

# **SHOROUK AHMED THARWAT MOHAMMED MAKHLOUF**

## **MBBCh, MSc, PhD**

Assiut, Egypt

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## **PROFESSIONAL PROFILE**

Lecturer of Pathology with expertise in histopathology, immunohistochemistry, digital pathology, and translational breast cancer research. Completed a PhD in Translational Medical Sciences at the University of Nottingham, United Kingdom, with research focused on breast cancer biomarkers, digital image analysis, and prognostic modelling. Experienced in diagnostic pathology, undergraduate and postgraduate teaching, scientific writing, and multidisciplinary research collaboration. Published author with a growing portfolio of peer-reviewed publications in breast pathology and translational oncology.

## **CURRENT POSITION**

### **Lecturer of Pathology**

Faculty of Medicine, Assiut University, Egypt

2026 – Present

## **EDUCATION**

### **PhD in Translational Medical Sciences**

- School of Medicine, University of Nottingham, United Kingdom

2021 – 2025

- **Thesis Title:**

*Computation Pathology for a Better Understanding of Breast Cancer Behaviour.*

Research Areas:

- Breast cancer pathology
- Digital pathology
- Artificial intelligence in pathology
- Biomarker discovery
- Prognostic modelling
- Image analysis

### **MSc in Ocular Pathology**

Faculty of Medicine, Assiut University, Egypt

2019

- **Thesis Title:**

*Immunohistochemical Expression of Cytokeratin 17 in Conjunctival Intraepithelial Neoplasia*

## **MB BCh (Excellent with Honours)**

Faculty of Medicine, Assiut University, Egypt  
2013

## **PROFESSIONAL EXPERIENCE**

### **Lecturer of Pathology**

Faculty of Medicine, Assiut University  
2026 – Present

- Deliver undergraduate and postgraduate pathology teaching.
- Participate in curriculum development and student assessment.
- Supervise student research projects and dissertations.
- Contribute to diagnostic histopathology services.
- Participate in multidisciplinary research collaborations.
- Mentor junior academic staff and postgraduate trainees.
- Develop research projects in breast pathology and translational oncology.

### **Assistant Lecturer of Pathology**

Faculty of Medicine, Assiut University  
2019 – 2025

- Participated in surgical pathology reporting and specimen handling.
- Assisted in undergraduate pathology education.
- Conducted research leading to completion of a PhD.
- Contributed to departmental scientific meetings and publications.

### **PhD Researcher**

University of Nottingham  
2021 – 2025

- Conducted translational breast cancer research.
- Applied digital pathology and image analysis methodologies.
- Applied molecular techniques
- Evaluated prognostic and predictive biomarkers.
- Performed statistical and clinicopathological analyses.
- Published research in peer-reviewed journals.

## **RESEARCH INTERESTS**

- Breast Pathology
- Digital Pathology
- Artificial Intelligence in Pathology

- Cancer Biomarkers
- Translational Oncology
- Immunohistochemistry
- Prognostic Modelling
- Precision Medicine

## **TECHNICAL SKILLS**

### **Diagnostic Pathology**

- Histopathological interpretation
- Surgical pathology reporting
- Gross specimen examination
- Tissue sampling and trimming

### **Laboratory Techniques**

- Immunohistochemistry
- Tissue microarray construction
- Biomarker assessment
- Digital slide analysis
- Molecular pathology

### **Research Skills**

- Study design
- Data analysis
- Scientific writing
- Systematic reviews
- Critical appraisal
- Grant and manuscript preparation

### **Digital Skills**

- QuPath
- ImageJ
- GraphPad Prism
- SPSS
- EndNote
- Microsoft Office Suite
- Research poster design

## **TEACHING EXPERIENCE**

- Undergraduate medical pathology teaching
- Dental pathology teaching
- Pharmacy and Clinical Pharmacy pathology teaching
- Histopathology practical sessions
- Small-group tutorials

