

Devang Mehta

Postdoctoral Fellow

University of Alberta

Education

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born: 31-10-1990
ORCID: [0000-0002-8911-1174](https://orcid.org/0000-0002-8911-1174)

Dr. Sc. (ETH Zurich) in Plant Biotechnology

+ Certificate in Science & Policy

ETH Zurich, Switzerland

JAN 2014 - MAR 2018

Master of Research in Systems & Synthetic Biology

(Distinction)

Imperial College London, UK

SEP 2012 - SEP 2013

Bachelor of Technology in Biotechnology

VIT University, India

JUN 2008 - JUN 2012

Research & Work Experience

Asst. Prof. R. Glen Uhrig

Prof. Wilhelm Gruissem &
Prof. Hervé Vanderschuren

Prof. Paul Freemont &
Prof. Tom Ellis

Postdoctoral Research > University of Alberta, Canada

JUN 2018 - present

- **Advanced systems analysis of plant proteomes and complexomes**
- **Multi-omic analysis of the impact of specific light regimes on plant growth and development** (*Collaboration with G2VOptics Inc. Alberta*)
- **Using quantitative proteomics to optimize *Euglena gracilis* as a sole-source COVID-19 vaccine delivery platform** (*Collaboration with NobleGen Inc. Ontario*)

PhD Thesis > ETH Zurich, Switzerland

DEC 2013 – APR 2018 (Defence held in FEB 2018, served as a postdoc until JUN 2018)

Engineering plant disease resistance in the context of evolving virus populations

CRISPR and RNAi based engineering of virus resistance in the tropical root crop, Cassava; confined field trial of transgenic cassava plants in Kenya; invention of a circular-ssDNA enrichment SMRT sequencing method for viral metagenomics and eccDNA detection.

Master's Thesis > Imperial College London, UK

SEP 2012 – SEP 2013

Engineering a protease-based biosensor for schistosomiasis

Construction and kinetic modelling of a modular, artificial protease cascade based whole-cell bacterial biosensor in *E. coli* and *B. subtilis* to detect cercarial elastase in order to assess the presence of *Schistosoma* parasites in water samples.

Summer Internship > Monsanto Research Center, India

JUN 2010 - JUL 2010

Genetic engineering technologies and plant transformation

Hands-on experience in plant biotechnology research and business development at the world's largest ag-biotech company.

Publications

* denotes equal contributions

denotes corresponding authorship

All articles are published as open-access, and most were deposited as preprints on *bioRxiv* prior to peer-review.

Associated software is version controlled and freely available at: www.github.com/devang-mehta

Last updated: 2020-12-22

Total articles= **19**
 articles in prep= **3**
 preprints = **2**
 published/accepted = **16**
 corresponding author = **4**
 first author = **10**
 h-index = **6**
 total citations = **166**

Article Metrics

Altmetric: Article attention score
 citations sourced from Google Scholar,
 including citations of preprints

Journal Metrics

JiF = Journal Impact Factor
 RiF = Journal Rank in Field

Patents

Illumination control systems and methods for modulating plant behavior

Inventors: Uhrig RG, Scandola S, **Mehta D**

Assignee: G2V Optics Inc.

U.S. Provisional Patent No.: 63083778

Filed: 25-09-2020

Preprints, articles under review or in prep

Direct data-independent acquisition (direct DIA) enables substantially improved label-free quantitative proteomics in Arabidopsis

Mehta D, Scandola S, Uhrig RG[#]

bioRxiv (2020)

<https://www.biorxiv.org/content/10.1101/2020.11.07.372276v1>

Quantitative proteome and PTMome analysis of Arabidopsis thaliana root responses to persistent osmotic and salinity stress.

