- 2019 *Whole genome sequencing of rare disease patients.*
- Funding body: KAUST (OSR Director's Award, Digital Health Initiative)
 - PI: Robert Hoehndorf
 - Total amount: 138,600 USD (138,600 USD to Robert Hoehndorf)
- 2018-2021 *Sequencing and computational analysis of MRSA samples.*
- Funding body: KACST
 - PI: Robert Hoehndorf, Mohammed Al Fageeh
 - Co-Investigators: Takashi Gojobori, Vladimir Bajic
 - Total amount: 362,159 USD (362,159 USD to Robert Hoehndorf)
- 2018-2019 *Improvement of genetic variant prioritization technology.*
- Funding body: KAUST (Center Partnership Fund)
 - PI: Robert Hoehndorf
 - Co-Investigators: Paul Schofield, Georgios Gkoutos, Vladimir Bajic

- Total amount: 129,715 USD (9,500 USD to Robert Hoehndorf)
- 2018-2020 *Bio2Vec: Smart analytics infrastructure for the life sciences.*
- Funding body: KAUST (Competitive Research Grant)
 - PI: Robert Hoehndorf
 - Co-Investigators: Xin Gao, Michel Dumontier, Jens Lehmann
 - Total amount: 399,986 USD (113,250 USD to Robert Hoehndorf)
- 2018-2020 *The Whale Shark 100: Applying Population Genomics to Understand Mysteries of the World's Largest Fish.*
- Funding body: KAUST (Competitive Research Grant)
 - PI: Takashi Gojobori
 - Co-Investigators: Michael Berumen, Robert Hoehndorf
 - Amount: 389,713 USD (105,838 USD to Robert Hoehndorf)
- 2016-2018 *Data integration and ontologies for microbial cell factories.*
- Funding body: KAUST (Center Competitive Funding)
 - PI: Vladimir Bajic
 - Role: WP leader
 - Amount: 4,786,036 USD (115,691 USD to Robert Hoehndorf)

Teaching experience

- 2022 *Instructor for Algorithms in Bioinformatics*, Computer Science Program, King Abdullah University of Science and Technology.
- 2022 *Instructor for Knowledge Representation and Reasoning*, Computer Science Program, King Abdullah University of Science and Technology.
- 2021 *Co-Instructor for Foundations of Bioengineering*, Bioengineering Program, King Abdullah University of Science and Technology.
- 2021 *Instructor for Data Analytics*, Computer Science Program, King Abdullah University of Science and Technology.
- 2021 *Instructor for Knowledge Representation and Reasoning*, Computer Science Program, King Abdullah University of Science and Technology.
- 2020 *Instructor for Algorithms in Bioinformatics*, Computer Science and Bioengineering Programs, King Abdullah University of Science and Technology.

- 2020 *Instructor for Knowledge Representation and Reasoning*, Computer Science Program, King Abdullah University of Science and Technology.
- 2019 *Instructor for Introduction to Artificial Intelligence*, Computer Science Program, King Abdullah University of Science and Technology.
- 2018 *Instructor for Applied Ontology*, Computer Science Program, King Abdullah University of Science and Technology.
- 2017-2018 *Instructor for Knowledge Representation and Reasoning*, Computer Science Program, King Abdullah University of Science and Technology.
- 2016-2017 *Instructor for Applied Ontology*, Computer Science Program, King Abdullah University of Science and Technology.
- 2015-2016 *Instructor for Knowledge Representation and Reasoning*, Computer Science Program, King Abdullah University of Science and Technology.
- 2015 *Organizer for Computer Science Graduate Seminar*, Computer Science Program, King Abdullah University of Science, and Technology.
- 2014 *Instructor in Object-Oriented Programming*, Software Engineering College, Northeastern University, Shenyang, China.
- 2013-2014 *Instructor in Professional And Personal Development*, Department of Computer Science, Aberystwyth University.
- 2013 *Instructor in Object-Oriented Programming*, Software Engineering College, Northeastern University, Shenyang, China.
- 2013 *Co-instructor in Machine learning*, Department of Computer Science, Aberystwyth University.
- 2005-2008 *Co-instructor for seminars on Ontology in medical information systems*, Department of Computer Science, University of Leipzig.
- 2006-2007 *Instructor and co-organizer for seminars on Computer science and society and Information*, Department of Computer Science, University of Leipzig.