- Student assessment and examination
- Research supervision

## **PROFESSIONAL REGISTRATION**

Egyptian Ministry of Health

Full Medical Registration Number: 256292

## **POST GRADUATE TRAINING AND COURSES**

- Attendance of the course of “Cardio-pulmonary resuscitation”, Assiut University in February 2014
- Attendance of the workshop of " How to choose your medical specialty" in January 2015.
- Attendance of the workshop of “ Pre Employment Orientation Program" in March 2015.
- Attendance of the course of "Endnote and basic word" in June 2016.
- Attendance of the 7th scientific conference "Collaborative research potentials between faculty of medicine and other faculties of Assiut University”, Faculty of medicine, Assiut University in June 2016.
- Attendance of the course of “Basic life support" in May 2018.
- Attendance of the course of “How to activate the E-course" in May 2018.
- Attendance of the course of “Student Evaluation" in May 2018.
- Attendance of the course of "Evidence Based Medicine" in June 2018.
- Attendance of the course of" Infection control" in June 2018.
- Attendance of the course of "Writing medical reports" in June 2018.
- Attendance of the course of "Quality standards in teaching" in June 2018.
- Attendance of the course of "E-learning (advanced)" in June 2018.
- Attendance of the course of “Communication skills" in July 2018.
- Attendance of the course of “Code of ethics" in July 2018.
- Attendance of the course of "How to write a research protocol" in July 2018.
- Attendance of "Elsevier - EKB Tour (22/10 - 11/12) 2018" in October 2018.
- Attendance of Microsoft Word: Managing Long Documents in October 2021
- Attendance of Research integrity in October 2021
- Attendance of Understanding and Expressing Criticality and Argument in Your Writing in November 2021
- Attendance of Biomedical Imaging in Research in January 2022
- Attendance of Researcher Information Skills for Medicine & Health Sciences in March 2022
- Attendance of Nottingham Breast Pathology Online Masterclass - Addressing Challenges in Diagnostic Breast Pathology in March 2022
- Attendance of Nottingham Breast Pathology live Masterclass in June 2022
- Attendance of Birmingham Breast Pathology Online Masterclass in November 2022
- Attendance of Systematic review: searching for evidence – online in April 2022
- Attendance of Attendance of Critical Appraisal of scientific literature in May 2022
- Attendance of Introduction to Flow Cytometry in June 2022
- Attendance of Image analysis training school course in October 2022
- Attendance of Molecular diagnostics training school course in October 2022
- Attendance of Microsoft PowerPoint: Research Poster Creation in November 2022

- Attendance of Research Ethics for Doctoral Researchers in November 2022
- Attendance of CELE - Academic Writing: Achieving clarity in November 2022
- Attendance of CELE - Academic Writing: Grammatical accuracy in November 2022
- Attendance of Getting Started with Mixed Methods Research in January 2023
- Attendance of Microsoft Word: Working Collaboratively in September 2023
- Attendance of Computational modelling of molecular dynamics in October 2023
- Attendance of Preparing for your Viva in December 2023
- Attendance of The ultimate guide to presenting your research in January 2024
- Attendance of The power of storytelling in research in January 2024
- Attendance of Introduction to light microscopy in January 2024
- Attendance of Data analysis and visualisation with R in March 2024
- Attendance of Microsoft Excel: Charts in May 2024

## CONFERENCE ATTENDANCE

- Attendance of Nottingham Breast Pathology Masterclass, June 2022.
- Attendance of Association of Breast Pathology fifth annual meeting, September 2022.
- Attendance of Birmingham Breast Pathology Masterclass, November 2022.
- Attendance of Pathological society winter meeting, February 2023.
- Attendance of Edinburgh breast cancer special symposium, February 2023.
- Attendance of Path Lake showcase meeting, March 2023.
- Early career researcher showcase, Nagoya University visit, University of Nottingham, April 2023.
- Drug development and prostate cancer workshop and symposium, University of Nottingham, May 2023.
- Research impact forum, University of Nottingham, June 2023.
- Pathological Society summer meeting, June 2023.
- Nottingham breast pathology masterclass, July 2023.
- Birmingham Breast Pathology Update Course, November 2023.
- Pathological Society, winter meeting, January 2024.
- Cancer research Nottingham symposium, February 2024.
- Sue-Watson event, University of Nottingham, February 2024.
- Singapore & Nottingham Breast Pathology Online Masterclass, April 2024.
- Pathological Society summer meeting, June 2024.
- 8th World Congress on Controversies in Breast Cancer (CoBrCa), September 2024.
- Cancer Research Nottingham Symposium, January 2025.

## CONFERENCE PRESENTATIONS

### Oral presentations

1. Identifying oestrogen receptor-related genes of predictive value in breast cancer (**8th World Congress on Controversies in Breast Cancer (CoBrCa), September 2024**), **Young Scientist Award winner.**

2. Tumour grading and atypia: is there a role for AI? (**Pathological Society summer meeting, June 2024**).
3. The survival patterns of invasive lobular carcinoma (**NBCRC Research Day, May 2024**).
4. Evaluation of tumour infiltrating lymphocytes in luminal breast cancer using artificial intelligence (**Sue-Watson event, University of Nottingham, February 2024**).
5. Oestrogen receptor low positive breast cancer: a validation study (**Research impact forum, University of Nottingham, June 2023**).
6. Oestrogen Receptor Expression Heterogeneity in Breast Cancer: Clinicopathological, Outcome and Differential Gene Expression Analysis (**Pathological Society summer meeting, June 2023**).
7. Artificial intelligence in Pathology (**Early career researcher showcase, Nagoya University visit, University of Nottingham, April 2023**).