Rodriguez M*, **Mehta D***, Tan M, Uhrig RG[#]

bioRxiv (2020)

The importance of responsible assessment of new biotechnologies in agriculture

Mehta D & Vanderschuren H[#]

Nature Molecular & Cell Biology

Manuscript in Prep --invited submission

Closing the protein gap in plant chronobiology

Mehta D, Krahmer J & Uhrig RG[#]

The Plant Journal

Manuscript in Prep --invited submission

Twilight length regulates growth, starch metabolism, and flowering time by modulating clock period in Arabidopsis

Scandola S*, **Mehta D***, Tan M, Rodriguez M, Uhrig RG[#]

Manuscript in Prep

Peer-reviewed Publications

Ten principles trainees, PIs, departments, and faculties can use to reduce bias and discrimination in STEM [altmetric = 122]
 [JiF = 12.685]

Willis L, **Mehta D**, Davis A

[RiF = 16/177]

ACS Central Science (2020)

<https://doi.org/10.1021/acscentsci.0c01120>

Phosphate and phosphite differentially impact the proteome and phosphoproteome of Arabidopsis suspension cell cultures [citations = 3]
 [JiF = 6.141]
 [RiF = 13/234]

Mehta D, Ghahremani M, Perez-Fernandez M, Tan M, Plaxton WC, Uhrig RG[#]

The Plant Journal (2020)

<https://doi.org/10.1111/tpj.15078>

Full-length sequencing of circular DNA viruses and extra-chromosomal circular DNA using CIDER-Seq [altmetric = 87]
 [citations = 1]

Mehta D*, Cornet L, Hirsch-Hoffman M, Zaidi SSA, Vanderschuren H[#] [JiF = 11.334]
 [RiF = 2/79]

Nature Protocols (2020)

<https://doi.org/10.1038/s41596-020-0301-0>

Linking CRISPR-Cas9 interference in cassava to the evolution of editing-resistant geminiviruses [altmetric = 152]
 [citations = 35]
Mehta D[#], Stürchler A, Hirsch-Hoffmann M, Gruissem W, Vanderschuren H[#]. [JiF = 14.028]
Genome Biology (2019) [RiF = 3/162]
<https://doi.org/10.1186/s13059-019-1678-3>

A new full-length circular DNA sequencing method for viral-sized genomes reveals that RNAi transgenic plants provoke a shift in geminivirus populations in the field [altmetric = 16]
 [citations = 13]
Mehta D[#], Hirsch-Hoffmann M, Were M, Patrignani A, Zaidi SSA, Were H, Gruissem W & Vanderschuren H[#]. [JiF = 11.147]
Nucleic Acids Research (2019) [RiF = 14/298]
<https://doi.org/10.1093/nar/gky914>

Accelerated ex situ breeding of GBSS-and PTST1-edited cassava for modified starch [altmetric = 201]
 [citations = 40]
 Bull SE, Seung D, Chanez C, **Mehta D**, Kuon J-E, Truernit E, Hochmuth A, Zurkirchen I, Zeeman S, Gruissem W, Vanderschuren H[#]. [JiF = 12.804]
Science Advances (2018) [RiF = 4/69]
<http://dx.doi.org/10.1126/sciadv.aat6086>

Molecular insights into Cassava brown streak virus susceptibility and resistance by profiling of the early host response [altmetric = 5]
 [citations = 23]
 Anjanappa RB^{*}, **Mehta D**^{*}, Okoniewski MJ, Szabelska A, Gruissem W & Vanderschuren H[#]. [JiF = 4.379]
Molecular Plant Pathology (2018) [RiF = 15/228]
<https://doi.org/10.1111/mpp.12565>

Genome-scale analysis of regulatory protein acetylation enzymes from photosynthetic eukaryotes. [altmetric = 6]
 [citations = 4]
 Uhrig RG, Schläpfer P, **Mehta D**, Hirsch-Hoffmann M & Gruissem W[#]. [JiF = 3.501]
BMC Genomics (2017) [RiF = 48/162]
<https://doi.org/10.1186/s12864-017-3894-0>

Characterization of Brown Streak Virus-Resistant Cassava [altmetric = 2]
 [citations = 22]
 Anjanappa RB, **Mehta D**, Maruthi MN, Kanju E, Gruissem W, Vanderschuren H[#]. [JiF = 3.649]
Molecular Plant-Microbe Interactions (2016) [RiF = 31/228]
<https://doi.org/10.1094/MPMI-01-16-0027-R>