Research supervised

PhD advisor

- 2015-2019 Imane Boudellioua, Computer Science; Semantic Prioritization of Novel Causative Variants (Start date: 2015, Graduated: 2019)
- First (current) position: Assistant Professor in Computer Science, King Fahd University of Petroleum and Minerals, Saudi Arabia
 - Winner of KACST Almarai Dissertation Award 2020

- 2015–2019 Mona Alshahrani, Computer Science; Multi-modal learning on biological knowledge graphs (Start date: 2015, Graduated: 2019)
- First (current) position: Assistant Professor in Computer Science, Jubail University College, Saudi Arabia
- 2015–2020 Maxat Kulmanov, Computer Science; Prediction of protein functions and phenotypes (Start date: 2015, Graduated: 2020)
- First position: Postdoctoral researcher at King Abdullah University of Science and Technology (KAUST, Saudi Arabia)
- 2018–2023 Sarah Alghamdi, Computer Science; Ontology design patterns and methods for integrating phenotype ontologies (Start date: 2018, Graduated: 2023)
- First (current) position: Assistant Professor in Computer Science, King Abdulaziz University, Saudi Arabia
- 2019–2023 Azza Althagafi, Computer Science; Prioritizing Causative Variants by Integrating Molecular and Functional Annotations from Multiple Biomedical Ontologies (Start date: 2019, Expected graduation: 2023)
- First (current) position: Assistant Professor in Computer Science, Taif University, Saudi Arabia

MS advisor

- 2021–2023 Robert Radley, Bioengineering
- 2021–2023 Hatoon Al Ali, Bioengineering; Predicting effects of non-coding genomic variants
- 2021–2022 Shahad Qatan, Computer Science; Predicting Protein Functions From Interactions Using Neural Networks and Ontologies
- 2021–2022 Kexin Niu, Bioscience; De novo genome-scale prediction of protein–protein interaction networks using ontology-based background knowledge
- 2021–2022 Yang Liu, Bioengineering; Rare variant collapsing analysis on UK Biobank
- 2021–2022 Xi Peng, Computer Science; Description Logic EL++ Embeddings with Intersectional Closure
- 2021–2022 Fernando Camacho Zhapa, Computer Science; Embedding Ontologies using Category Theory Semantics
- 2021–2022 Zhenwei Tang, Computer Science; Towards Quality and General Knowledge Representation Learning
- 2019–2020 Sakhaa Alsaedi, Computer Science; Evaluating the Application of Allele Frequency in the Saudi Population Variant Detection
- 2018–2019 Abeer Almutairi, Computer Science; Unsupervised Method for Disease Named Entity Recognition
- 2019 Sumyyah Toonsi, Computer Science; Automatic annotation of protein functions through text mining
- 2017–2018 Sarah Alghamdi, Computer Science; Ontology design patterns for aging mouse ontologies
- 2018 Sara Althubaiti, Computer Science; Ontology-based identification of cancer driver genes
- 2018 Azza Althagafi, Computer Science; Simulation and visualization of human genomes

Postdocs supervised

2016–2018

Miguel Angel Rodriguez Garcia:

- Previous institution: University of Murcia
- Current position: Research scientist, King Juan Carlos University, Spain

2020–2021

Ashraf Kibraya

2020–2021

Maxat Kulmanov

- Previous institution: King Abdullah University of Science and Technology
- Current position: Research scientist, King Abdullah University of Science and Technology

External examinations

2022

I served as external examiner for PhD theses: Aberystwyth University, Wales (CS Program)

2021

University of Oslo, Norway (CS Program)

2020

University of Galway, Ireland (CS Program)

2022

I was a member of the habilitation committee: Masaryk University, Faculty of Informatics, Czech Republic

University service

2022–now

Interim Associate Director, Computational Bioscience Research Center, King Abdullah University of Science and Technology.

2021–now

Track Leader, Bioinformatics & Machine Learning Track, Bioengineering Program, King Abdullah University of Science and Technology.

