

# Joelyn de Lima

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## SUMMARY

Ph.D. in Undergraduate Biology Education Research; trained in Marine Biology, Zoology, and Science Pedagogy. Strong communication skills from extensive teaching & outreach experience; detail-oriented and goal-focused. Special expertise in:

- Undergraduate Biology Pedagogy
- Community Engaged Research
- Evaluation and Assessment
- Informal Science Education
- Outreach and Communication
- Event Management

## CURRENT APPOINTMENTS

**Pedagogical Advisor:** EPFL, the Swiss Federal Institute of Technology in Lausanne, Switzerland 2021-

**Visiting Scientist:** W.K. Kellogg Biological Station, Michigan State University, USA 2021-

## EDUCATION

MICHIGAN STATE UNIVERSITY (MSU) USA

**Ph.D.** Undergraduate Biology Education Research – Department of Plant Biology (Defended Nov 2020) 2021

- Bessey Award for Outstanding Graduate Student Interdisciplinary Research (2020)

**Graduate Certification in Community Engagement** 2020

**Graduate Certification in College Teaching in Natural Science** 2019

- Future Academic Scholars in Teaching Fellowship (2017 -18, 2018-19)

GOA UNIVERSITY India

**Bachelor of Education**, specialisation in Mathematics and Science Education. 2009

- First rank & distinction, Goa Liberation Council Scholarship for securing the first rank.

**Master of Science** in Marine Science, specialisation in Marine Biology. 2008

- Distinction

**Bachelor of Science** in Zoology with Biotechnology 2005

- First rank & distinction, Late Smt. Hirabai V. Salgaocar Award for Excellence in Zoology.

## PROFESSIONAL COMPETENCIES

- **Communicating Science to Non-Scientific Audiences:** Trained in teaching and communicating science at the school and undergraduate level. Taught scientific courses in formal (middle and high school, and undergraduate) and informal (community outreach) settings. Developed and conducted science activities, including a set of outdoor-education activities to facilitate communicating current scientific research and development. Led multiple educational tours for diverse audiences.
- **Curriculum & Pedagogy:** Developed curriculum for formal and informal education. Experienced in recent pedagogical developments at the undergraduate level.
- **Evaluation & Assessment:** Designed assessments for research and education, both formative and summative. Evaluated student performance (school and undergraduate) as well as pedagogical skills (trainee teachers and graduate students). Evaluated process and products of educational/outreach programs.
- **Qualitative Analysis:** Designed and conducted research interviews for multiple projects, and developed qualitative coding rubrics for interview and open-response data.
- **Communicating Research:** Presented at national and international conferences in India, America, and Europe.

- **Organisational Development:** Co-founded a professional organisation for graduate and post-doctoral researchers, Discipline Based Education Research – Scholars in Training (DBER-SiT). Drafted the bylaws and operating procedures for the organisation. Served as the inaugural chair of the electoral committees for two organisations (DBER-SiT and Evolutionary Knowledge for Everyone, EvoKE). Developed and implemented election procedures for both.
- **Project Leadership & Management:** Designed, developed, and executed projects as a leader (6 projects) and collaborator. Coordinated research teams and supervised high school, undergraduate, and post-baccalaureate researchers.
- **Mentorship:** Mentored students (high school, undergraduate, and post-baccalaureate) and schoolteachers in research skills. Mentored trainee teachers and students (graduate and undergraduate) in pedagogical skills. Mentored graduate students in science communication and outreach.
- **Community Engagement:** Built collaborations with community residents (including educators, artists, and volunteers) to foster science communication. Co-developed outdoor education curriculum with local formal and informal educators.
- **International Collaboration:** Initiated and developed international collaborations with researchers and educators. Gained experience understanding and appreciating cultural contexts as a visiting student in Denmark and Switzerland.
- **Event Management:** Designed, organised, and co-ordinated large virtual and in-person events including weddings.