Academic Opinions, Perspectives & Correspondence

First plant cell atlas workshop report
 Rice S, Fryer E, Jha SG, Malkovskiy A, Meyer H, Thomas J, Weizbauer R, Zhao K, Birnbaum K, Erhardt D, Wang Z, Rhee S, **The Plant Cell Atlas Consortium** [altmetric = 26]
Plant Direct (2020) [JiF = 1.725]
<https://doi.org/10.1002/pld3.271> [RiF = 105/234]

Research Communication: Ways to increase equity, diversity and inclusion [altmetric = 77]
 [citations = 1]
Mehta D[#], Bedaiko Y, de Winde CM, Ebrahimi H, Fernandez-Chiappe F, Ilango V, Quezada CP, Riley JL, Saladi SM, Tay A, Weissgeber T [JiF = 7.080]
eLife (2020) [RiF = 5/93]
<https://doi.org/10.7554/eLife.60438>

Lab heads: how have your minority ethnic trainees fared? <u>Mehta D#</u> <i>Nature</i> (2020) https://doi.org/10.1038/d41586-020-01760-4	[altmetric = 26] [JiF = 42.779] [RiF = 1/71]
Mitigating the impact of conference and travel cancellations on researchers' futures Weissgeber T, Bedaiko Y, de Winde CM, Ebrahimi H, Fernandez-Chiappe F, Ilango V, <u>Mehta D</u> , Quezada CP, Riley JL, Saladi SM, Sarabipour S, Tay A <i>eLife</i> (2020) https://doi.org/10.7554/eLife.57032	[altmetric = 88] [citations = 7] [JiF = 7.080] [RiF = 5/93]
Highlight negative results to improve science <u>Mehta D#</u> <i>Nature</i> (2019) https://doi.org/10.1038/d41586-019-02960-3	[altmetric = 2158] [citations = 3] [JiF = 42.779] [RiF = 1/71]
The green revolution did not increase hunger and poverty for millions. <u>Mehta D#</u> <i>Nature Plants</i> (2018) https://doi.org/10.1038/s41477-018-0240-8	[altmetric = 18] [citations = 2] [JiF = 13.256] [RiF = 3/234]
Lab heads should learn to talk about racism <u>Mehta D#</u> . <i>Nature</i> (2018) https://doi.org/10.1038/d41586-018-05646-4	[altmetric = 496] [citations = 2] [JiF = 42.779] [RiF = 1/71]
PhD supervisors: be better mentors <u>Mehta D#</u> . <i>Nature</i> (2017) https://doi.org/10.1038/545158a	[altmetric = 51] [JiF = 42.779] [RiF = 1/71]

Software

DomainViz

Schlöpfer P, Mehta D, Ridderikof C, Uhrig RG
<https://uhrigprotocols.biology.ualberta.ca/domainviz>

PSMfinder

Schlöpfer P, Mehta D
<https://github.com/UhrigLab/mehta2020-pi-proteome/tree/master/PSMfinder>

CIDER-Seq Data Analysis v.2.0

Hirsch-Hoffman M, Cornet L, Mehta D
<https://github.com/devang-mehta/ciderseq2>

CRISPR Amplicon-Seq Analysis and Visualisation Tool

Hirsch-Hoffmann M, Mehta D
https://github.com/devang-mehta/CRISPR_amplicon-seq

Awards and grants

Postdoctoral Fellowship > Swiss National Science Foundation

JUL 2018

CAD 90 000

IDP-Bridges PhD Fellowship > Marie-Curie Actions, FP7

DEC 2013

EUR 166 000

Jubilee Scholarship > The British Council, UK

SEP 2012

GBP 40 000

George McDuffy Travel Bursary > Canadian Society of Plant Biologists

2018, 2019 (Travel Grant)

Fund for Young Scientists > Swiss Society of Agronomy

2017 (Travel Grant)

SEB Travel Award > Society of Experiment Biologists

2017

Science Challenge > Royal College of Science Union

2012 (Science Communication Competition)

Community Service

University of Alberta Faculty of Science: Equity, Diversity, and Inclusion Committee

AUG 2020 – PRESENT

I'm a member of a group of early career researchers who advise the senior management at the life science journal *eLife*, including Editor-in-Chief Prof. Mike Eisen about editorial policies and means to support minorities and women in science publishing.

eLife: Early Career Advisory Group Member

AUG 2018 - PRESENT

I'm a member of a group of early career researchers who advise the senior management at the life science journal *eLife*, including Editor-in-Chief Prof. Mike Eisen about editorial policies and means to support minorities and women in science publishing.