2022–now

Institutional Bioethics Committee, Member, King Abdullah University of Science and Technology.

2021–now

Track Leader Bioinformatics & Machine Learning Track, Bioengineering Program, King Abdullah University of Science and Technology.

2020–now

Bioscience Core Lab User Committee, Member, King Abdullah University of Science and Technology.

2020–now

Bioinformatics Hiring Committee, King Abdullah University of Science and Technology.

2019–now

Directed Research Evaluation Committee (chair since 2020), King Abdullah University of Science and Technology.

2019

Advisory committee on AI strategy, King Abdullah University of Science and Technology.

2018–now

Steering committee member of Women in Data Science and Technology, King Abdullah University of Science and Technology.

Professional service

EDITORIAL WORK

2022–now	Editor in Chief, <i>Journal of Biomedical Semantics</i>
2021–now	Guest Editor: ICBO “Direct to Journal track” at <i>Journal of Biomedical Semantics</i>
2018–2021	Member of Editorial Board: <i>PLoS ONE</i>
2017–now	Associate Editor: <i>Applied Ontology</i>
2017–now	Associate Editor: <i>BMC Bioinformatics</i>
2016–now	Member of Editorial Board: <i>Data Science</i>
2012–now	Associate Editor: <i>Journal of Biomedical Semantics</i>
2012	Editor: Special Issue on Ontologies in Biomedicine and Life Sciences in <i>Journal of Biomedical Semantics</i>
2011	Editor: Special Issue on Ontologies in Biomedicine and Life Sciences in <i>Journal of Biomedical Semantics</i>
2010	Editor: Special Issue on Ontologies in Biomedicine and Life Sciences in <i>Journal of Biomedical Semantics</i>

REVIEWER FOR FUNDING ORGANIZATIONS

I reviewed over 50 research proposal and participated in several grant review panels. I have reviewed research grant applications for

- German Federal Ministry of Education and Research (BMBF)
- German Research Foundation (DFG)
- National Research Fund Luxembourg (FNR)
- Dr Hadwen Trust
- European Commission Horizon 2020: ERA-Net for Research Programmes on Rare Diseases
- Vrije Universiteit Brussel (VUB Interdisciplinary Research Programmes)

and have been an invited panel member for grant programs at

- German Federal Ministry of Education and Research (BMBF)
 - i:DSem – Integrative Data Semantics
 - Computational Life Sciences
 - Computational Life Sciences (Deep Learning in Life Sciences)
 - Machine learning for Infectious Disease

REVIEWER FOR JOURNALS

I have reviewed manuscripts for *Applied Ontology*, *Bioinformatics*, *BMC Bioinformatics*, *BMC Complementary and Alternative Medicine*, *Briefings in Bioinformatics*, *Central European Journal of Computer Science*, *Computational and Structural Biotechnology Journal*, *Data Science, Database*, *Genetics in Medicine*, *Genome Medicine*, *Genomics*, *Proteomics & Bioinformatics*, *Human Mutation*, *International Journal on Semantic Web and Information Systems*, *Journal of Bioinformatics and Computational Biology*, *Journal of Biomedical Informatics*, *Journal of Biomedical Semantics*, *Journal of Engineering*, *Journal of Molecular Biology*, *Journal of Web Semantics*, *Knowledge-based Systems*, *Natural Language Engineering*, *PLoS ONE*, and *Scientific Reports*.