### **Poster presentations**

1. The morphological and survival patterns of pleomorphic lobular carcinoma (**Cancer Research Nottingham Symposium, January 2025**).
2. Sushi domain-containing protein 3 is a predictor of endocrine therapy response in breast cancer (**8th World Congress on Controversies in Breast Cancer (CoBrCa), September 2024**).
3. Characterisation of pleomorphic lobular carcinoma: an image analysis-assisted study (**8th World Congress on Controversies in Breast Cancer (CoBrCa), September 2024**).
4. Tumour infiltrating lymphocytes in luminal breast cancer: an artificial intelligence-based study (**Cancer Research Nottingham, February 2024**).
5. Deciphering oestrogen receptor low-positive expression in breast cancer (**Cancer Research Nottingham, February 2024**).
6. Tumour infiltrating lymphocytes in luminal breast cancer: an artificial intelligence-based study (**Cancer research Nottingham, February 2024**).
7. Deciphering oestrogen receptor low-positive expression in breast cancer (**Cancer research Nottingham, February 2024**).
8. Does the level of oestrogen receptor expression in breast cancer matter? (**Cancer research Nottingham, February 2024**).
9. Growth Regulating Oestrogen Receptor Binding 1 (GREB1) as a Surrogate Oestrogen Receptor Biomarker (**Pathological Society winter meeting, January 2024**).
10. Clinical and biological significance of oestrogen receptor heterogeneity in breast cancer (**Edinburgh breast cancer special symposium, February 2023**).
11. Evaluation of tumour infiltrating lymphocytes in luminal breast cancer using artificial intelligence (**Pathological society winter meeting February 2023**).
12. oestrogen receptor low positive breast cancer: A validation study (**Pathological society winter meeting February 2023**).

### **SELECTED PUBLICATIONS**

1. **S Makhlof**, N Almalki, A Sheha, NM Atallah, A Ibrahim, M Toss [Outcome prediction of oestrogen receptor-positive breast cancer based on a panel of oestrogen receptor-regulated genes](#), *Histopathology* (2025).
2. **Shorouk Makhlof**, Nehal M Atallah, Susanna Polotto, Andrew HS Lee, Andrew R Green, Emad A Rakha “[Deciphering the clinical behaviour of invasive lobular carcinoma of the breast defines an aggressive subtype](#)”, *Cancers* (2024).
3. **Shorouk Makhlof**, Cecily Quinn, Michael Toss, Mansour Alsaleem, Nehal M Atallah, Asmaa Ibrahim, Catrin S Rutland, Nigel P Mongan, Emad A Rakha “ [Quantitative expression of oestrogen receptor in breast cancer: Clinical and molecular significance](#)”, *European Journal of Cancer* (2024).
4. **Shorouk Makhlof**, Noorul Wahab, Michael Toss, Asmaa Ibrahim, Ayat G Lashen, Nehal M Atallah, Suzan Ghannam, Mostafa Jahanifar, Wenqi Lu, Simon Graham, Nigel P Mongan, Mohsin Bilal, Abhir Bhalerao, David Snead, Fayyaz Minhas, Shan E Ahmed Raza, Nasir Rajpoot, Emad Rakha “[Evaluation of tumour infiltrating lymphocytes in luminal breast cancer using artificial intelligence](#)”, *British Journal of Cancer* (2023).
5. **Shorouk Makhlof**, Maryam Althobiti, Michael Toss, Abir A Muftah, Nigel P Mongan, Andrew HS Lee, Andrew R Green, Emad A Rakha. “[The clinical and biological significance of estrogen receptor-low positive breast cancer](#)”, *Modern Pathology* (2023).
6. Ayaka Katayama, **Shorouk Makhlof**, Michael S Toss, Tetsunari Oyama, Emad A Rakha “[Nuclear morphological characterisation of lobular carcinoma variants: a morphometric study](#)”, *Histopathology* (2025).
7. NM Atallah, **S Makhlof**, M Nabil, A Ibrahim, MS Toss, NP Mongan, E Rakha “[Characterisation of HER2-Driven Morphometric Signature in Breast Cancer and Prediction of Risk of Recurrence](#)”, *Cancer Medicine* (2025).
8. Nehal Atallah, **Shorouk Makhlof**, Xingmin Li, Yuan Zhang, Nigel P Mongan, Emad Rakha “[Prediction of response to anti-HER2 therapy using a multigene assay](#)”, *Modern Pathology* (2025).
9. Suzan F Ghannam, **Shorouk Makhlof**, Mansour Alsaleem, Catrin Sian Rutland, Cinzia Allegrucci, Nigel P Mongan, Emad A Rakha “[The Conflicting Prognostic Role of the Stroma–Tumor Ratio in Breast Cancer Molecular Subtypes](#)”, *Modern Pathology* (2024).
10. Ayat G Lashen, Noorul Wahab, Michael Toss, Islam Miligy, Suzan Ghanaam, **Shorouk Makhlof**, Nehal Atallah, Asmaa Ibrahim, Mostafa Jahanifar, Wenqi Lu, Simon Graham, Mohsin Bilal, Abhir Bhalerao, Nigel P Mongan, Fayyaz Minhas, Shan E Ahmed Raza, Elena Provenzano, David Snead, Nasir Rajpoot, Emad A Rakha “[Characterization of Breast Cancer Intra-Tumor Heterogeneity Using Artificial Intelligence](#)”, *Cancers* (2024).
11. Asmaa Ibrahim, Nehal M Atallah, **Shorouk Makhlof**, Michael S Toss, Andrew Green, Emad Rakha “[Deciphering the Role of ASPM in Breast Cancer: A Comprehensive Multicohort Study](#)”, *Cancers* (2024).
12. Asmaa Ibrahim, Mostafa Jahanifar, Noorul Wahab, Michael S Toss, **Shorouk Makhlof**, Nehal Atallah, Ayat G Lashen, Ayaka Katayama, Simon Graham, Mohsin Bilal, Abhir Bhalerao, Shan E Ahmed Raza, David Snead, Fayyaz Minhas, Nasir Rajpoot, Emad