TEDMED: Research Scholar

SEP 2019

As a TEDMED Research Scholar, I evaluated submissions by high-profile scientists to speak at the annual TED medical conference.

Department Council, Biological Sciences, University of Alberta

2018 – 2019

Member of the final decision-making voting body of the Department.

European Synthetic Biology Students and Postdocs Association

JAN 2015 – JAN 2018

Founding member and Trustee of EUSynBioS, an association of 500+ students and postdocs working in synthetic biology in Europe.

Peer reviewer

Reviewer for Communications Biology, Plant Biotechnology Journal, Physiologia Plantarum

Managing Editor, ECRLife

AUG 2018 – AUG 2020

Managing Editor of the blog for the eLife Ambassadors Program: www.ecrlife.org

Teaching experience

Guest Lecturer > Drug Plants (BOT380)

University of Alberta, Canada

SPRING 2019 & 2020

Lecturer > Fundamentals in Biology II

ETH Zurich, Switzerland

SPRING 2018

~200 2nd year Bachelor students

Coordinator > Applied Biotechnology

ETH Zurich, Switzerland

SPRING 2016 & 2017

~8-10 Final year Bachelor students

Lab instructor > Fundamentals in Biology II

ETH Zurich, Switzerland

SPRING 2015

~200 2nd year Bachelor students

Supervisory experience

Graduate Students

Maria Rodriguez

(2019-) Master's thesis, University of Alberta

Mariam Were

(2016) PhD student – visitor from MMUST, Kenya

Alessandra Stürchler

(2017) Master's thesis, ETH Zurich

Yazhen Liu

(2017) Master's rotation, ETH Zurich

Christelle Chanez

(2016) Master's rotation, ETH Zurich

Undergraduate Students

Kallum McDonald (2019-2020) University of Alberta

Maryalle Tan (2019-2020) University of Alberta

Maria Rodriguez (2018-2019) University of Alberta

Conference presentations and invited talks

The genetic engineering of plants: a first-hand account

(2021) Invited Talk: Sunny Hollow Montessori Junior High, MI, USA

Structure in science writing

(2020) Invited Workshop: ComSciCon SciWri 2020

Post-genetic responses to abiotic stress in plants

(2020) Invited Seminar: Department of Biology, Queen's University, Canada

Post-genetic responses to phosphate starvation and heat stress in *Arabidopsis thaliana*

(2019) Poster Presentation: Cold Spring Harbor Meeting: Plant Genomes & Biotechnology

Linking kinase signaling and RNA processing in plant stress response.

(2019) Oral Presentation: Plant Canada

Linking kinase signaling and RNA processing in plant stress response.

(2019) Invited Talk: University of Liège, Belgium

How 21st Century Genetic Engineering Can Address Food Insecurity in the Global South.

(2018) Invited Talk: University of California, Riverside (remote)

CIDER-Seq: unbiased virus enrichment & full-length genome sequencing.

(2018) Invited Talk: Zurich PacBio Day (Functional Genomics Center-Zurich)

Synthetic Biology & Engineering the Environment.

(2017) Moderator: Panel Discussion, EUSynBioS Symposium

Engineering disease resistance in the context of complex virus populations.

(2017) Poster: PSC-Syngenta Symposium 2017

CIDER-Seq: unbiased virus enrichment & full-length genome sequencing.

(2017) Oral Presentation: Society of Experimental Biology Annual Meeting

Misuse of biological research: Do we need to be concerned?