CONFERENCE ORGANIZATION

- 2022 *Chair and Organizer* for the First Workshop on the Role of Ontologies in Biomedical AI (ROBI), Ann Arbor, MI, USA, 2022
- 2022 *PC Member* for the 3rd Workshop on Research Objects Metadata and Management for Linked Open Science (DaMaLOS) 2022
- 2022 *PC Member* for the 5th Workshop on Semantic Web solutions for large-scale biomedical data analytics
- 2022 *Co-Chair* for Bio-Ontologies SIG 2022
- 2021 *Co-Chair* for Bio-Ontologies SIG 2021
- 2021 *Workshop & Tutorial Chair* for International Conference on Biomedical Ontologies (ICBO) 2021
- 2021 *Demonstration Track Chair* for Formal Ontology in Information Systems (FOIS) 2021
- 2020 *PC Member* for Semantic Web solutions for large-scale biomedical data analytics (SeWeBMeDA-2020)
- 2020 *PC Member* for First virtual workshop on Research data management for linked open science (Damalos 2020)
- 2020 *Chair* for Bio-Ontologies SIG 2020
- 2020 *Workshop & Tutorial Chair* for International Conference on Biomedical Ontologies (ICBO) 2020
- 2020 *Industry Chair* for Formal Ontology in Information Systems (FOIS) 2020
- 2020 *PC Member* for Formal Ontology in Information Systems (FOIS) 2020
- 2020 *PC Member* for Intelligent Systems in Molecular Biology (ISMB) 2020
- 2020 *PC Member* for International Semantic Web Conference (ISWC) 2020
- 2020 *PC member* of the 19th European Conference on Computational Biology (ECCB)
- 2019 *Co-Chair* for Bio-Ontologies SIG 2019
- 2019 *PC Member* for Ontologies and Databases in Life Sciences (ODLS) 2019
- 2019 *PC Member* for Saudi Society of Medical Genetics (SSMG) Meeting 2019
- 2019 *PC Member* for International Semantic Web Conference (ISWC) 2019
- 2019 *PC member* of the 27th Conference on Intelligent Systems for Molecular Biology (ISMB) and the 18th European Conference on Computational Biology
- 2019 *PC member* of the Semantic Web solutions for large-scale biomedical data analytics (SeWeBMeDA-19)

2018 *PC member* of the 17th European Conference on Computational Biology (ECCB)

2018 *PC Member* for Semantic Web Applications and Tools in Health Care and Life Sciences (SWAT4HCLS) 2018

2018 *PC Member* for Function-SIG 2018

2018 *PC Member* for Data Integration in the Life Sciences (DILS 2018)

2018 *PC Member* for FOIS 2018: 10th International Conference on Formal Ontologies in Information Systems

2018 *PC member* of the Extended Semantic Web Conference (ESWC), 2018

2018 *PC Member* for International Semantic Web Conference (ISWC) 2018

2018 *PC Member and Co-Organizer* for Bio-Ontologies SIG 2018

2018 *PC Member* for Intelligent Systems in Molecular Biology (ISMB) 2018

2018 *PC Member* for Semantic Web Solutions for Large-scale Biomedical Data Analytics (SeWeBMeDA) 2018

2017–2020 *Steering Committee member* for International Conference on Biological and Biomedical Ontologies (ICBO)

2017 *PC Member* for Semantic Web Applications and Tools in Life Sciences (SWAT4LS) 2017

2017 *Reviewer* for the AMIA 2018 Informatics Summit, 2018

2017 *Organizing committee member* for the International Conference on Biomedical Ontology (ICBO) 2017

2017 *PC member* for the Workshop on Ontologies and Databases in Life Sciences 2017 (ODLS)

2017 *PC member* of the Function SIG 2017

2017 *PC member and Co-organizer* of the Bio-Ontologies SIG 2017

2017 *PC member* of the International Semantic Web Conference (ISWC), 2017

2017 *PC Member* for International Workshop on Biological Data Mining and Knowledge Discovery (BioKDD 2017)

2017 *PC Member* for 25th Conference on Intelligent Systems for Molecular Biology (ISMB) and the 16th European Conference on Computational Biology

2017 *PC member* of Medinfo 2017

2017 *PC member* of the Extended Semantic Web Conference (ESWC), 2017

2016 *PC Member* for Semantic Web Applications and Tools in Life Sciences (SWAT4LS) 2016

2016 *PC member* for the Workshop on Ontologies and Databases in Life Sciences 2016 (ODLS)

2016 *PC Chair* for the International Conference on Biological Ontology 2016 (ICBO)

2016 *PC member* for the Bio-Ontologies SIG 2016

2016 *PC member* for the 15th International Semantic Web Conference (ISWC)

2016 *PC member* of the 15th European Conference on Computational Biology (ECCB)

2016 *PC Member* for 24nd Annual International Conference on Intelligent Systems for Molecular Biology (ISMB)

