***Curriculum vitae***

**Name: Dr Anantdeep Kaur**

- Innovative and creative, *Key Inventor in the granted US Patent (****Patent No. US 11459406 B2****) 'Nanoparticles adsorbed with Gliadin molecules'.*

- Developed a novel Point-of-care non-invasive diagnostic assay for rapid detection of celiac disease using biomarkers in saliva.

- Developed a novel lateral flow immunoassay for celiac disease using biomarkers in human serum.

- Obtained clinical research experience by working with clinicians of the prestigious *Walter and Eliza Hall Institute*, Melbourne, Australia.

- Experienced in Verification and Validation *(V&V)* medical device testing.

- Experienced and trained in FDA Quality System Regulation (21 CFR Part 820) for medical devices.

- Experienced in scientific writing, grant submissions, developing and delivering practical classes and course materials in various fields of biology.

 **Experience**

**1. Research And Development Scientist**

***Anatara Lifesciences Ltd (Australia)***

**Key Responsibilities:**

• Project lead on the research and development of novel technology in the detection of an autoimmune disease.

• Provided scientific expertise and leadership in all research and product development activities for the development of a celiac disease IVD medical device.

• Managed clinical evaluations of research prototypes of devices, including writing clinical protocols and submissions for review by ethics review boards.

• Performed laboratory bench work, setting experiments, analyzing data and generating reports.

• Scientific writing and reviewing of technical reports and manuscripts for publication.

• Conducted Verification and Validation (V&V) studies for medical device development.

**ACHIEVEMENTS:**

• Worked with the Chief Development Officer developing strategic plans, adjusting priorities to align with company goals and monitoring expenditures.

• Assisted in preparation of market assessment and product fit analysis for commercialization opportunities of the celiac disease IVD medical device. This was performed in collaboration with Planet Innovation, an organization specializing in health-tech innovation and commercialization.

•Developed strong collaborations and partnerships with clinicians, academic & scientific researchers, and gastroenterologists.

• Assisted and provided scientific input in Intellectual Property acquisition for new product development opportunities.

• Ensured all research and product development activities adhered to ISO 13485 and FDA 21 CFR Part 820 quality management system*.*

**2. Research Fellow and Teaching Associate**

***University of Technology Sydney, Australia***

In my research, I have developed a novel, highly sensitive saliva test using specific antigens, and peptides to test for the presence of Celiac disease specific biomarkers in patient samples. The test can deliver a positive result in under 15 minutes.

In addition, I have also developed a novel lateral flow test to detect celiac disease-induced antibodies from human serum. The test is novel, easy to use and has a quick result turn around.

Key Achievements as a Research Fellow

• Conducted clinical research for the development of a point-of-care device in the project 'Screening test for Celiac Disease'.

• Published my research titled as, ‘Nanoparticles adsorbed with Gliadin Molecules’ (PCT/AU2018/050125), with an International Publication Number WO 2018148801. Successfully applied for National phase entry patent application in 2019 for the invention in Australia (AU2018221895), the USA (US16/485,481) and Europe (EP18753657.8).

• Associated in a research project for developing 3D printed modular microfluidic devices for micro/nanoparticle conjugation of proteins.

• Participated in and presented at conferences and workshops. Key presenter at the Science Industry Connect organized by UTS (2019).

• Assisted with the supervision of research students (honours as well as postgraduate).

• Contributed to the preparation of research proposal submissions to funding bodies.

Key achievements as Teaching Associate

• Conducted practical’s and tutorials for Biotechnology courses (Metabolic Biochemistry: 91320 and Innovation, Entrepreneurship and Commercialization: 60904) for both undergraduate and master’s students.

**3. PhD: Development of an efficient test for an autoimmune disease using gold nanoparticles.**

Key Achievements in PhD

• Secured the prestigious Australian Government Research Training Program Scholarship (Australian Postgraduate Award) (2015-2019) for pursuing PhD at UTS.

• Developed a novel rapid colorimetric assay using protein as well as peptide conjugated nanoparticles to detect disease specific biomarkers in human serum and saliva.

• Developed collaboration with key opinion leaders in the field of Gastroenterology and worked with clinicians of the prestigious Walter and Eliza Hall Institute, Melbourne, Australia.

• Clinically validated the study on human samples with the immunology research group at Walter and Eliza Hall Institute (WEHI, Parkville, Melbourne).

