



Deepankar Chakroborty

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EDUCATION

- University of Turku** | Institute of Biomedicine
Ph.D., Medical Biochemistry and Genetics
Turku Doctoral Programme of Molecular Medicine (TuDMM) Turku, FIN
Expected October 2022
- University of Turku** | Faculty of Mathematics and Natural Sciences
M.Sc., Bioinformatics (graduated *eximia cum laude approbator*) Turku, FIN
October 2014
- Amity University** | Institute of Biotechnology
B.Tech., Biotechnology, 8.16 Cumulative Grade Point Average Lucknow, IND
December 2012

RESEARCH EXPERIENCE

- Medicity Research Laboratories** | Institute of Biomedicine | University of Turku Turku, FIN
Doctoral Candidate with Prof. Klaus Elenius & Prof. Laura Elo 2015 – present
Thesis: Novel tools for identification of oncogenic driver mutations.
- Established a high throughput screen for identification of activating mutations (studied the *EGFR* family)
 - Generation of high-coverage libraries consisting of random mutations (ORFs up to 4 kb)
 - Analyze Illumina and PacBio next-generation sequencing data (SNV calling & annotation, CNV analysis)
 - Establish mammalian cell cultures with stable expression (lenti- and retroviral transductions)
 - Characterize mutations with growth assays, estimate sensitivity to tyrosine kinase inhibitors (dose-response analysis) and study receptor tyrosine kinase phosphorylation with western blots.
 - Develop a database of recurrent somatic mutations (DORM) in human cancers and a web tool to design primers for site-directed mutagenesis using R and Shiny (available at <https://eleniuslabtools.utu.fi>).
- Dept. of Medical Biochemistry and Genetics** | University of Turku Turku, FIN
Research Assistant with Prof. Klaus Elenius Jun – Dec 2014
- Cloned retroviral mammalian expression constructs with Restriction Digestion & Gibson Assembly
 - Evaluated methods for random mutagenesis and established mammalian cell cultures with stable transgene expression (using retroviral transduction).
- Turku Centre for Biotechnology** | University of Turku & Åbo Akademi Turku, FIN
Master's thesis student with Prof. Laura Elo Nov 2013 – May 2014
Thesis: Gene expression analysis in cancer microarray datasets, investigating the role of an Embryonic Stem Cell Factor in prognosis.
- Studied an embryonic stem cell marker (*LITD1*) in human cancers using microarray and RNA-seq data
 - Elucidated potential effects of the complex interactome of LITD1 in different cancer types using R.
- Turku Centre for Biotechnology** | University of Turku & Åbo Akademi Turku, FIN
Summer internship with Prof. Laura Elo Jun – Jul 2013
- Mined Cancer Gene Expression databases (like GEO, ArrayExpress, Oncomine)
 - Parsed the data (Python) and summarized using visualizations (R)
- MRD Life Sciences & Amity Institute of Biotechnology** | Amity University Lucknow, IND
Bachelor's thesis student 2011 – 2012
Thesis: DNA Extraction, Sequencing & Computational Analysis from *Neisseria flavescens*.

PATENTS

- WO2019229302A1 | EP3802883A1 | US20210285053A1** May 2019
Title: LITD1 as predictive biomarker of colon cancer
Identification of a gene expression signature that predicts positive prognosis in colon cancer.

SKILLS and TECHNIQUES

Molecular Biology:

- Cloning (Gateway, Gibson Assembly, Restriction digestion) into lentiviral & retroviral expression plasmids
- Bacterial and Mammalian cell culture
- High titer virus production (lenti- & retro-) and doing viral transductions (transgene and shRNA)
- Random mutagenesis and production of mutation libraries with large ORFs (up to 4kb).
- Nucleic acid extraction DNA (mammalian genome & bacterial plasmid), and RNA.
- Site-directed mutagenesis using polymerase chain reaction
- Protein isolation, quantification, and western blot analysis
- Flow cytometry and Fluorescence assisted cell sorting

Bioinformatics:

- Scripting in R, bash, shell, python and Perl
- Statistical analysis of gene expression from microarray & RNA-seq data
- Variant calling and analysis from next-generation sequencing data (Illumina and Pacbio CCS).
- Proficient in developing and deploying Shiny apps (accessible as web apps) with nginx reverse proxy
- Expert in using Mac OSX, Debian Linux, Microsoft Excel, PowerPoint and Word

TEACHING and ADVISING EXPERIENCE

- 2019 - Peppi Suominen (B.Sc. student) for establishing mammalian cell cultures with stable expression using retroviral transductions, and for cloning and production of plasmids in *E. coli*.
- 2018 - Kaisa Aalto (M.D. student) for her thesis project with *ERBB2* receptor tyrosine kinase.

