THE PATHFINDER BLUEPRINT

Newsletter of PathFinders Club

Faculty of Medicine
University of Ruhuna

PathFinders Club
Department of Pathology, Faculty of Medicine
University of Ruhuna

Second Issue

Volume 01

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PathFinders Club

2nd Annual General Meeting

The **Pathfinders Club** of the Faculty of Medicine, University of Ruhuna, reached a significant milestone as it successfully hosted its **2nd Annual General Meeting (AGM)** at Lecture Theatre D. The meeting gathered undergraduates and academic staff to celebrate past accomplishments, review strategic objectives, and formally hand over leadership to the newly elected Executive Committee for the 2026/2027 academic year.
Since its founding in 2024, the university-approved student organisation has continued to keep to its core missions of fostering interest in pathology among undergraduates, facilitation of networking between faculties and the encouragement of collaboration and knowledge sharing between institutions.

Highlights

- The outgoing President delivered a comprehensive review of the club's recent accomplishments, highlighting significant programs such as **Anaemia Day** and the annual **Pathology Symposium**, both of which provided valuable learning experiences for medical undergraduates.
- The outgoing Junior Treasurer presented the official financial report and budget statement, showing transparent resource management across past activities.
- Senior Treasurer **Prof. Chandana Wickramarathne** addressed the assembly, commending the outgoing executive board for their dedication. Prof. Wickramarathne outlined the key goals for the upcoming year, emphasising a major **Breast Cancer Awareness Program** as a flagship endeavour for the 2026/2027 academic year.

Executive Committee for 2026/2027 academic year

The official election and appointment of the Executive Committee for the year 2026/2027 was carried out.

President: Thiyum Mihiran (46th Batch)
Vice President: Wishmitha Wijenayake (46th Batch)
Secretary: Yenuli Fernando (46th Batch)
Assistant Secretary: Sumudu Abeywickrama (47th Batch)
Junior Treasurer: Pawan Sathsara (46th Batch)
Co-Editors: Nethranjali Arundima (46th Batch) & Lilan De Silva (46th Batch)
Committee Members: Naduni Abeynayake (46th Batch), Seniya Wijayasriwardhana (46th Batch), Ishini Weragala (46th Batch), Nethmini Amarasinghe (47th Batch), Anupama Mallikarathne (47th Batch) & Ravindu Jayathilaka (47th Batch)

The newly appointed President Thiyum Mihiran addressed the gathering, expressing the new Committee's commitment to driving impactful initiatives, interactive clinical pathological discussions, and community-focused awareness campaigns in the coming year.

PathFinders Club
Department of Pathology, Faculty of Medicine
University of Ruhuna

PathFinders Club 2026/2027

CONGRATULATIONS TO THE NEW COMMITTEE!



Prof. Thushari Liyanage
Patron



Prof. Chandana Wickramarathne
Senior Treasurer



Thiyum Mihiran
President



Wishmitha Wijenayake
Vice President



Yenuli Fernando
Secretary



Sumudu Abeywickrama
Assistant Secretary



Pawan Sathsara
Junior Treasurer



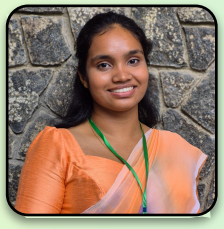
Nethranjali Arundima
Co-Editor



Lilan De Silva
Co-Editor

Committee Members

46th Batch Representatives



Naduni Abeynayake

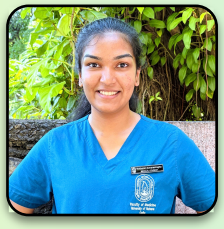


Seniya Wijayasriwardhana



Ishini Weragala

47th Batch Representatives



Nethmini Amarasinghe



Anupama Mallikarathne



Ravindu Jayathilaka



Message from the Senior Treasurer

Dear Students - Members of the Pathfinders Club,

I extend my warmest congratulations and best wishes to the newly appointed President and Executive Committee. Stepping into leadership comes with both great honor and vital responsibility, and I am confident that your drive, enthusiasm, and fresh perspectives will lead the club to new heights.

The PathFinders Club was established as a platform to bridge academic excellence with clinical application, fostering scientific inquiry, student engagement, and health awareness. As you begin your term, our primary goal must be to build upon this foundation—strengthening peer mentoring, driving impactful community health initiatives, and organizing academic activities that deepen our collective understanding of pathology and diagnostics.

I encourage the incoming team to lead with vision, unity, and dedication. Let this chapter be marked by active collaboration, innovative ideas, and meaningful contributions to our faculty and community.

