

Name: Yu-Feng Wang

Position & Affiliation: Postdoctoral Research Associate

Full Reference (including all authors (presenter in bold) & title):

1. Longitudinal quantitative MRI detects heterogeneity in response to radiation therapy within prostate cancer

Y. Wang, S. Tadimalla, L. Holloway, N. Thiru, S. Turner, M. Sidhom, A. Hayden, J. Martin, A. Haworth

2. Quality assurance of quantitative MRI protocol for a hypoxia imaging clinical study in glioblastoma

Yu-Feng Wang, James Drummond, Marco Mueller, Paul J. Keall, Kieran O'Brien, Jeremy Booth, Jackie Yim, Jonathon Parkinson, Shona Silvester, Dale L. Bailey, Michael Back, Heidi Luton, David Waddington, Caterina Brighi

Conference/Meeting Name: International Society of Magnetic Resonance in Medicine (ISMRM) Annual Meeting 2024

Location (city, state, country): Singapore

Dates: 4th – 9th May, 2024

Presentation Type: Abstract (1) was delivered twice as oral presentations, one in a Scientific Session, the other in a Trainee Competition (see image below), abstract (2) was presented as a poster.



Photo after the Trainee competition at the Magnetic Resonance in Radiation Therapy Study Group Meeting. Past chair, Prof. Ralph Mason, on the left, and current chair, Prof. Zhaoyang Fan, on the right and myself, second from right.

The ISMRM (International Society for Magnetic Resonance Research in Medicine) Annual Meeting is the largest event of its kind, dedicated to advancements in MRI technology, a pivotal tool in medical imaging. This year, the conference attracted over 5000 delegates from around the globe, including researchers, clinicians, and industry professionals. The central theme revolved around developing and integrating cutting-edge MRI technology into medical research and clinical practice. Keynote speakers, who are renowned experts in the field, delivered insightful presentations on various innovative topics and emerging trends.

A significant highlight of the conference was the focus on the evolution of MRI machines. Traditionally, MRI machines are bulky and expensive, capable of performing a wide range of imaging techniques. However, a noticeable trend at the conference was the development of "application-specific" MRI devices. These newer additions to the range of MRI devices are smaller, more cost-effective, and designed for specific functions. A plenary session delivered by Prof David Lurie, Dr Kevin Sheth, and Prof Clarrissa Cooley discussed this paradigm shift that aims to make MRI technology more accessible and tailored to particular clinical and research needs, marking a significant advancement in the field. The conference also underscored the extensive and ongoing research dedicated to developing non-invasive MRI-based imaging biomarkers. These biomarkers are essential for enhancing medical practice by providing detailed insights into tissue biological properties. A recurring theme in the presentations was the importance of standardizing MRI-based biomarkers to ensure their effective translation into clinical practice.

Attending the conference also allowed me to reconnect with two international collaborators, Dr Oliver Gurney-Champion who I collaborated with in a previous project involving validation of his artificial intelligence (AI) model on our clinical data, and Dr Petra van Houdt who I met while serving on the organising committee of the [MRI Together 2023 workshop](#). These interactions facilitated deeper connections and discussions about potential future collaborations, strengthening our professional relationships.

The knowledge acquired about novel MRI acquisition, processing, and analysis techniques will directly benefit my current research focused on developing imaging biomarkers to provide maps of biological information that can inform and improve radiation oncology. Participating in discussions with leading experts (e.g. Dr Petra van Houdt) provided valuable insights and sharing of experiences on developing, standardizing, and translating MRI-based imaging biomarkers into clinical practice, which will significantly enhance our current research efforts.

An important learning outcome relevant to the wider Sydney Cancer Partners membership is the integration of AI into the MRI field. AI technology offers considerable benefits for translational cancer research, such as accelerating the acquisition of advanced techniques that were previously impractical. However, the conference also emphasized pitfalls and the need for caution when using AI technologies. It highlighted the importance of rigorous commissioning, testing, and quality assurance to transition MRI from merely an imaging tool to a precise measurement device, which is an important reminder for all conducting translational cancer research.

On a personal note, I had the opportunity to stay an extra day in Singapore to attend my cousin's wedding. Additionally, I reunited with a classmate from my undergraduate studies whom I had not seen in 10 years. We had a long-overdue catch-up and discussed the overlaps in our fields of cancer and imaging research, as well as innovations in patenting. This personal experience added a delightful and memorable dimension to my conference trip.