PERSONAL RESEARCH GRANTS

2021 University of Turku Graduate School (TuDMM)	€ 11 300
2020 K. Albin Johansson Foundation	€ 10 000
2020 University of Turku Graduate School (TuDMM)	€ 27 000
2020 Juhani Aho Foundation for Medical Research	€ 5 000
2019 K. Albin Johansson Foundation	€ 10 000
2016 University of Turku Graduate School (TuDMM)	€ 16 600

CERTIFICATIONS and COURSES

- YKI (Yleinen Kielitutkinto) certification for the Finnish Language (CEFR Level B1, 2020) | Opetushallitus (Finnish National Agency for Education).
- Non-neuronal optogenetics, EMBO practical course (2016) | EMBL Heidelberg, Germany.
- Laboratory animal science course (2015) | University of Turku. Competent and certified to plan, organize, and conduct *in-vivo* experiments.

INVITED TALKS

- 8 March 2022 - “Developing a high-throughput screen to identify activating mutations in tyrosine kinases”, presented at Cancer Research Seminar Series, Turku Cancer Research Society, Turku.
- 1 September 2020 - “iSCREAM – in vitro screen for activating mutations”, presented at Annual Seminar of Turku Doctoral Programme of Molecular Medicine, Turku.

MISCELLANEOUS INFORMATION

- *Memberships:*
 - American Association of Cancer Research (since 2017)
 - Turku Cancer Research Society (since 2016)
- *Languages:* English (Bilingual), Hindi (Bilingual), Finnish (CEFR Level B1), Bengali (mother tongue).
- *Nationality:* Finnish
- *ORCID Identifier:* [0000-0002-3458-0205](https://orcid.org/0000-0002-3458-0205)
- *Google Scholar:* [SPfrYAAAAJ](https://scholar.google.com/citations?user=SPfrYAAAAJ)
- *Github:* [dchakro](https://github.com/dchakro)

List of publications

- 1) *An Unbiased Functional Genetics Screen Identifies Rare Activating ERBB4 Mutations.*
Chakroborty, D.*, Ojala, V. K.*, Knittle, A. M., Drexler, J., Tamirat, M. Z., Ruzicka, R., Bosch, K., Woertl, J., Schmittner, S., Elo, L. L., Johnson, M. S., Kurppa, K. J., Solca, F., & Elenius, K. (2022). *Cancer Research Communications*, 2(1), 10–27.
- 2) *Identification of Predictive ERBB Mutations by Leveraging Publicly Available Cell Line Databases.*
Koivu, M. K. A., Chakroborty, D., Tamirat, M. Z., Johnson, M. S., Kurppa, K. J., & Elenius, K. (2021). *Molecular Cancer Therapeutics*, 20(3), 564–576.
- 3) *LITD1 - A prognostic marker for colon cancer.*
Chakroborty, D.*, Emani, M. R.*, Klén, R.*, Böckelman, C., Hagström, J., Haglund, C., Ristimäki, A., Lahesmaa, R., & Elo, L. L. (2019). *BMC Cancer*, 19(1), 727.
- 4) *An unbiased in vitro screen for activating epidermal growth factor receptor mutations.*
Chakroborty, D., Kurppa, K. J., Paatero, I., Ojala, V. K., Koivu, M., Tamirat, M. Z., Koivunen, J. P., Jänne, P. A., Johnson, M. S., Elo, L. L., & Elenius, K. (2019). *Journal of Biological Chemistry*, 294(24), 9377–9389.
- 5) *Receptor tyrosine kinase profiling of ischemic heart identifies ROR1 as a potential therapeutic target.*
Heliste, J., Jokilampi, A., Paatero, I., Chakroborty, D., Stark, C., Savunen, T., Laaksonen, M., & Elenius, K. (2018). *BMC Cardiovascular Disorders*, 18(1), 196.
- 6) *Different responses of colorectal cancer cells to alternative sequences of cetuximab and oxaliplatin.*
Narvi, E., Vaparanta, K., Karrila, A., Chakroborty, D., Knuutila, S., Pulliainen, A., Sundvall, M., & Elenius, K. (2018). *Scientific Reports*, 8(1), 16579.
- 7) *Transcriptional Repressor HIC1 Contributes to Suppressive Function of Human Induced Regulatory T Cells.*
Ubaid Ullah*, Andrabi, S. B. A.*, Tripathi, S. K.*, Dirasanthi, O., Kanduri, K., Rautio, S., Gross, C. C., Lehtimäki, S., Bala, K., Tuomisto, J., Bhatia, U., Chakroborty, D., Elo, L. L., Lähdesmäki, H., Wiendl, H., Rasool, O., & Lahesmaa, R. (2018). *Cell Reports*, 22(8), 2094–2106.
- 8) *The LITD1 protein interactome reveals the importance of post-transcriptional regulation in human pluripotency.*
Emani, M. R. R.*, Närvä, E.*, Stubb, A., Chakroborty, D., Viitala, M., Rokka, A., Rahkonen, N., Moulder, R., Denessiouk, K., Trokovic, R., Lund, R., Elo, L. L. L., & Lahesmaa, R. (2015). *Stem Cell Reports*, 4(3), 519–528.

* These authors contributed equally to this work.

The journal name, volume, issue, & page number (underlined) is a link to doi of the article.