Wishing you every success in all your upcoming endeavors.

Prof. K. A. C. Wickramaratne
Senior Treasurer/PathFinders club
Head/ Department of Pathology
Faculty of Medicine, University of Ruhuna



Message from the President

Dear Members and Friends,

It is an absolute honor to step into the role of President of the Pathfinders Club for the upcoming term. First and foremost, I want to express my gratitude to our Senior Treasurer, Prof. K. A. C. Wickramaratne, and the Department of Pathology for their unwavering support and guidance.

The Pathfinders Club has always been dedicated to bridging academic knowledge with real-world clinical insight. As we embark on this new chapter, our Executive Committee is committed to fostering curiosity, strengthening peer learning, and organizing meaningful health awareness initiatives that serve both our faculty and the wider community.

Leadership and progress are team efforts. I invite each of you to bring your ideas, passion, and energy as we work together to take our club to new heights.

Thank you for your trust, and I look forward to an exciting and impactful year ahead!

Thiyum Mihiran
President, Pathfinders Club
Faculty of Medicine, University of Ruhuna

PathFinders Club
Department of Pathology, Faculty of Medicine
University of Ruhuna

DISTRICT GOVERNOR 306 D8
2026 2027
SERVICE BEYOND BOUNDARIES
LION RAVI KALANSOORIYA MJF

Breast Cancer

STEPS FOR HOPE

GALLE CITY CENTER
24TH OCT
8:00 AM



Types of Breast Cancers and Their Features

Moorthi Chandradasa



Introduction

Breast cancers are categorised according to where the cancer starts, whether it has spread beyond its original location, the type of cells involved, and the biological characteristics of the cancer cells. They can be divided into two broad categories: **invasive** breast cancers and **non-invasive** breast cancers.

Types of Invasive Breast Cancer

Invasive ductal carcinoma, also known as infiltrating ductal carcinoma, accounts for about 80% of all breast cancers, making it the most common type. It starts in the milk ducts and then spreads into the surrounding healthy breast tissue. It can be diagnosed at any stage, from stage 1 to stage 4, and reaches stage 4 when it spreads beyond the milk ducts to distant organs.

Other invasive types of breast cancer include invasive lobular carcinoma (ILC) and inflammatory breast cancer.

Types of Non-Invasive Breast Cancer

Non-invasive breast cancers are stage 0 cancers. The abnormal cells stay in the place where they first formed. These cancers are generally not life-threatening, but they can become invasive and life-threatening if left untreated.

The most common is ductal carcinoma in situ (DCIS), which occurs when the cells lining the milk ducts of the breast have changed into cancer cells but have not grown through the duct walls into the nearby breast tissue. DCIS is not invasive: it does not spread into the surrounding breast tissue and cannot spread (metastasise) beyond the breast to other parts of the body. If left untreated, however, it can sometimes become an invasive cancer. About 1 in 5 breast cancers is DCIS.

The other type of non-invasive breast cancer is lobular carcinoma in situ (LCIS).

Biomarkers in Breast Cancer

Biomarkers show how aggressive a breast cancer is and which treatments are likely to work. Estrogen receptor (ER)-positive tumours have a more favourable prognosis and respond well to endocrine therapy. Progesterone receptor (PR) is present in roughly 80–90% of ER-positive cancers, and PR-positive tumours also respond to hormone therapy. HER2, overexpressed in about 13–15% of cases, marks a more aggressive tumour. Ki-67 reflects how fast tumour cells divide.

Emerging markers, including microRNAs, PD-L1, microsatellite instability and circulating tumour cells and DNA, may improve early detection and guide immunotherapy, but most still need validation before routine use.

Molecular Subtypes of Breast Cancer

Invasive breast cancers can be further divided into molecular subtypes: Luminal A, Luminal B, HER2-positive and triple-negative (basal-like).

Luminal A is the most common subtype. These cancers are usually estrogen receptor (ER)-positive, progesterone receptor (PR)-positive and HER2-negative, with slow-growing tumour cells. They generally have the best prognosis and respond well to hormone therapy. Luminal B cancers are also usually ER-positive but may be HER2-positive or HER2-negative. These tumours tend to grow faster than Luminal A cancers and may carry a higher risk of recurrence, so treatment may include hormone therapy, chemotherapy and targeted therapy when indicated.

HER2-positive breast cancer occurs when cancer cells produce excessive amounts of the HER2 protein, which promotes rapid tumour growth.. Triple-negative breast cancer is more aggressive. It lacks the three receptors usually found in breast cancer (estrogen, progesterone and HER2), which makes common hormonal therapies ineffective.

