



# Erick I. Navarro-Delgado

## Profile

I am a bioinformatician interested in developing computational tools and statistical approaches to analyze and integrate multi-omic data and understand how and under which conditions, individual genetic susceptibility and environmental exposures work to influence human biology.

## Education

2021 - TO DATE	<b>THE UNIVERSITY OF BRITISH COLUMBIA</b> - FACULTY OF SCIENCE
	PhD in Bioinformatics      Grade Average: 95.9/100
2016 - 2021	<b>UNIVERSIDAD NACIONAL AUTÓNOMA DE MÉXICO (UNAM)</b> - FACULTY OF SCIENCE
	B.Sc. in Biology      Grade Average: 9.85/10 (3rd highest GPA in 2021's class)
2019	<b>KING'S COLLEGE LONDON</b> - FACULTY OF LIFE SCIENCES & MEDICINE
	Study Abroad (Exchange)      Grade Average: 73.5 (First-Class Honors)

## Professional Development

- 2024    **BIOCONDUCTOR CARPENTRIES INSTRUCTOR TRAINING.** BIOCONDUCTOR (16 HOURS).
- 2020/21 **DATA SCIENCE CERTIFICATE.** BEDU / SANTANDER (5 MONTHS).
- 2020    **INTRODUCTION TO DATA ANALYSIS WITH PYTHON.** EMTECH INSTITUTE / SANTANDER (60 HOURS).

## Research Experience

SEP 2021 - TO DATE	<b>BC CHILDREN'S HOSPITAL RESEARCH INSTITUTE</b> (VANCOUVER, CANADA)
	Supervisors: Dr. Michael Kobor & Dr. Keegan Korthauer
	- Developing RAMEN: a bioinformatic tool to model the genome and exposome contribution to DNA methylome variation across early life with a ML approach.
NOV 2018 - JUN 2021	<b>NATIONAL CANCER INSTITUTE (INCAN)</b> - (MEXICO CITY)
	Supervisor: Dr. Rodrigo Gonzalez Barrios
	- Conducted a bioinformatic analysis to identify epigenetic central players in SARS-CoV-2 infection with therapeutic potential through a weighted gene co-expression network approach using RNA-seq data, leading to a first co-author publication.
JUNE - SEP 2019	<b>THE UNIVERSITY OF BRITISH COLUMBIA</b> - (VANCOUVER, CANADA)
	Supervisor: Dr. Denise Daley
	- Adapted the GWAS permutation-based Gene Set Analysis bioinformatic tool ALLIGATOR to be used with RNA-seq data.
JUNE - AUG 2018	<b>WEIZMANN INSTITUTE OF SCIENCE</b> - (REHOVOT, ISRAEL)
	Supervisor: Dr. Valery Krizhanovsky
	- Tested the effect of senolytics as a therapeutic approach to prevent Pancreatic Ductal Adeno-carcinoma development in a Kras-driven transgenic mouse model and cultured human cell lines
JUNE - AUG 2017	<b>NATIONAL LABORATORY OF GENOMICS FOR BIODIVERSITY (LANGEBIO), CINVESTAV</b> - (IRAPUATO, MEXICO)

Supervisor: Dr. Alexander de Luna Fors

- Analysis of epistasis among genes in the nutrient sensing regulatory pathway affecting *Saccharomyces cerevisiae*'s chronological lifespan using a high-throughput parallelizable approach

JAN - JUNE 2017

**FACULTY OF SCIENCE , UNAM - LABORATORY OF MOLECULAR BIOLOGY AND GENOMICS (MEXICO CITY, MEXICO)**

Determination of acatalacemic *Saccharomyces cerevisiae*'s chronological lifespan expressing *Debaryomyces hansenii*'s catalase in plasmids under different promoters.

SEP 2015-MAY 2016

**NATIONAL INSTITUTE OF NEUROLOGY AND NEUROSURGERY (INNN) - LABORATORY OF NEUROINFLAMMATION RESEARCH (MEXICO CITY, MEXICO)**

Evaluation of specific antibodies in patients affected with neurocysticercosis before and after regular treatment.

MAY - JULY 2015

**INSTITUTE OF CHEMISTRY (IQ), UNAM - DEPARTMENT OF NATURAL PRODUCTS(MEXICO CITY)**

Extraction of bioactive natural products from the plant *Cacalia decomposita* with possible antiviral activity against HIV type 1.

## Presentations

### ORAL PRESENTATIONS

**Navarro-Delgado, El.** (2024). *Modelling the genome-exposome contribution to newborn methylome variability with the RAMEN package*. Presented at the 13th BIG research day. UBC Life Sciences Institute, Vancouver, Canada.