- Rakha “[Artificial intelligence-based mitosis scoring in breast cancer: clinical application](#)”, *Modern Pathology* (2024).
13. Asmaa Ibrahim, Michael S Toss, Mansour Alsaleem, **Shorouk Makhlof**, Nehal Atallah, Andrew R Green, Emad A Rakha “[Novel 2 gene signatures associated with breast cancer proliferation: Insights from predictive differential gene expression analysis](#)”, *Modern Pathology* (2024).
  14. Wenqi Lu, Ayat G Lashen, Noorul Wahab, Islam M Miligy, Mostafa Jahanifar, Michael Toss, Simon Graham, Mohsin Bilal, Abhir Bhalerao, Nehal M Atallah, **Shorouk Makhlof**, Asmaa Y Ibrahim, David Snead, Fayyaz Minhas, Shan E Ahmed Raza, Emad Rakha, Nasir Rajpoot “[AI-based intra-tumor heterogeneity score of Ki67 expression as a prognostic marker for early-stage ER+/HER2- breast cancer](#)”, *The Journal of Pathology: Clinical Research* (2024).
  15. Nehal M Atallah, Maria Haque, Cecily Quinn, Michael S Toss, **Shorouk Makhlof**, Asmaa Ibrahim, Andrew R Green, Mansour Alsaleem, Catrin S Rutland, Cinzia Allegrucci, Nigel P Mongan, Emad Rakha “[Characterisation of luminal and triple-negative breast cancer with HER2 Low protein expression](#)”, *European Journal of Cancer* (2024).
  16. Noorul Wahab, Michael Toss, Islam M Miligy, Mostafa Jahanifar, Nehal M Atallah, Wenqi Lu, Simon Graham, Mohsin Bilal, Abhir Bhalerao, Ayat G Lashen, **Shorouk Makhlof**, Asmaa Y Ibrahim, David Snead, Fayyaz Minhas, Shan E Ahmed Raza, Emad Rakha, Nasir Rajpoot “[AI-enabled routine H&E image based prognostic marker for early-stage luminal breast cancer](#)”, *npj Precision Oncology* (2023).
  17. Nehal M Atallah, Noorul Wahab, Michael S Toss, **Shorouk Makhlof**, Asmaa Y Ibrahim, Ayat G Lashen, Suzan Ghannam, Nigel P Mongan, Mostafa Jahanifar, Simon Graham, Mohsin Bilal, Abhir Bhalerao, Shan E Ahmed Raza, David Snead, Fayyaz Minhas, Nasir Rajpoot, Emad Rakha “[Deciphering the morphology of tumor-stromal features in invasive breast cancer using artificial intelligence](#)”, *Modern Pathology* (2023).
  18. Ayat Gamal Lashen, Michael S Toss, Suzan Fathy Ghannam, **Shorouk Makhlof**, Andrew Green, Nigel P Mongan, Emad Rakha “[Expression, assessment and significance of Ki67 expression in breast cancer: an update](#)”, *Journal of clinical pathology* (2023).
  19. Asmaa Ibrahim, Michael S Toss, **Shorouk Makhlof**, Islam M Miligy, Fayyaz Minhas, Emad A Rakha “[Improving mitotic cell counting accuracy and efficiency using phosphohistone-H3 \(PHH3\) antibody counterstained with haematoxylin and eosin as part of breast cancer grading](#)”, *Histopathology* (2023).