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Three Looks at Every Lump

The Triple Assessment for Breast Cancer

Wishmitha W. Wijenayaka | 46th Batch | Vice President, PathFinders Club

October is Breast Cancer Awareness Month. In Sri Lanka, breast cancer makes up around 28% of all cancers in women, with about 15 new cases diagnosed every day, and more than 30% are still detected at a late stage. Early detection depends on women coming forward with symptoms, but it also depends on doctors getting the diagnosis right the first time. That is the purpose of the triple assessment, the standard way every new breast lump or suspicious breast symptom is evaluated. It combines three independent "looks" at the same problem.

1. Clinical Assessment: History and Examination

The first look is at the patient, in two parts.

History (what we ask): when the lump was first noticed, whether it has grown or changes with the menstrual cycle, whether it is painful, and any nipple discharge (especially blood-stained) or changes in the nipple or skin that the patient has noticed. We then ask about risk factors: age, a family history of breast or ovarian cancer, early menarche, late menopause, never having children or not breastfeeding, and use of hormone therapy. Finally, we ask about symptoms that may suggest spread, such as bone pain, breathlessness or weight loss.

Examination (what we see and feel): both breasts and both axillae are examined, first with the patient sitting (arms by the sides, then raised above the head) and then lying down. On *inspection* we look for asymmetry, a visible lump, skin dimpling or "peau d'orange", and nipple retraction or eczema-like change. On *palpation* we feel the lump's size, shape, consistency, surface and margins, and check whether it is mobile or fixed to the skin or chest wall. A hard, irregular, painless lump with ill-defined margins that is tethered or fixed is worrying. Lastly, the axillary and supraclavicular lymph nodes are palpated.

2. Imaging: Ultrasound and Mammography

The second look is radiological. Ultrasound is the first choice in younger women (generally under 40), whose dense breast tissue makes mammograms harder to read. It also tells a solid lump from a fluid-filled cyst and guides the biopsy needle. Mammography is used in older women, often together with ultrasound. Suspicious signs include an irregular or spiculated (star-shaped) mass and clusters of fine microcalcifications. MRI is kept for selected cases, such as lobular cancers, women with breast implants, or those at very high genetic risk.

3. Pathology: Tissue Diagnosis

The third look is under the microscope. Core needle biopsy is now the preferred method. It provides a strip of tissue that confirms whether a cancer is invasive, shows its type and grade, and allows testing for oestrogen receptor (ER), progesterone receptor (PR) and HER2 status, which guide treatment. Fine needle aspiration cytology (FNAC) is quick and inexpensive and is still useful for cysts and enlarged lymph nodes, but it cannot reliably separate in-situ from invasive cancer.

Each component is scored on the same five-point scale: **1** normal, **2** benign, **3** indeterminate, **4** suspicious, **5** malignant (for example P1–P5 for palpation, U1–U5 or M1–M5 for imaging, and B1–B5 or C1–C5 for biopsy or cytology).

Why Three, Not One?

No single test is perfect. Examination can miss small or deep lesions, some lobular cancers barely show on imaging, and a needle can miss its target. When all three components agree, the diagnostic accuracy is about 99%. If any one of them is suspicious, or if the results do not match (discordance), the lesion is never simply dismissed. It is discussed at a multidisciplinary team meeting and usually re-biopsied or removed. Many breast clinics aim to complete all three steps in a single "one-stop" visit.

Take-Home Message

For the public: any new breast lump, nipple change or skin change should be shown to a doctor without delay. Most lumps turn out to be benign, but only proper assessment can say so with confidence. For us as future doctors: never rely on one test alone. **Three looks at every lump.**

Statistics: National Cancer Control Programme, Sri Lanka (2022 data, released 2025).

Prognostication of Breast Cancer

Oneli Kamburugamuwa

Traditional prognostic factors

Several clinical and pathological factors contribute to breast cancer prognosis. The most established include lymph node status, tumour size, histological grade, age at diagnosis and estrogen receptor (ER) status. The TNM classification assesses tumour size (T), regional lymph node involvement (N) and distant metastasis (M). In general, smaller tumours without lymph node involvement or distant spread are associated with a more favourable prognosis. Histological grade reflects the degree of cellular abnormality and differentiation, providing insight into the tumour's biological aggressiveness. The **Nottingham Prognostic Index (NPI)** is a well-established prognostic model that combines three important pathological parameters: tumour size, lymph node stage and histological grade. Its simplicity makes it a useful tool for estimating prognosis in patients with primary breast cancer.