**Navarro-Delgado, El.** (2023). *Modelling the genome and prenatal exposome contribution to newborn DNA methylome variability with the RAMEN package*. Presented at the Epigenomics of Common Diseases 2023 conference. Wellcome Genome Campus, Hinxton, UK.

**Navarro-Delgado, El.** (2023). *Modelling the genome and prenatal exposome contribution to newborn DNA methylome variability with the RAMEN package*. Presented at the Vancouver Bioinformatics Users Group meeting. Simon Fraser University, Burnaby, Canada.

**Navarro-Delgado, El.** (2023). *Genetics vs environment? Modelling their contribution to DNA methylome variability in newborns*. Presented at the Centre or Molecular Medicine and Therapeutics Seminar series. BC Children's Research Institute, Vancouver, Canada.

**Navarro-Delgado, El.** (2023). *Nature vs Nurture: understanding the influence of genetics and environment on DNA methylation*. Presented at the Vancouver Bioinformatics Users Group Lay-term talks competition. Langara College, Vancouver, Canada.

**Navarro-Delgado, El.** (2023). *Modelling the contribution of genetics and prenatal environment to DNA methylome variability with the RAMEN package*. Presented at the 12th BIG Research Day. UBC Life Sciences Institute, Vancouver, Canada.

**Navarro-Delgado, El.** (2020). *Identifying targetable epigenetic central players in SARS-CoV-2 infection with a systems biology approach*. Presented at the Mexican Interdisciplinary Network of Epigenomics (RIEM). Universidad Nacional Autónoma de Mexico, Mexico..

**Navarro-Delgado, El.** (2019). *Identifying the main biological mechanisms in asthma and food allergy: adapting ALLIGATOR to RNA-seq data*. Presented at the Summer Student Research Day. Robson Square, Vancouver, Canada.

**Navarro-Delgado, El.** (2018). *Use of senolytics as a therapeutic approach to prevent cancer development*. Presented at the Kupcinet-Getz International Summer School Colloquium. Weizmann Institute of Science, Rehovot.

## POSTER PRESENTATIONS

**Navarro-Delgado, EI;** Czamara, D; Edwards, K; Merrill, SM; Konwar, C; Maclsaac, JL; the CHILD study team, the PREDO study team; Turvey, SE; Korthauer, K; Kobor, MS (2024). *RAMEN: Modelling the genome-exposome contribution to newborn methylome variability*. Presented at the 2024 Life Sciences Institute Symposium. UBC Life Sciences Institute, Vancouver, Canada.

**Navarro-Delgado, EI;** Czamara, D; Edwards, K; Merrill, SM; Konwar, C; Maclsaac, JL; the CHILD study team, the PREDO study team; Turvey, SE; Korthauer, K; Kobor, MS (2024). *Modelling the genome-exposome contribution to newborn methylome variability with the RAMEN package*. Presented at the 13th BIG research day. UBC Life Sciences Institute, Vancouver, Canada.

**Navarro-Delgado, EI;** Edwards, K; Merrill, SM; Konwar, C; Maclsaac, JL; the CHILD study team, Turvey, SE; Korthauer, K; Kobor, MS (2024). *Genome-exposome contribution to newborn methylome variability modelling with the RAMEN package*. Presented at the 2024 Healthy Starts Research Day. BC Children's Research Institute, Vancouver, Canada.

**Navarro-Delgado, EI;** Konwar, C; Edwards, K; Merrill, SM; Maclsaac, JL; Liang, X; Zhao, Q; Mozhiu, K; LeWinn, KZ; Bush, NR; the CHILD study team, the CANDLE study team; Korthauer, K; Kobor, MS (2023). *Modelling the contribution of genetics and prenatal environment to cord blood and placenta DNA methylation variability*. Presented at the Centre for Molecular Medicine and Therapeutics Research Day. BC Children's Research Institute, Vancouver, Canada.

**Navarro-Delgado, EI;** Konwar, C; Edwards, K; Merrill, SM; Maclsaac, JL; Liang, X; Zhao, Q; Mozhiu, K; LeWinn, KZ; Bush, NR; the CHILD study team, the CANDLE study team; Korthauer, K; Kobor, MS (2023). *Modelling the contribution of genetics and prenatal environment to cord blood and placenta DNA methylation variability*. Presented at the 12th BIG research day. UBC Life Sciences Institute, Vancouver, Canada.

**Navarro-Delgado, EI;** Edwards, K; Merrill, SM; Konwar, C; Maclsaac, JL; the CHILD study team; Korthauer, K; Kobor, MS (2023). *Modelling the contribution of genetics and prenatal environment to newborn DNA methylation variability*. Presented at the 2023 Healthy Starts Research Day. BC Children's Research Institute, Vancouver, Canada.