• Runner up at UTS Science 3-minute thesis competition (3 MT, 2017): *Pitch: To go gluten free or not?* • Recorded for the THINK HEALTH Radio (2SER 107.3) Podcast *‘Celiac Disease: Making sense of the symptoms.’* • Conducted comprehensive literature review to develop the value proposition of the test in close collaboration with the IDE Group, a biomedical consultancy group.

 **PATENTS**

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| --- | --- | --- |
| **Title**  | **Country**  | **Official Number** |
| **Nanoparticles adsorbed with gliadin molecules**  | **USA**  | **US 11459406 B2** |
| **Nanoparticles adsorbed with gliadin molecules**  | **Europe**  | **EP 358135** |
| **Nanoparticles adsorbed with gliadin molecules**  | **Australia**  | **AU2018221895** |

**Research Grants Secured**

• Selected for the Cicada Innovations run NSW Medical Device Commercialization Training Program (2018).

• Selected for the Industry Mentoring Network in STEM (IMNIS) (2017-2018), wherein I have undertaken an internship in the biotechnology industry.

• Undertook training in the Government of Australia supported SPARK Oceania program (2018-2019).

 • Research funding from the SPARK Oceania program (2018-2019).

• Brandwood Biomedical Regulatory Award, Cicada Innovations, NSW (2019)

• An AMP Tomorrow Makers Award, AMP Limited (2017).

• UTS Academic Excellence Grant (2013): Awarded by the University of Technology for excellence in Academics.

**Qualifications**

• **PhD in Nanobiotechnology**, (*2015-2019*)

*University of Technology Sydney, Australia*

Thesis: Development of an efficient test for an autoimmune disease using gold nanoparticles.

• **Master of Science in Medical Biotechnology***, (2013-2014)*

*University of Technology Sydney, Australia*

*GPA: 3.17/4.00*

Thesis: Development of an allergy diagnostic test for Coeliac disease using gold nanoparticles.

• **Master of Science – M.Sc. Biotechnology***, (2008 – 2011)*

*Punjab Agricultural University, Ludhiana, India*

OCPA: 8.5/10.0, Placed on University Merit List for excellence in Academics.

Thesis: Molecular mapping of leaf rust resistance gene transferred from *Triticum monococcum* L. to *Triticum aestivum* L.

• **Bachelor of Science***, (2005 – 2008)*

*Panjab University, Chandigarh,* India

Major Subjects: Plant Biology, Biochemistry, Molecular Biology, Chemistry

Marks: 80.1%, First Division, Placed on University Merit List for excellence in Academics.

• **Sacred Heart Convent Senior Secondary School,** *India***.**

All India Senior School Certificate Examination, 2005, Overall Score: 84%

All India Secondary School Examination, 2003, Overall Score: 90.8%

**Publications**

**Anantdeep Kaur**, Wang Y., Wallach M. & Shimoni O. (2020). Gliadin-coated Gold Nanoparticles for Rapid Colorimetric Test for Celiac Disease, *Materials Advances*- *Royal Society of Chemistry*, vol. 1 (7), pp. 2483-2491, DOI: 10.1039/D0MA00495B.

**Anantdeep Kaur**, Wallach M., Shimoni O. & Demirci B. (2019). Nanoparticles adsorbed with Gliadin Molecules, Patent Publication Number WO/2018/148801.

**Anantdeep Kaur**, Shimoni O. & Wallach M. (2018). A Novel Screening Test for Celiac Disease using Peptide Coated Gold Nanoparticles, *World Journal of Gastroenterology*, vol. 24 (47), pp. 5379-5390.

**Anantdeep Kaur**, Shimoni O. & Wallach M. (2017). Celiac disease: from Etiological factors to evolving Diagnostic Approaches*, Journal of Gastroenterology*, vol. 52 (9), pp. 1001–1012.

**Anantdeep Kaur**, Kaur S., Kumar K., Dhaliwal H.S. & Keller B. (2011). Molecular mapping of leaf rust resistance gene transferred from *Triticum monococcum* L. to *Triticum aestivum* L. In: Abstract Book: Indo-

Swiss Collaboration in Biotechnology (ISCB), (p.72) International Symposium organized by the Department of Biotechnology, Government of India and Swiss Agency, New Delhi.

**Additional Courses Completed**

• Researcher Management & Leadership Training (2022)

• Design and Interpretation of Clinical Trials, Johns Hopkins University (2020)

• SPARK Sydney Biomedical Innovation Course (2018-2019)

• PMP**®** Project Management Professional (2014)