The role of tumour biology

Advances in molecular pathology have expanded prognostic assessment beyond traditional factors. ER and progesterone receptor (PR) status help identify tumours that may respond to endocrine therapy, while human epidermal growth factor receptor 2 (HER2) status provides important prognostic and treatment-related information. Although HER2-positive tumours can exhibit aggressive behaviour, HER2-targeted therapies have substantially improved outcomes. Triple-negative breast cancer, which lacks ER, PR and HER2 expression, presents distinct therapeutic challenges and often requires a different treatment strategy. More recently, gene-expression profiling and multigene assays, such as Oncotype DX and MammaPrint, have contributed to more individualised risk assessment. In selected patients with early-stage breast cancer, these tests help estimate recurrence risk and inform decisions regarding adjuvant chemotherapy. Nevertheless, their use depends on clinical indications, availability and cost and they do not replace conventional clinicopathological assessment.

Early detection and comprehensive care

Prognosis is strongly influenced by the stage at diagnosis. Early detection through prompt evaluation of breast symptoms and appropriate screening can facilitate diagnosis at an earlier, more treatable stage. However, early diagnosis alone is insufficient; timely access to appropriate treatment and completion of the recommended treatment course are equally important. A multidisciplinary team involving surgeons, oncologists, radiologists, pathologists, nurses and rehabilitation professionals supports coordinated care and better patient outcomes. Ultimately, prognostic estimates are not absolute predictions for individual patients. Outcomes also depend on treatment response, coexisting conditions and access to healthcare. As precision medicine continues to evolve, the integration of clinical, pathological and molecular information offers opportunities for increasingly personalised care. The goal of prognostication is not merely to predict survival, but to guide informed decisions, optimize treatment and preserve patients' quality of life.

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Relation of Increased Adiposity to Increased Risk of Breast Cancers

-- Lilan De Silva | 46th Batch --

Breast cancer (BC) is among several forms of malignancies that are associated with increased adiposity (i.e. overweight and obese). Individuals who have increased adiposity have a higher risk of developing BC, as well as an increased likelihood of its recurrence in those who have been previously diagnosed and treated for it.

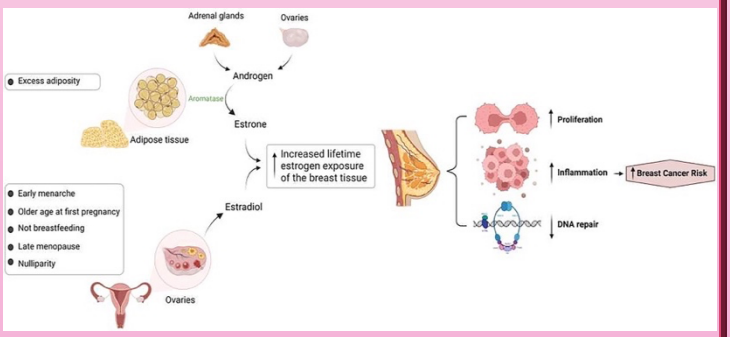
Overweight and obesity are typically determined by one's body mass index (BMI), where a person with a BMI of over 25 kg m^{-2} is considered overweight and that of over 30 kg m^{-2} as obese. New definitions of them have been postulated based on an individual's visceral adiposity.

Prolonged Oestrogen Exposure

In adipose tissue, androgens are aromatised and converted to oestrogen in the form of oestrone. In persons with excess adiposity, lifetime exposure to oestrogen is increased due to this process. While oestrogen is essential for normal breast development, prolonged exposure is a risk factor for BC development, and more than half of all cases of BC are oestrogen-dependent at diagnosis. In postmenopausal women with excess adiposity, the increased BC risk may be explained to be firstly from the prolonged exposure to oestrogen from androgen aromatisation, and secondly postmenopausal women have a higher number of oestrogen receptor-positive epithelial cells.

Chronic Inflammation

Overweight and obesity are characterised by adipose tissue expansion via hypertrophy and/or hyperplasia of adipocytes, which can cause inflammation mediated by cytokines leading to alterations in the physiological properties of white adipose tissue that cause dysregulation in the production and secretion of steroidal hormones (oestrogen) and adipokynes (leptin, adiponectin, inflammatory mediators). Such alterations are linked to breast cell carcinogenesis due to DNA damage, tumour progression due to increased reactive oxygen species generation and growth factors, and metastasis via increased angiogenesis.



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