## Invited talks

**Navarro-Delgado, EI.** (2024). *Modelling the genome and prenatal exposome contribution to newborn DNA methylome variability with the RAMEN package*. Presented at the Genetics Seminar Series. Centre for Fertility and Health, Oslo, Norway.

## Fellowships

2023/27 **4-YEAR PHD FELLOWSHIP** - ~99 200 CAD, UBC'S PREMIER PHD FELLOWSHIP

2021/25 **INTERNATIONAL TUITION AWARD** - ~12,800 CAD, THE UNIVERSITY OF BRITISH COLUMBIA.

2023 **BCCHR HEALTHY STARTS MASTER'S STUDENTSHIP** (ACCEPTED IN NAME) - 10 000 CAD, BCCHRI

2022 **BANK OF MONTREAL GRADUATE FELLOWSHIP** - 3 200 CAD, UNIVERSITY OF BRITISH COLUMBIA

2022 **PATRICK DAVID CAMPBELL GRADUATE FELLOWSHIP** - 4 325 CAD, UNIVERSITY OF BRITISH COLUMBIA

2022 **GERTRUDE LANGRIDGE GRADUATE SCHOLARSHIP IN MEDICAL SCIENCES** - 8 475 CAD, UNIVERSITY OF BRITISH COLUMBIA

2022 **"SOCIETY TO CELL" CLYDE HERTZMAN MEMORIAL FELLOWSHIP** - 13 000 CAD, SOCIAL EXPOSOME CLUSTER

2021 **GRADUATE GLOBALINK FELLOWSHIP** - 15 000 CAD, MITACS

2020 **SANTANDER TECH FELLOWSHIP** - 30 000 MXN, SANTANDER

2018/20 **ACADEMIC EXCELLENCE SCHOLARSHIP** - 36 000 MXN, FUNDACION TELMEX

2017/19 **EXCELLENCE FELLOWSHIP FOR UNDERGRADUATE STUDENTS** - 54 000 MXN, MEXICAN ACADEMY OF SCIENCES

2019 **EXCELLENCE BECALOS FELLOWSHIP** - 45 000 MXN, ORGANIZACIÓN BECALOS

- 2019 **INTERNATIONAL STUDENT MOBILITY FELLOWSHIP** - 95 000 MXN, UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO
- 2019 **GLOBALINK RESEARCH INTERNSHIP FELLOWSHIP** - 7 500 CAD, MITACS
- 2018 **KUPCINET-GETZ INTERNATIONAL SUMMER SCHOOL FELLOWSHIP** - WEIZMANN INSTITUTE OF SCIENCE
- 2017 **SUMMER SCIENTIFIC RESEARCH (VIC) FELLOWSHIP** - MEXICAN ACADEMY OF SCIENCES

## Awards

- 2024 **BEST POSTER AWARD** - 150 CAD, UBC LIFE SCIENCES SYMPOSIUM 2024. VANCOUVER, CANADA.
- 2023 **BURSARY AWARD** - EPIGENOMICS OF COMMON DISEASES 2023 CONFERENCE. HINXTON, UK.
- 2023 **SPEED TALK COMPETITION - THIRD PLACE** - 100 CAD, 12TH BIG RESEARCH DAY. VANCOUVER, CANADA.
- 2021 **UNAM BIOLOGY EXCELLENCE AWARD** - AWARD FOR OBTAINING THE 3RD HIGHEST CLASS' GRADE AVERAGE AT UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO CLASS 2021 (BIOLOGY). MEXICO CITY, MEXICO.
- 2017 **BEST POSTER AWARD** - II UNAM UNDERGRADUATE BIOCHEMISTRY COLLOQUIUM. MEXICO CITY, MEXICO
- 2016 **GOLD MEDAL, X IBERO-AMERICAN BIOLOGY OLYMPIAD (OIAB)**. BRASILIA, BRAZIL.
- 2016 **UNAM HIGH SCHOOL STUDENT AWARD IN SCIENTIFIC RESEARCH**. MEXICO CITY, MEXICO.
- 2016 **THIRD PLACE, ITESM XXI INTERNACIONAL SCIENCE CONTEST (CIC)**. MONTERREY, MEXICO.
- 2016 **GOLD MEDAL, XXV NATIONAL BIOLOGY OLYMPIAD**. VERACRUZ, MEXICO.

