Curriculum vitae

Partho Sarathi Sen, PhD

PERSONAL INFORMATION

Age: 38 years
Place of birth: Odisha, India
Citizenship: Indian
ORCID: 0000-0003-0475-2763
Researcher ID: L-8471-2019

SKILLS

Programming languages and OS: Python (basics). MATLAB (expert), R (expert), HTML (basics) and MySQL (basics).
OS: Linux, Mac, Windows

Computational systems biology and bioinformatics: Transcriptomics (NGS), Metabolomics, Metagenomics, Machine learning, Biostatistics and Mathematical modelling(constraint-based (genome-scale) and kinetic)

CONTACT

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EDUCATION

B. Pharm
(Pharmaceutical sciences)
04/2003 – 04/2007
Roland Institute of Pharmaceutical Sciences, Berhampur, Odisha, India

M.S. Pharm
(Pharmacoinformatics)
06/2007 – 06/2009
National Institute of Pharmaceutical Education and Research (N.I.P.E.R), Kolkata, India

PhD
(Biological sciences)
12/2010 – 12/2013
DIMNP-UMR 5235, Centre National de la recherche scientifique (CNRS) & Université of Montpellier 2, France

PROFESSIONAL EXPERIENCE

Junior Research Fellow
06/2009 - 06/2010
School of Computational and Integrative Sciences, JNU, New-Delhi, India

Postdoctoral researcher
(Nielsen's group)
04/2014 - 04/2017
Sysbio.se Group, Chalmers University of Technology, Gothenburg, Sweden

Postdoctoral researcher
(Oresic's group)
05/2017 - (*pursuing*)
Systems Medicine Group, Turku Bioscience, University of Turku, Turku, Finland

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RESEARCH PROJECTS INVOLVED OR HANDLED

Projects during postdoctorate in Finland (Oresic's lab, 05/2017 - pursuing)

- JDRF – Type 1 Diabetes Research Funding and Advocacy & Novo Nordisk: Metabolic modelling of $CD4^+$ T cell activation and differentiation, and in Type 1 Diabetes at Turku Bioscience.
- Type 1 Diabetes Prediction and Prevention Study (DIPP): Turku Bioscience and University of Helsinki.
- Diabimmune: Turku Bioscience and University of Helsinki.
- MetaHit: Turku Bioscience, Orebro University and University of Copenhagen.
- Academy of Finland: Human exposure to per- and poly-fluoroalkyl substances – role of the gut microbiome and bile acid metabolism in mediating impact (*PFASgut*), Turku Bioscience.
- EU–GEI: Turku Bioscience and King's College London.
- EPoS: Orebro University and University of Cambridge.

Projects during postdoctorate in Sweden (Nielsen's lab, 04/2014 - 04/2017)

- Bill & Melinda Gates Foundation (BMGF): Mathematical modelling of tissue metabolism and gut microbiota in response to malnutrition. Chalmers University of Technology, Sweden.
- MetaCardis, Chalmers University of Technology, Sweden.
- Advanced Immunization Technologies (ADITECH), Chalmers University of Technology, Sweden.
- Biomarker for enhanced vaccine and immunosafety (BioVacSafe), Chalmers University of Technology, Sweden.

Project during PhD in France (Radulescu & Vial's lab 12/2010 – 12/2013)

- Integrated kinetic modelling of glycerophospholipid metabolism pathway in *Plasmodium falciparum* and *Plasmodium knowlesi*, Université of Montpellier II, Centre national de la recherche scientifique, CNRS, Montpellier, France. [weblink]

Project during research assistantship in India (06/2009 - 06/2010)

- Designing novel inhibitors for *Plasmodium falciparum*: A novel Pharmacophore based approach, Department of Bioinformatics, School of Computational and Integrative Sciences, JNU, New-Delhi, India.

Project during Masters in India (06/2007 – 06/2009)

- Affinity HTS: A web based tool for bioassay data management and bioactivity reporting. IICB-CSIR and TCG Life science Pvt. Ltd.

SOFTWARE AND DATABASES DEVELOPED

1. PfalDB: An integrated drug target & chemical database for *Plasmodium falciparum*.
2. BioVacSafe: A web tool to analyze metabolomics and transcriptomics.
3. Affinity HTS: A java based software that reports bioactivity from high-throughput data.

