

Irfan Prabudiansyah, PhD

Architecture et Fonction des Macromolécules Biologiques (AFMB)
CNRS/Aix-Marseille University (AMU)
Marseille, France | irfan.prabudiansyah@gmail.com | +33627693411

SUMMARY

- Biochemist and structural biologist with 10+ years of experience in international research collaborations.
- Expertise in membrane protein structural biology, enzymology, and cryo-electron microscopy (cryo-EM).
- Proven record of leading complex research projects and delivering impactful scientific outcomes.
- Author of 7 peer-reviewed publications with strong written and oral scientific communication skills.

EDUCATION

PhD in Biochemistry, University of Groningen, the Netherlands 2017

Topic : Functional studies of protein translocation in vitro and in vivo

Advisor : Prof. Arnold Driessen

MSc. in Biochemistry, Institut Teknologi Bandung (ITB), Indonesia 2010

Topic : Structural dynamics of the protein translocation complex

Advisors : Prof. Dessy Natalia and Prof. Arnold Driessen

BSc. in Chemistry, Institut Teknologi Bandung (ITB), Indonesia 2009

Topic : Biochemical characterization of Protein Disulfide Isomerase

Advisor : Prof. Dessy Natalia

PROFESSIONAL EXPERIENCE

Postdoctoral Scientist, AFMB, CNRS/Aix-Marseille University, France 2024 – Present

- Lead Cryo-EM projects on membrane and soluble proteins for structure-based drug design.
- Conduct single-particle cryo-EM workflows, including sample screening, data acquisition, and data processing for high-resolution structure determination.
- Develop and optimize membrane protein expression and purification for structural studies.
- Mentor and train junior researchers and students.
- Lead the preparation and drafting of two major manuscripts as first author.

Postdoctoral Scientist, Umeå University, Sweden 2021 – 2023

- Led Cryo-EM projects collaborating with scientists at the University of Leeds, UK.
- Applied single-particle Cryo-EM workflows for high-resolution structure determination.
- Developed and optimized protocols for membrane protein purification in nanodiscs.
- Published first-author articles in peer-reviewed journals.

Postdoctoral Scientist, Delft University of Technology, the Netherlands 2017 – 2020

- Optimized expression and purification protocols for recombinant soluble and membrane proteins.
- Developed protocols for protein functional analysis using biochemical and biophysical techniques.
- Led Cryo-EM project in collaboration with scientists at the University of Basel, Switzerland.
- Published first-author articles in peer-reviewed journals.

PUBLICATION

- **Irfan Prabudiansyah**, Fredrik Orädd, Konstantinos Magkakis, Kevin Pounot, Matteo Levantino, Magnus Andersson. Dephosphorylation and ion-binding in prokaryotic calcium transport. *Science Advances*, 10, 41, (2024).
- **Irfan Prabudiansyah**, Ramon van der Valk, and Marie-Eve Aubin-Tam, Reconstitution and functional characterization of the FtsH protease in lipid nanodiscs. *Biochimica et Biophysica Acta*, 1863, 2, 183526, (2021).
- Vanessa Carvalho, **Irfan Prabudiansyah**, Lubomir Kovacik, Mohamed Chami, Roland Kieffer, Ramon van der Valk, Nick de Lange, Andreas Engel, and Marie-Eve Aubin-Tam. The cytoplasmic domain of the AAA+ protease FtsH is tilted with respect to the membrane to facilitate substrate entry. *Journal of Biological Chemistry*, 296, 100029, (2021).
- **Irfan Prabudiansyah** and Arnold J.M. Driessen. The canonical and accessory Sec system of Gram-positive bacteria, *Current Topic in Microbiology and Immunology*, 404, 45-67, (2017).
- **Irfan Prabudiansyah**, Ilja Kusters, Antonella Caforio, and Arnold J.M. Driessen. Characterization of the annular lipid shell of the Sec translocon, *Biochimica et Biophysica Acta*, 1848, 10 Pt A, 2050-2056, (2015).
- **Irfan Prabudiansyah**, Ilja Kusters, and Arnold J.M. Driessen. In vitro interaction of the housekeeping SecA1 with the accessory SecA2 protein of *Mycobacterium tuberculosis*, *PLoS One*, 10, 6, e012878, (2015).
- Jelger A. Lycklama a Nijeholt, Jeanine de Keyzer, **Irfan Prabudiansyah**, and Arnold J.M. Driessen. Characterization of the supporting role of SecE in protein translocation, *FEBS Letter*, 587, 18, 3083-3088, (2013).