## SELECTED SCIENCE COMMUNICATION AND OUTREACH

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|--|-----------|
| <i>W.K. Kellogg Biological Station (KBS), Michigan State University (MSU)</i>  | 2020 -    |
| <ul style="list-style-type: none"> <li>• <b>Developing, organising and hosting series of online workshops</b> on ‘Climate Science’ and ‘Building Indigenous Cultural Connections in the Classroom’ which were designed as professional development for K-12 educators.</li> <li>• <b>Write content for and design monthly outreach newsletter &amp; website</b> aimed at disseminating information about research being conducted and resources available that are relevant to K-12 educators.</li> </ul>  |           |
| <i>Michigan State University (MSU)</i>   | 2015 -    |
| <ul style="list-style-type: none"> <li>• <b>Developed, coordinated, and conducted science activities</b> in school science fairs (~20 elementary/middle schools) and for annual Darwin Day and MSU Science Festival events (&gt;1000 children and adults) based on scientific concepts including evolution, ecology, and the environment.</li> <li>• <b>Collaborated with a local artist</b> to create an oil on canvas diptych depicting Contextual Influences on Algorithmic Reasoning, a focus of my research. (Link to digital exhibition website: <a href="https://tinyurl.com/y77upe76">https://tinyurl.com/y77upe76</a>)</li> </ul>   |           |
| <i>Long Term Ecological Research Program at the W.K. Kellogg Biological Station (KBS), MSU</i>   | 2012 -    |
| <ul style="list-style-type: none"> <li>• <b>Collaboratively developed the curriculum for an outdoor activity trail</b> along with relevant educational activities based on research done at the station and aimed at improving elementary students’ understanding of agriculture, agricultural practices, and ecology.</li> <li>• <b>Authored</b> a manual for the activity trail guides, <b>co-authored</b> a teacher’s manual, and <b>co-designed an activity booklet</b> to go along with the trail activities.</li> <li>• <b>Designed and customised assessment materials</b> for the various demographic audiences.</li> <li>• <b>Co-ordinated and led school tours</b> at the activity trail.</li> </ul> |           |
| <i>W.K. Kellogg Bird Sanctuary, MSU</i>  | 2012 - 13 |
| <ul style="list-style-type: none"> <li>• <b>Developed educational materials</b> for outreach activities.</li> <li>• <b>Redesigned and customised</b> the Agriculture and Ecology activity trail to leverage the different landscapes at the Bird Sanctuary, and to cater to diverse audiences, based on previous assessments and feedback received.</li> <li>• <b>Led tours</b> on the activity trail for school students and local community members.</li> <li>• <b>Exhibited</b> bird migration and conservation related material at the county fair.</li> </ul>   |           |
| <i>W.K. Kellogg Biological Station’s Pasture Dairy, MSU.</i>   | 2012 - 13 |
| <ul style="list-style-type: none"> <li>• <b>Organised and conducted multiple seminars, field trips, and outreach sessions</b> based on dairy-related research, tailored for diverse audiences.</li> </ul>  |           |

- **Customised and led tours** for groups including school children and dairy professionals.
- **Planned and organised events** including open house days to showcase the research and facilities at the KBS Pasture Dairy.

*W.K. Kellogg Biological Station, MSU*

2012 - 13

- **Wrote blog posts, designed and created publicity materials** including posters, flyers, and brochures for community outreach at KBS.

*Goa, India*

2009 - 11

- **Developed and conducted a session on science communication** in daily lives for international participants at the VIII Global Conference on Environmental Education.
- **Edited and contributed to** the 'science and environment' section of a community magazine.
- **Planned and organised social awareness campaigns** on 'Alternative to Plastics' and 'The Threat of Tobacco'.

## RESEARCH EXPERIENCES

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COLLABORATOR (EUROPE AND USA)

2021-

Multiple projects exploring evolution education and outreach in Europe.

- **Contributing to a publication** on describing best practises in non-formal evolution education.
- **Leading a collaboration** on assessing knowledge, motivation, engagement and attituded towards science in people choosing to engage in non-formal education activities.
- **Mentoring** three graduate students
- **Collaboratively evaluating** science curricula (various countries) for presence and types of evolution related learning objectives.

Curricular analysis for presence and types of socio-scientific issues (SSIs) (Europe)

- Contributing to **project design and development**.
- Mentoring one graduate student
- **Co-developing the rubric** to analyse curricula and analysing curricula.

Co-Fish: a co-created citizen science project for evolution understanding, conservation and scientific literacy. (Switzerland)

- Contributing to **designing the project** and to various subtasks.