SELECTED SCIENTIFIC MEETINGS, CONFERENCES AND WORKSHOPS

2021 The International Liver Congress 2021, EASL, online (**oral presentation**)
2021 Metabolomics conference 2020 online (**poster presentation**)
2020 EASD EGIR-NAFLD abstract meeting 2020 (**oral presentation**)
2020 Metabolomics conference 2020 online **(oral presentation)**
2019 Metabolomics conference 2019, The Hague, Netherlands **(oral and poster presentation)**
2019 Metabolomics and Human Health, Gordon Research Conference, Ventura, CA, US (**oral presentation)**
2019 Nordic Metabolomics Society meeting, Oslo, Norway **(poster presentation)**
2018 Nordic Metabolomics Society meeting, Orebro, Sweden **(oral and poster presentation)**
2016 BioVacSafe EU meeting, Lyon, France **(poster presentation)**
2015 4th Conference on Constraint-Based Reconstruction and Analysis (COBRA), Germany **(poster)**
2015 Workshop on metabolic phenotyping in personalized health care, Imperial College London **(poster)**
2015 Informatics Alignment Workshop, eTRICKS, Imperial College London
2015 BioVacSafe EU meeting, Ghent, Belgium **(poster presentation)**
2013 The Evimalar cluster 1-4 meeting, Créte, Greece **(oral and poster presentation)**
2013 9th Annual BioMalPar, EVIMalar conference, EMBL, Heidelberg, Germany **(poster)**
2013 IT workshop on RNA-Seq, PlasmoDB, GeneDB, VectorBase, EMBL ATC, Heidelberg, Germany
2012 Metabolomics workshop, University of Glasgow, UK
2011 EVIMALAR cluster 4 meeting, Delft, Netherlands **(poster presentation)**

WORKSHOPS / TRAININGS CONDUCTED

2020 Lifespan 2020 annual meeting and workshop, University of Turku and Åbo academy university, Finland
2018 Swedish bioinformatics workshop, Örebro University, Sweden

TEACHING AND SUPERVISION OF MASTER AND PHD STUDENTS

2012	Systems biology and Modeling	University of Montpellier 2, France
2016	Metabolomics	Chalmers University of Technology, Gothenburg, Sweden

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2013 – 16	Supervised and trained visiting researchers on bioinformatics and modeling	Chalmers University of Technology, Gothenburg, Sweden
2019 –	Currently, supervising a visiting PhD student	University of Turku, Finland

ACADEMIC ACHIEVEMENTS, AWARDS AND GRANTS

2019	Travel award from University of Turku for Gordon Research Conference, Ventura, CA, US
2018	Travel award from Nordic Metabolomics society, Örebro, Sweden
2016	Travel grants (3 times) from Kunt and Alice Wallenberg foundation, Gothenburg, Sweden.
2012	Travel grant form University of Montpellier 2, France, to attend metabolomics workshop at University of Glasgow, UK.
2010	Korean Government Fellowship Program (KGSP 2010), South Korea *via* Ministry of HRD, New-Delhi, India.
2007	Fellowship from National Institute of Pharmaceutical Education and Research (NIPER) to pursue MS Pharm study. MS Pharm second best student (batch 2009).
2007	GATE: graduate aptitude test in engineering, Indian Institutes of Technology (IIT) – 99 percentile.

SCIENTIFIC SOCIETIES AND MEMBERSHIPS

2017 –	Member of Metabolomics Society
2018 –	Member of Nordic Metabolomics Society

PEER REVIEWED FOR SCIENTIFIC JOURNALS

Bioinformatics, Briefings in Bioinformatics, Cell Metabolism, Cell Reports, Cell Systems, Diabetologia, iScience, Nature Communication, Metabolites, Molecular Systems Biology, PLOS Computational Biology, Scientific Reports *etc*.

LIST OF PEER REVIEWED PUBLICATIONS (PUBMED & GOOGLE SCHOLAR)

The international peer-reviewed publications in the scientific journals can also be retrieve by clicking on the 'PubMed' and / or 'Google Scholar' link above.

Original research articles in international peer-reviewed journals

1. Katherine Johnson, Peter J Leary, Olivier Govaere, Matthew J Barter, Sarah H Charlton, Simon J Cockell, Dina Tiniakos et al. (2021). Increased serum miR-193a-5p during non-alcoholic fatty liver disease progression: diagnostic and mechanistic relevance. JHEP Reports, 100409.

2. **Sen, P**., Andrabi, S.B.A., Buchacher, T., Khan, M.M., Kalim, U.U., Lindeman, T.M., Alves, M.A., Hinkkanen, V., Kemppainen, E., Dickens, A.M., et al. (2021). Quantitative genome-scale metabolic modeling of human $CD4^+$ T cell differentiation reveals subset-specific regulation of glycosphingolipid pathways. Cell Rep 37, 109973.