## Teaching Experience

- SEP - DEC 2023 **THE UNIVERSITY OF BRITISH COLUMBIA**- VANCOUVER, CANADA  
Teaching Assistant of STAT545 - Exploratory Data Analysis
- SEP - DEC 2022 **THE UNIVERSITY OF BRITISH COLUMBIA**- VANCOUVER, CANADA  
Teaching Assistant of STAT545 - Exploratory Data Analysis
- MAR 2021 **UNIVERSIDAD AUTÓNOMA METROPOLITANA** - MEXICO CITY  
Developed and led the 20 hours-long workshop "Introduction to RNA-seq data analysis"
- JAN - JUNE 2020 **UNIVERSIDAD NACIONAL AUTÓNOMA DE MEXICO (UNAM)**- MEXICO CITY  
Teaching Assistant of the Epigenetics course in the 2020-2 term.

## Volunteering

- 2023/24 **TRAINEE 'OMICS GROUP SEMINAR DIRECTOR** - BC CHILDREN'S RESEARCH INSTITUTE, VANCOUVER, CANADA.
- 2023 **CLIMATE CHANGE WORKSHOP LEAD** - UBC LET'S TALK SCIENCE. VANCOUVER, CANADA.
- 2017/19 **MEXICO'S NATIONAL BIOLOGY OLYMPIAD ORGANIZING COMMITTEE** - MEXICO.
- 2015/16 **MEXICO CITY'S HEADQUARTER PRESIDENT**- SOCIEDAD CIENTIFICA JUVENIL. MEXICO CITY, MEXICO.

## Software

- **RAMEN** : Regional Association of Methylome variability with the Exposome and geNome, an R package to model the genome and exposome contribution to methylome variability (<https://ericknavarro.github.io/RAMEN>).

## Publications

† denotes equal contribution

## JOURNAL ARTICLES

- Life B; Petkau TL; Cruz GNF; **Navarro-Delgado EI**; Shen N; Korthauer K ; Leavitt BR. (2023). FTD associated behavioural and transcriptomic abnormalities in 'humanized'progranulin-deficient mice: A novel model for progranulin-associated FTD. *Neurobiology of Disease*. 182: 1-15.
- Salgado-Albarrán M.†, **Navarro-Delgado EI**†, Del Moral-Morales A.†, Alcaraz N., Baumbach J., González-Barrios R., Soto-Reyes E. (2021) Comparative transcriptome analysis reveals key epigenetic targets in SARS-CoV-2 infection. *npj Systems Biology and Applications*; doi: 10.1038/s41540-021-00181-x.
- Cáceres-Gutiérrez R.E., Andonegui M.A., Oliva D.A., González-Barrios R., Luna F., Arriaga-Canon C., López A., Prada D., Castro C., Parmentier L., Díaz-Chávez J., Alfaro-Mora Y.,**Navarro-Delgado EI**, Fabian-Morales E., Tran B., Shetty J., Zhao Y., Alcaraz N., De la Rosa C., Reyes J.L., Hédouin S., Hubé F., Francastel C., & Herrera L.A. (2021). Proteasome inhibition alters mitotic progression through the upregulation of a-satellite RNAs. *The FEBS Journal*; doi:10.1111/febs.16261.
- Duncan E.M., Nowotarski S.H., Guerrero-Hernández C., Ross E.J., D'Orazio J.A., **Clubes de Ciencia México Workshop for Developmental Biology\***, McKinney S., Guo L., Alvarado A.S. (2020). A new species of planarian flatworm from Mexico: *Girardia guanajuatensis*. *bioRxiv*; doi:10.1101/2020.07.01.183442.  
\* I was part of the Clubes de Ciencia Mexico WfDB consortium.

## BOOK CHAPTERS

- **Navarro-Delgado EI**†, Salgado-Albarrán M.†, Torres-Arciga K., Alcaraz N., Soto-Reyes E., Herrera L.A. & Gonzalez-Barrios R. (2021). Bioinformatics of Transcription Factor Binding Prediction. In Diego A. Forero, *Bioinformatics and Human Genomics Research*. USA. CRC Press USA (Taylor & Francis Group); doi: 10.1201/9781003005926-10

## THESIS

- **Navarro-Delgado EI**., Gonzalez-Barrios R., Alcaraz N. (2021). Bachelors. Identificación de genes codificantes y elementos repetidos regulados por DAXX mediante RNA-SEQ. *Universidad Nacional Autónoma de México. México*.

## IN PREPARATION / UNDER REVIEW

- **Navarro-Delgado, EI**; Czamara, D; Edwards, K; Merrill, SM; Konwar, C; Maclsaac, JL; the CHILD study team, the PREDO study team; Turvey, SE; Korthauer, K; Kobor, MS. Modelling the genome-exposome contribution to newborn methylome variability with the RAMEN package. *Manuscript in preparation*.