(2017) Invited Panellist: the Swiss Academy of Sciences

Natural products: from plant-based production to synthetic biology

(2016) Moderator: Panel Discussion, Zurich-Basel Plant Science Centre Symposium 2016

Gene Drives: Pros & Cons.

(2016) Moderator: Panel Discussion at the EUSynBioS Symposium 2016

From light to food: improving crops which feeds millions.

(2015) Public demonstration: Scientifica 2015, Zurich Research Day

Engineering durable resistance to viral diseases in cassava for sustainable industrial production in Southern Africa.

(2014) Poster: FIBL Symposium on Participatory Research in Agriculture

Engineering durable resistance to viral diseases in cassava for sustainable industrial production in Southern Africa.

(2014) Poster: ETH Zurich D-BIOL Symposium

In the media

Media appearances about broader scientific issues.

Publication specific media coverage can be found under Altmetric stats for each paper.

Deutschlandfunk

2020

Interview about publishing negative results in science.

<https://www.deutschlandfunk.de/negative-studienergebnisse-null-und-nichtig.740.de.html>

Laborjournal

2020

Interview about doing GMO research in Europe

https://www.laborjournal.de/rubric/hintergrund/hg/hg_20_04_01.php

The Pulse, WHYY, National Public Radio

JAN 2019

Interview about the opposition to GMOs

<https://whyy.org/segments/why-opposition-to-gmos-is-a-first-world-privilege/>

Quartz

JUN 2018

Quoted in an article about plant consciousness

<https://qz.com/1294941/a-debate-over-plant-consciousness-is-forcing-us-to-confront-the-limitations-of-the-human-mind/>

Talking Biotech Podcast

MAY 2018

Interviewed about my research into plant viruses and genetic engineering

<http://www.talkingbiotechpodcast.com/135-engineering-plant-virus-resistance/>

Popular science writing

I write regularly for [Massive Science](#), an online science publication that features articles written by active scientists for science-curious readers.

I write about genetic engineering, the ethics of genome editing in plants and humans, climate-change, evolution. My articles cover new research as well as review popular science books.

My work has been featured on radio, podcasts, and has been syndicated by mainstream news outlets in the US and India. On Massive Science, my work has been read more than 70,000 times.

Since 2019, all proceeds from my writing are donated to the UN Human Rights Commission to help with the Syrian refugee crisis.

We need genetic engineering to stave off climate-change induced global hunger.

(2019) [Massive Science](#). Syndicated by: [The Wire](#)

Evolution is elegant but not in David Sloan Wilson's hands.

(2019) [Massive Science](#)

Your bubble tea could hold the key to helping millions of farmers.

(2018) [Massive Science](#). Syndicated by: [Salon](#)

The art of publicly changing your mind on GMOs.

(2018) [Massive Science](#). Syndicated by: [Salon](#)

Why I'm quitting GMO research.

(2018) [Massive Science](#). Syndicated by: [Slate](#), [The Wire](#)

Plants are not conscious, whether you can sedate them or not.

(2018) [Massive Science](#)

How simulating evolution helped scientists design a better virus.

(2018) [Massive Science](#)

Scientists are recruiting live bacteria to fight deadly infections.

(2018) [Massive Science](#)

Author contributions: recognising researchers for the work they do.

(2018) [eLife Labs](#)

The Mother's Curse: How a French king's legacy revealed a loophole in evolution.

(2018) *Massive Science*, syndicated by: [Salon](#)

Nobel Prizes should reward science, not scientists.

(2018) *Massive Science*, syndicated by: [Slate](#)

Science first, scientists later: reforming author lists in scientific publications.

(2018) [Medium](#)

We should embrace human genome engineering.

(2018) [Massive](#)

Inside the effort to create entire genomes from scratch.

(2018) [Massive](#)

Synthetic Biology and Geoengineering.

(2018) [PLOS Blogs](#)

Dangers of our own creation: biosecurity in an era of genome editing.

(2018) [PLOS Blogs](#)

Rewriting our food supply: how genome editing will revolutionise our food supply, if we let it.

(2018) [PLOS Blogs](#)

Writing our genome: a conversation with George Church.

(2018) www.devang.bio