3. **Sen, P**., Qadri, S., Luukkonen, P.K., Ragnarsdottir, O., McGlinchey, A., Jantti, S., Juuti, A., Arola, J., Schlezinger, J.J., Webster, T.F., et al. (2021). Exposure to environmental contaminants is associated with altered hepatic lipid metabolism in non-alcoholic fatty liver disease. J Hepatol.

4. Petersen, A.O., Julienne, H., Hyotylainen, T., **Sen, P**., Fan, Y., Pedersen, H.K., Jantti, S., Hansen, T.H., Nielsen, T., Jorgensen, T., et al. (2021). Conjugated C-6 hydroxylated bile acids in serum relate to human metabolic health and gut Clostridia species. Sci Rep 11, 13252.

5. Sinisalu, L., **Sen, P**., Salihović, S., Virtanen, S.M., Hyöty, H., Ilonen, J., Toppari, J., Veijola, R., Orešič, M., Knip, M., et al. (2020). Early-life exposure to perfluorinated alkyl substances modulates lipid metabolism in progression to celiac disease. Environ Res 188, 109864.

6. **Sen, P**., Dickens, A.M., López-Bascón, M.A., Lindeman, T., Kemppainen, E., Lamichhane, S., Rönkkö, T., Ilonen, J., Toppari, J., Veijola, R., Hyöty, H., Hyötyläinen, T., Knip, M., Orešič, M. (2020). Metabolic alterations in immune cells associate with progression to type 1 diabetes. Diabetologia 63, 1017-1031.

7. McGlinchey, A., Sinioja, T., Lamichhane, S., **Sen, P**., Bodin, J., Siljander, H., Dickens, A.M., Geng, D., Carlsson, C., Duberg, D., et al. (2020). Prenatal exposure to perfluoroalkyl substances modulates neonatal serum phospholipids, increasing risk of type 1 diabetes. Environ Int 143, 105935.

8. Lamichhane, S., Dickens, A.M., **Sen, P**., Laurikainen, H., Borgan, F., Suvisaari, J., Hyötyläinen, T., Howes, O., Hietala, J., and Orešič, M. (2020). Association Between Circulating Lipids and Future Weight Gain in Individuals With an At-Risk Mental State and in First-Episode Psychosis. Schizophr Bull.

9. Khoomrung, S., Nookaew, I., **Sen, P**., Olafsdottir, T.A., Persson, J., Moritz, T., Andersen, P., Harandi, A.M., and Nielsen, J. (2020). Metabolic Profiling and Compound-Class Identification Reveal Alterations in Serum Triglyceride Levels in Mice Immunized with Human Vaccine Adjuvant Alum. J Proteome Res 19, 269-278.

10. Dickens, A.M.*, **Sen, P.***, Kempton, M.J., Barrantes-Vidal, N., Iyegbe, C., Nordentoft, M., Pollak, T., Riecher-Rössler, A., Ruhrmann, S., Sachs, G., et al. (2020). Dysregulated Lipid Metabolism Precedes Onset of Psychosis. Biol Psychiatry 89, 288-297.

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11. **Sen, P**., Carlsson, C., Virtanen, S.M., Simell, S., Hyöty, H., Ilonen, J., Toppari, J., Veijola, R., Hyötyläinen, T., Knip, M., et al. (2019). Persistent Alterations in Plasma Lipid Profiles Before Introduction of Gluten in the Diet Associated With Progression to Celiac Disease. Clin Transl Gastroenterol 10, 1-10.

12. Vincent, A., Savolainen, O.I., **Sen, P**., Carlsson, N.G., Almgren, A., Lindqvist, H., Lind, M.V., Undeland, I., Sandberg, A.S., and Ross, A.B. (2017). Herring and chicken/pork meals lead to differences in plasma levels of TCA intermediates and arginine metabolites in overweight and obese men and women. Mol Nutr Food Res 61.

13. Thankaswamy-Kosalai, S.*, **Sen, P.***, and Nookaew, I. (2017). Evaluation and assessment of read-mapping by multiple next-generation sequencing aligners based on genome-wide characteristics. Genomics 109, 186-191.

14. **Sen, P**., Mardinogulu, A., and Nielsen, J. (2017). Selection of complementary foods based on optimal nutritional values. Sci Rep 7, 5413.

15. Olafsdottir, T.A., Lindqvist, M., Nookaew, I., Andersen, P., Maertzdorf, J., Persson, J., Christensen, D., Zhang, Y., Anderson, J., Khoomrung, S., **Sen, P**., et al. (2016). Comparative Systems Analyses Reveal Molecular Signatures of Clinically tested Vaccine Adjuvants. Sci Rep 6, 39097.

