

# Shubham Dutta, Ph.D.

SCIENTIST II

Massbiologics, University of Massachusetts Medical School

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## About me

- Molecular Biologist with 10 years of experience in assay development
- Designing & executing high-throughput CRISPR-Cas9 knockout & RNAi screens in cancer and rare genetic diseases
- Experience in multicolor flow cytometry and flow panel design in blood
- Design, production, and purification of monoclonal antibodies
- Development and selection of stable clonal cell lines for protein production
- Designing & executing antibody-antigen interaction studies using Surface Plasmon Resonance and BiLayer Interferometry
- Supervising direct reports & working with cross-functional/ remote teams
- Actively serving as a Editorial Board Member & Reviewer of several peer-reviewed journals

## Professional Experience

### SCIENTIST II, MASSBIOLOGICS, UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL

2020 - Present

- Engineering novel antibodies against cell-surface markers in Neotropic non-human primates
- Generation and screening of hybridomas
- Production, purification, and quality testing of antibodies and proteins
- Generation of stable antibody producing cell lines
- High-throughput screening and identification of top expression clones
- Multicolor flow cytometry and panel generation for primate blood
- Managing research associates

### SCIENTIST II, TOTIENT INC.

2018 - 2020

- Served as cell and molecular biology lead for oncology drug discovery programs
- Developed strategies to simultaneously knockout two genes using CRISPR-Cas9
- Experience with preparation of high-quality whole genome lentiviral sgRNA particles
- Identification of targets using CRISPR mediated whole genome knockout screen on multiple cell lines
- Identification of targets for recombinant antibodies using Protein arrays, western blotting, LC-MS, ELISA and immunofluorescence
- Worked with CROs with for special assays including 3D cell culture, Mass Spectrometry, and Surface Plasmon Resonance (SPR)
- Managed one direct report and one matrix reports in CROs

### POST-DOCTORAL ASSOCIATE, UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL

2018

- Developing a CRISPR screen to identify novel epigenetic regulators of EWS-FLI1 fusion oncoprotein which causes Ewing's sarcoma
- Executing genome wide shRNA/ RNAi and proteomic screens to identify transcription factors involved in X-chromosome inactivation
- Genome editing by CRISPR/Cas9 for specific projects in the lab
- Managed one intern and two junior graduate students

## MOLECULAR BIOLOGY

CRISPR-Cas9 Knock-outs and Knock-in, Genome wide RNAi and CRISPR screens, PCR, SDS Page, Recombinant DNA Technology, Molecular Cloning, Mutagenesis, Western Blots, Quantitative RT-PCR, Flow Cytometry (upto 8 color sorting and Flow panel design), Gene tagging, ChIP-Seq, RNA-Seq, Preparation of NGS libraries, Fluorescence Microscopy

## PROTEIN BIOLOGY

Antibody engineering, Antibody production using transient and FedBatch culture, Purification using AKTA, ELISA, Surface Plasmon resonance (SPR) using Biacore, BiLayer Interferometry, In vitro Protein purification and kinase assays, Immunoprecipitation, Phospho-protein separation by phostag gels

## CELL CULTURE

Stable cell line generation, High-throughput clone selection (AMBR15, Clonepix), Handling and culture of Blood and PBMCs, Generation of neurons from NPCs and iPSCs, Viral packaging and transduction, Soft agar colony formation, invasion and migration assays, Mammalian Cell Maintenance, Transfection and related techniques

## DATA SCIENCE

RNA-Seq and CHIP-Seq data analysis, Genomic data mining, R programming (Base, Tidyverse, Shiny, Bioconductor), Data wrangling, analysis and visualization, Basic statistics using R, Data driven websites (using R Shiny and Markdown), Basic knowledge in Python programming

## SCIENTIFIC EDITING/ WRITING

Scientific papers and research proposals for grants, Editorial Board member of several peer-reviewed journals

# Education

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## University of Massachusetts Medical School

DOCTOR OF PHILOSOPHY, BIOMEDICAL SCIENCES

Worcester, MA, USA

09/2011-06/2018

## University of Calcutta

MASTER OF SCIENCE, BIOPHYSICS AND MOLECULAR BIOLOGY

Calcutta, West Bengal, India

06/2008-05/2010

## University of Calcutta

BACHELOR OF SCIENCE, MICROBIOLOGY

Calcutta, West Bengal, India

06/2005-05/2008

# Publications

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1. Banerjee, A., Malonia, S. K., & Dutta, S. (2021). Frontiers of CRISPR-Cas9 for cancer research and therapy. *Journal of Exploratory Research in Pharmacology*, 6(3), 96–104.
2. Dutta, S., Mana-Capelli, S., Paramasivam, M., Dasgupta, I., Cirka, H., Billiar, K., & McCollum, D. (2018). TRIP6 inhibits hippo signaling in response to tension at adherens junctions. *EMBO Reports*, 19(2), 337–350.
3. Mana-Capelli, S., Paramasivam, M., Dutta, S., & McCollum, D. (2014). Angiomotins link f-actin architecture to hippo pathway signaling. *Molecular Biology of the Cell*, 25(10), 1676–1685.
4. Bindu, S., Pal, C., Dey, S., Goyal, M., Alam, A., Iqbal, M. S., Dutta, S., Sarkar, S., Kumar, R., Maity, P., others. (2015). Translocation of heme oxygenase-1 to mitochondria is a novel cytoprotective mechanism against non-steroidal anti-inflammatory drug-induced mitochondrial oxidative stress, apoptosis, and gastric mucosal injury. *Journal of Biological Chemistry*, 290(22), 13667–13668.