2016 *PC Member* for Know@LOD 2016

2016 *PC Member* for FOIS 2016: 9th International Conference on Formal Ontologies in Information Systems

2015 *PC Member* for Semantic Web Applications and Tools in Life Sciences (SWAT4LS) 2015

2015 *PC member* for the 14th International Semantic Web Conference (ISWC)

2015 *PC member* for Bio-Ontologies SIG 2015

2015 *PC Member* for 23nd Annual International Conference on Intelligent Systems for Molecular Biology (ISMB)

2015 *PC Member* for 15th World Congress on Health and Biomedical Informatics (MEDINFO'15)

2015 *PC Member* for 4th Workshop on Knowledge Discovery and Data Mining Meets Linked Open Data (Know@LOD)

2015 *PC Member* for 29th AAAI Conference on Artificial Intelligence (AAAI-2015)

2014 *PC Member* for Ontologies and Data in the Life Sciences (ODLS) 2014

2014 *PC Member* for Semantic Web Applications and Tools in Life Sciences (SWAT4LS) 2014

2014 *PC Member* for Conference and Labs of the Evaluation Forum (CLEF) 2014

2014 *Reviewer* for 22nd Annual International Conference on Intelligent Systems for Molecular Biology (ISMB)

2014 *PC member* of Bio-Ontologies SIG 2014

2014 *PC member* of the 13th European Conference on Computational Biology (ECCB)

2014 *PC member* of the 8th International Workshop on Modular Ontologies (WoMO)

2014 *Workshop chair* of FOIS 2014: 8th International Conference on Formal Ontologies in Information Systems

2014 *PC member* of CSHALS2014: Conference on Semantics in Healthcare and Life Sciences

2014 *PC member* of the International Symposium on Inconsistency Robustness 2014

2013 *PC member* of the 7th International Workshop on Modular Ontologies (WoMO)

2013 *PC member* of the 12th International Semantic Web Conference (ISWC)

2013 *Program chair* of the Fourth International Conference on Biomedical Ontologies (ICBO)

2012 *PC member* of the Third Workshop on the use of Semantic Web Technology for Mobile and Ubiquitous Applications (SWUMA)

2012 *PC member* of Bio-Ontologies SIG 2012

2012 *PC member* of the 11th European Conference on Computational Biology (ECCB)

2012 *Chair* of the 4th Workshop on Ontologies in Biology and Life Sciences (OBML)

2012 *PC member* of the 6th International Workshop on Modular Ontologies (WoMO)

2012 *PC member* of the International Symposium on Inconsistency Robustness

2012 *PC member* of Intelligent Systems in Molecular Biology (ISMB) 2012

2012 *PC member* of FOIS 2012: 7th International Conference on Formal Ontology in Information Systems

2012 *PC member* of ICBO 2012: 3rd International Conference on Biomedical Ontologies

2011 *Chair* of the 3rd Workshop on Ontologies in Biology and Life Sciences (OBML)

2011 *PC member* of the International Symposium on Inconsistency Robustness

2011 *PC member* of the Workshop on Working with Multiple Biomedical Ontologies (WoMBO)

2011 *PC member* of the 5th International Workshop on Modular Ontologies (WoMO)

2011 *PC member* of OWL: Experiences and Directions (OWLED) 2011

2011 *PC member* of the 2nd International Conference on Biomedical Ontologies (ICBO)

2010 *Program Chair* of the 2nd Workshop on Ontologies in Biology and Life Sciences (OBML)

2010 *PC member* of the NETTAB 2010 Workshop on Biological Wikis

2010 *PC member* of the Extended Semantic Web Conference (ESWC), 2010

2010 *PC member* of Intelligent Systems in Molecular Biology (ISMB) 2010

2009 *Reviewer* for the 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)

2009 *PC member* of Medical Informatics Europe (MIE), 2009

2008 *PC member* of Intelligent Systems in Molecular Biology (ISMB) 2008

2008 *PC member* of Medical Informatics Europe (MIE), 2008

2007 *PC member* of Intelligent Systems in Molecular Biology (ISMB) and European Conference on Computational Biology (ECCB), 2007

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