16. Shoaie, S., Ghaffari, P., Kovatcheva-Datchary, P., Mardinoglu, A., **Sen, P**., Pujos-Guillot, E., de Wouters, T., Juste, C., Rizkalla, S., Chilloux, J., et al. (2015). Quantifying Diet-Induced Metabolic Changes of the Human Gut Microbiome. Cell Metab 22, 320-331.

17. **Sen, P**., Vial, H.J., and Radulescu, O. (2013). Kinetic modelling of phospholipid synthesis in Plasmodium knowlesi unravels crucial steps and relative importance of multiple pathways. BMC Syst Biol 7, 123.

Review articles in international peer-reviewed scientific journals

18. **Sen, P**., Lamichhane, S., Mathema, V.B., McGlinchey, A., Dickens, A.M., Khoomrung, S., and Oresic, M. (2021). Deep learning meets metabolomics: a methodological perspective. Brief Bioinform 22, 1531-1542.

19. Lamichhane, S., **Sen, P**., Alves, M.A., Ribeiro, H.C., Raunioniemi, P., Hyotylainen, T., and Oresic, M. (2021). Linking Gut Microbiome and Lipid Metabolism: Moving beyond Associations. Metabolites 11.

20. Alves, M.A., Lamichhane, S., Dickens, A., McGlinchey, A., Ribeiro, H.C., **Sen, P**., Wei, F., Hyotylainen, T., and Oresic, M. (2021). Systems biology approaches to study lipidomes in health and disease. Biochim Biophys Acta Mol Cell Biol Lipids 1866, 158857.

21. **Sen, P**., and Orešič, M. (2019). Metabolic Modelling of Human Gut Microbiota on a Genome Scale: An Overview. Metabolites 9.

22. Lamichhane, S., **Sen, P**., Dickens, A.M., Oresic, M., and Bertram, H.C. (2018). Gut metabolome meets microbiome: A methodological perspective to understand the relationship between host and microbe. Methods 149, 3-12.

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23. **Sen, P**., Kemppainen, E., and Orešič, M. (2017). Perspectives on Systems Modelling of Human Peripheral Blood Mononuclear Cells. Front Mol Biosci 4, 96.

Manuscripts available as preprints and under peer-review in scientific journals

24. Lamichhane*, S., **Sen, P**.*, Dickens, A.M., Amaral Alves, M., Karkonen, T., Honkanen, J., Vatanen, T., Xavier, R.J., Hyotylainen, T., Knip, M., et al. (2021). Dynamics of gut microbiome - mediated bile acid metabolism in progression to islet autoimmunity. medRxiv, 2021.2008.2020.21262371.

25. **Sen, P**., Govaere, O., Sinioja, T., McGlinchey, A., Geng, D., Ratziu, V., Bugianesi, E., Schattenberg, J.M., Vidal-Puig, A., Allison, M., et al. (2021). Quantitative genome-scale analysis of human liver reveals dysregulation of glycosphingolipid pathways in progressive nonalcoholic fatty liver disease. medRxiv, 2021.2002.2009.21251354. (Under review).

Books and chapters

26. **Sen, P**., Lamichhane, S., Dickens, A., and Oresic, M. (2019). The Role of Omic Technologies in the Study of the Human Gut Microbiome. Reference Module in Food Science.

27. Lamichhane, S., **Sen, P**., Dickens, A.M., Hyötyläinen, T., and Orešič, M. (2018). An Overview of Metabolomics Data Analysis: Current Tools and Future Perspectives. Comprehensive analytical chemistry 82, 387-413.

28. **Sen, P**., Vial, H.J., and Radulescu, O. (2016). Mathematical modelling and omic data integration to understand dynamic adaptation of Apicomplexan parasites and identify pharmaceutical targets. Comprehensive Analysis of Parasite Biology: From Metabolism to Drug Discovery 7, 457.

Editorials in peer-reviewed scientific journals

29. **Sen, P**., Hyotylainen, T., and Oresic, M. (2021). 1-deoxyceramides - key players in lipotoxicity and progression to type 2 diabetes? Acta Physiol (Oxf), e13635.

PhD Thesis

30. **Sen, P**. (2013). Integrated modelling of lipid metabolism in Plasmodium, the causative parasite of malaria (Université Montpellier II-Sciences et Techniques du Languedoc) [weblink].

Signifies equal contributions

DECLARATION

I hereby declare that the information given above is true to the best of my knowledge and belief.

Partho Sarathi Sen

Date and place: 01/12/2021, Turku, Finland.


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