Studying student engagement in modelling tasks in undergraduate courses

- **Co-designing a rubric** (with a graduate student) to analyse students cognitive, behavioural and emotional engagement on tasks related to constructing, evaluating, and revising models; And using the rubric to analyse video data.

GRADUATE RESEARCHER (MSU)

2015 - 21

Dissertation research focused on exploring how context influences the way students reason about evolution, and the way they represent their knowledge and reasoning so as to increase efficiency and equitability in instruction and assessment.

- **Designed and executed an interdisciplinary research project** in consultation with evolutionary biologists, network scientists, mathematicians, education researchers, and ecologists.
- **Designed assessment instruments** and data collection protocols.
- **Developed data analysis** methods including qualitative coding rubrics and quantitative/statistical approaches.
- **Communicated research** through talks at national and international conferences; currently preparing three research manuscripts.
- **Mentored and trained** four undergraduate researchers.

Studying content and patterns in students' mechanistic explanations across undergraduate chemistry and biology courses so as to improve cross-disciplinary transfer of knowledge.

- **Collaborated** with an interdisciplinary team of researchers (4 departments).
- **Developed assessments** through iterative testing, coding and revising.
- **Designed and conducted semi-structured research interviews.**
- **Collaboratively revised** previously developed qualitative coding instruments.
- **Mentoring and training** two undergraduate researchers.

Assessing the efficacy of an innovative science education resource (Data Nuggets) so as to build a foundation for future support and development.

- **Designed assessments** to test modeling and data literacy skills.
- Analysed data and communicated results at national conferences.

GRADUATE RESEARCHER (GOA UNIVERSITY)

2005 - 08

Studied how drilling fluid additive biochemically affects the post-larvae of tiger prawn, *Penaeus monodon* (M.Sc. Thesis)

- **Designed and executed experiments** based on previous studies in the field.
- Conducted microbiological and heavy metal assays.
- **Communicated findings** by giving short talks.

## TEACHING EXPERIENCES (FORMAL AND INFORMAL)

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### WORKSHOPS AND TRAININGS

- Developed and taught two workshops on *Evaluating non-formal learning activities* and *Data Management: Ethics & Logistics* for graduate students. University of Zurich, Switzerland 2021
- Developed and taught a workshop on *Equity in Addressing Climate Science* for K-12 teachers. MSU 2021
- Co-developed, organised and facilitated a five-week summer program on *Enhancing science education by incorporating indigenous knowledge and perspectives* for K-12 teachers. MSU 2021
- Co-developed and organised a 3-day Institute for K-12 teachers and informal educators on *ART+SCIENCE* including ways to incorporate art in their science classrooms. MSU 2021
- Developed and conducted workshops on *Systems Thinking Skills* for K-12 teachers, and on *Co-operative learning strategies in the undergraduate classroom* for graduate students. MSU 2017 - 18
- Designed and conducted a series of training sessions for the *Agriculture and Ecology Activity Trail* guides. MSU 2012 - 13

### INDEPENDENT TEACHING

- Taught two sections of an undergraduate biology laboratory course - *Cell and Molecular Biology*. Supervised student research projects. Designed assessments and conducted evaluations. MSU 2016
- Taught *General Science* grades 5 to 8. The Rosary High School, Miramar, and Don Bosco High School, Panjim, Goa, India. 2009 - 12
- Taught *Mathematics* grades 5 to 10. St Ann's High School, Tivim, and Don Bosco High School, Panjim, Goa, India. 2009 - 12

### TEACHING ASSISTANT

- Assisted in an active-learning undergraduate biology course - *Organismal and Population Biology*. Facilitated group activities, assessed performance using formative and summative evaluations. MSU 2017

## LEADERSHIP

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**Inaugural Chair of Electoral Committee of Evolutionary Knowledge for Everyone (EvoKE)**

2019 -

- Designed and implemented online election protocol.

- Currently leading efforts to draft policies and procedures for the committee.