PRESENTATION

- Cryo-EM workshop: 3D Variability Analysis for resolving structural heterogeneity (2026).
- Cryo-EM workshop: From data to structure determination (2025).
- Membrane Protein Day (2025). Cryo-EM studies of Calcium transporter in lipid nanodiscs.
- French Conference on Membrane Protein Structure & Function APPICOM (2024). Cryo-EM studies of Calcium transporter in lipid nanodiscs.
- Swedish Conference on Macromolecular Structure & Function (2023). Cryo-EM structure determination of P-type ATPases in lipid nanodiscs.
- Dutch Biophysics Conference, Veldhoven, the Netherlands (2020). The cytoplasmic domain of FtsH is tilted with respect to the membrane to facilitate substrate entry.
- Dutch Biophysics Conference, Veldhoven, the Netherlands (2018). Structural and functional studies of the FtsH protease.
- Chemistry as Innovating Science (CHAINS), Veldhoven, the Netherlands (2016). Dynamics of the Sec translocon in the cell membrane.
- Chemistry as Innovating Science (CHAINS), Veldhoven, the Netherlands (2015). Characterization of the annular lipid shell of the Sec translocon.
- GBB Symposium, Groningen, the Netherlands (2014). Characterization of the annular lipid shell of the Sec translocon.

- EMBO Conference: From structure to function of translocation machines, Dubrovnik, Croatia (2013). Interaction of the housekeeping SecA1 with the accessory SecA2 protein.
- Dutch Biophysics Conference, Veldhoven, the Netherlands (2012). Characterization of the supporting role of SecE in protein translocation.

GRANTS AND AWARDS

- FOM Grant, University of Groningen, the Netherlands (2015).
- Bernoulli Grant, University of Groningen, the Netherlands (2011).
- Master Sandwich Scholarship, University of Groningen, the Netherlands (2010).
- Excellent Scholarship, Ministry of Education of Indonesia (2007-2009).
- Dean's List: Awards for students with high achievement (2007-2009).

TEACHING AND SUPERVISION

- Supervision of master's thesis in Structural Biology (2025).
- Negative stain EM training course, Bachelor level (2021).
- Supervision of master's theses in Biochemistry (2018–2020).
- Supervision of bachelor's theses in Molecular Biology (2016–2017).

TECHNICAL EXPERTISE

- **Protein production and characterization**
 - Expression of recombinant proteins in eukaryotic and prokaryotic systems
 - Purification of recombinant soluble and membrane proteins
 - Production of membrane proteins in detergent, nanodiscs, liposomes, and SMALPs
 - Affinity chromatography (IMAC), ion exchange (IEX), and SEC by AKTA/HPLC system
 - Protein characterization: SDS-PAGE, BN-PAGE, Western blot, UV-Vis spectroscopy
- **Biochemistry and molecular biology techniques**
 - Molecular Cloning and DNA manipulation, PCR, Site-directed mutagenesis
 - Protein labeling, cross-linking, functional assays, and enzyme kinetic assays
 - Biophysical characterization: Biolayer Interferometry (BLI), Dynamic light scattering (DLS), Multi-angle light scattering (SEC-MALS), Microscale Thermophoresis (MST), and Fluorescence spectroscopy
- **Structural biology techniques**
 - Cryo-EM sample preparation, screening, and data collection (Glacios 2 Cryo-TEM, EPU)
 - Single particle cryo-EM data processing (CryoSPARC, RELION)
 - Model building and structure refinement (Phenix, Coot, CCP-EM, ChimeraX)
 - Negative staining electron microscopy (Tecnai T12 TEM)
 - X-ray solution scattering (SAXS)

REFEREES

1. Dr. Pascale Marchot
AFMB, CNRS/Aix-Marseille University (AMU)
E-mail: pascale.marchot@univ-amu.fr
2. Dr. Magnus Andersson
Department of Chemistry, Umeå University
E-mail: magnus.p.andersson@umu.se
3. Prof. Dr. Arnold Driessen
Department of Molecular Microbiology, University of Groningen
E-mail: a.j.m.driessen@rug.nl