Rezvaneh Banaeyan

Summary

- Experienced in tissue engineering, cell culture, stem cell differentiation, biomaterials (natural, conductive, and functionalized), and molecular techniques. This expertise has culminated in three pending publications and four conference presentations.
- Passionate educator with extensive experience as a high school biology teacher and student research center Instructor. Acknowledge as The Best teacher In Amirabad city for fostering a research spirit, innovative teaching methods, and dedication to student development.

Education

M.Sc. in Nanobiotechnology, Shahid Beheshti University Sep 2020 – Aug 2022

Thesis title: Evaluation of watermelon-derived cellulose scaffold dopamination on osteogenic induction of stem cells.

B.Sc. in Biology Education, Farhangian University Sep 2016 – Aug 2020

Work Experience

Ministry of Education, Iran

- **High School Biology teacher, Research Instructor at Student Research Center** Sep 2023 - present

Delivering engaging biology lessons and guiding high school students.

Serving as an instructor at Shahid Ghodratabady Student Research Center, nurturing research skills and scientific inquiry.

Led students in doing research, enabling them to produce nanoparticles using green methods with limited equipment and supplies.

- **Science teacher** Sep 2021 – Aug 2023

Established an Experimental Science Class at a village school, expanding access to hands-on scientific education in underserved areas.

Organizing workshops in biotechnology and microphotography to foster scientific curiosity.

- **High school headmaster** Sep 2020 – Aug 2021

Managed high school operations during COVIDD- 19 pandemic.

Demonstrated leadership and adaptability in challenging circumstances.

Ensured student and staff safety, transitioning to remote learning

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Award & Honors

- Rank 14th in the 25th Biology Olympiad (A nationwide scientific Olympiad for university students), 2020
- Top student in the Biology Department at Farhangian University of Tehran, 2018
- Recipient of the "Best Teacher Award" for 2022 at Amirabad city. Recognized for promoting research spirit, innovative teaching methods, and dedication to student development.

Research Experience

Laboratory of Regenerative Medicine and Biomedical Innovations, Pasteur Institute of Iran, National Cell Bank, Tehran, 13169-43551, Iran Sep 2021 – Aug 2022

As part of my M.Sc. in nanobiotechnology

- Scaffold Preparation and modification:
  Prepared natural plant-derived scaffolds, and functionalized them using various molecules and conductive polymers for bone tissue engineering.
- Techniques for Scaffold Analysis:
  Tested scaffolds' chemical, physical, and biological properties using techniques including SEM, FTIR, AFM, 4 Point Prob, etc.
- Cell Culture Techniques
- Stem Cell Extraction and differentiation:
  Extracted mesenchymal stem cells from human adipose tissue.
  Explored the osteogenic potential of natural scaffolds by employing SEM, PCR, Gel electrophoresis, and staining techniques.
- Analyzed data using software tools such as GraphPad, One Step, Photoshop, and Excel.

Publication

Journal Papers:

1. "Polydopamine-based surface functionalization of watermelon rind as a 3D nanofibrous cellulose scaffold for osteogenesis". **Rezvaneh Banaeyan**, Mohammad Nourany, Saadi Hosseini, Atena Galefi, Atefeh Alipour, Mehdi Jahanfar, Peng Yuan Wang, Shahin Homaeigohar, Hosein Shahsavarani. CELLULOSE, Vol. 31, pp.443-461, 2024. https://doi.org/10.1007/s10570-023-05611-z. (5-year Journal Impact Factor: 5.3 (2023))

2. "Electroconductive plant-derived 3D cellulosic scaffold for Bone regeneration". **Rezvaneh Banaeyan**, Saadi Hosseini, Atefeh Alipour, Mehdi Jahanfar, Naser Farrokhi, Hosein Shahsavarani. (Article in progress, preparing electroconductive natural scaffolds using conductive polymers and watermelon rind for Bone Regeneration.)

3. "Synergistic Enhancement of Osteogenesis: Silica Nanoparticles and Proanthocyanidin on Bioinspired Nanofibrous Scaffolds for Craniofacial Bone Regeneration".
   Atena Galefi; Saadi Hosseini; Atefeh Alipour; **Rezvaneh Banaeyan**; Naser Farrokhi; Amir Amanzadeh; Peng-Yuan Wang; Ali Zarrabi; Hosein Shahsavarani; Mehdi Jahanfar. (Manuscript submitted)

Conferences:

1. "From watermelon rind toward smart scaffold for neural tissue engineering"
   Rezvaneh Banaeyan, Atefeh alipour, Mehdi Jahanfar, Naser Farrokhi, Hosein Shahsavarani.
   The 13th AFOB Regional Symposium (ARS 2022), 2022

2. "Watermelon rind; agricultural waste or high value biomaterial for tissue Engineering?"
   Rezvaneh Banaeyan, Atefeh Alipour, Zahra Dadashi, Mehdi Jahanfar, Naser Farrokhi, Hosein Shahsavarani.
   EFB2022 virtual conference, Barcelona, 2022.

3. "Bio-inspired Zea mays (corn) leaf three-dimensional scaffolds for human mesenchymal stem cell fate direction".
   Reza Farokhi, Zahra Dadashi, **Rezvaneh Banaeyan**, Mohammadreza Letafat, Pouria Aghakhani, Abbas Saeidi, Mehdi Jahanfar, Naser Farrokhi, Atefeh Alipour, Hosein Shahsavarani. The 2nd International BioDesign Research Conference, 2021.

4. "Seaweeds derived cellulosic matrix: A novel biocompatible resource for advanced stem cell-based therapies and bone tissue engineering"
   Zahra Dadashi, Atefeh Alipour, **Rezvaneh Banaeyan**, Atena Galefi, Mousa Ahmadi Marallu, Seyede Fateme Hoseini, saeed irian, Hosein Shahsavarani. EFB2022 virtual conference, 2022

English Tests

IELTS (Academic): 7.5 (overall score)
Listening: 8.5, Reading: 8, Writing: 6.5, Speaking: 6.5