**Co-founder** of *Discipline Based Education Research – Scholars in Training* (DBER-SiT), international special interest group for trainees in Biology Education Research 2017 -20

- **Former Chair of Bylaws and Elections Subcommittee:** Drafted bylaws and operating procedures of the organisation, designed and implemented online election protocol.
- **Former Co-chair of Media Committee.** Developed website and public presence.
- Co-organised professional development workshop on potential career paths in education research.
- Raised and awarded \$5000 in funding to enable students with financial constraints to attend the national conference.

**Advisor**, *Women's Advisory Committee to the VP for Student Affairs and Services*, MSU. 2015 - 19

- Raised initiatives and advised the Vice President every month on issues women students face.
- **Former Chair** (2016 – 17). Spearheaded series of town halls to assess campus climate.

**Advisor**, *Women's Advisory Committee to the Provost*, MSU. 2016 - 19

- Briefed the Provost once a semester on issues facing women, and provided potential solutions.

**Elected Representative**, *Council of Graduate Students*, MSU 2015 - 19

- Proposed, debated, and voted on legislation for the Graduate Student Government.
- Advocated for student interests on policies regarding student life and wellness, including mental health.

## MENTORSHIP

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### MENTORSHIP IN SCIENCE COMMUNICATION AND OUTREACH

- Graduate Fellows (2). Provide mentoring on designing & conducting science communication & outreach 2020 -

### MENTORSHIP IN RESEARCH.

- Graduate researchers (5) in Europe and USA 2017-
- Post-Baccalaureate (5) & undergraduate (19) researchers; several presented at university conferences. 2015 -
- Schoolteachers (10) as part of the Research Experience for Teachers (RET) program. 2012
- High school students (9); their research was selected to represent India at an international conference. 2009

### MENTORSHIP IN TEACHING AND LEARNING.

- Undergraduate Teaching Assistants (3). Provided mentoring on student interaction skills and instruction. 2016, 17
- Graduate Students (20). Provided mentoring in classroom teaching skills. 2012 - 13
- Trainee teachers (15). Provided mentoring in lesson design, classroom skills and management, and assessment design. 2009 - 11

## OTHER WORK EXPERIENCES

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*Volunteer at the W.K. Kellogg Biological Station, Michigan State University* 2012 -

- **Docent.** Led historical tours and interacted with the public and the media
- **Event Manager.** Planned, organised and managed the Annual Holiday Walk and Market.
- **Event Co-ordinator.** Facilitated client-tours and helped co-ordinate events such as weddings, teas, and corporate dinners.
- **Creative Assistant.** Designed and created publicity and marketing material for public events.
- **Office Assistant.** Handled accounting and clerical work.

- **Book Store Staff.** Managed customer service and basic store operations at the W.K. Kellogg Bird Sanctuary bookshop.
- **Digital Archivist.** Archived documents of historical and operational value for KBS.

*Goa, India*

1997 -  
2011

- **Compere/MC.** Hosted Institutional Annual Day celebrations, inter-collegiate festivals, and social functions.
- **Invited Speaker.** Delivered talks on environmental issues and personality development to audiences of parents, children, adults, and youth.
- **Audiobook Narrator.** Narrated several audio-textbooks for the National Association for the Blind, India
- **Event Planner.** Instrumental in planning and organizing various social activities.
- **Fund-raiser.** Participated in fund-raising and awareness programs for Non-Governmental Organizations such as Lions Club International and Help Age India.
- **Educator.** Taught basic reading and writing skills (Devanagari script) to illiterate adults as part of the 'Each One - Teach One' national program. Conducted remedial classes (especially in English).
- **Campaign Planner.** Planned and organised social awareness campaigns on local governance.

## SKILLS

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**Languages:** Native Speaker: English, Hindi, and Konkani; Beginner: German and French

**Working tools:** Microsoft Office, Collaborative project management tools (Google drive, Microsoft Teams, Trello), Community engagement tools (Padlet, Mailchimp), Website development.

## CURRENT PROFESSIONAL AFFILIATIONS

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- Life Sciences Switzerland (LS2)
- American Association for the Advancement of Science (AAAS)
- European Science Education Research Association (ESERA)
- European Educational Research Association (EERA)
- Evolutionary Knowledge for Everyone (EvoKE)
- Discipline Based Education Research – Scholars in Training (DBER-SiT)
- Society for the Advancement of Biology Education Research (SABER)

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Last Updated: 1<sup>st</sup> October 2021