

Guess The Flower

Text and photos by Dr Lynette Teo



Dr Teo is a retired programme director and is now enjoying the finer things in life.



“Guess the Flower” was borne out of necessity rather than boredom, especially when one was supposed to “pay back” to society after passing your FRCR examinations by being on the organising committee of the Singapore Radiological Society Annual Scientific Meeting (SRS ASM). As the most junior member with zero intellectual input (ie, not in highbrow scientific or sponsorship subcommittees), one had to serve in the social subcommittee (ie, literally no financial input but with the financial freedom to source for food, drinks and venue, as well as to plan the social programme).

The social programme was the crowning jewel of the SRS ASM and the pressure was on to keep the radiology seniors entertained. My mentor, Dr Chan Lai Peng, and I

brainstormed ideas; I was doing my breast radiology posting then and we decided on a “Guess the Flower” quiz using the highest resolution X-ray imaging equipment which was (and still is) the mammography X-ray machine. If this machine could detect microcalcifications in breasts, it would surely be able to depict the fine anatomical detail in flowers.

In the mid-2000s, Singapore’s population was 4.17 million¹ compared to a current population of 5.64 million,² and the relatively new Health Promotion Board BreastScreen Singapore programme³ was in its infancy with machine utilisation rates not as high as today. Aunty Mui Ee, then principal breast radiographer at National University Hospital (NUH) Department of Diagnostic Imaging (DDI), was persuaded to be my

partner in crime and after the last patient left the breast centre, we started imaging flowers.

During that time, mammography X-ray machines still used cut film and we couldn't see the images immediately on a monitor. The X-ray film had to be processed and developed like photographic film. After the first flower that was X-rayed popped out of the film processor – we could barely make out its structure and realised that they could not be imaged “de novo”. These flowers needed to be post-processed and since they were already sitting in a beaker of water, we decided to add a few drops of contrast (the standard CT contrast that is used) and use the principal of capillary effect.

The dose of contrast and time in which these flowers “sat” in the contrast medium needed to be titrated carefully – if the contrast dose was too high or if the flowers were “soaked” for too long, they would die a terrible wrinkled death. The X-ray machine settings had to be adjusted as well and we worked out the optimal kVp and mAs by viewing all X-rays of the same flower at different imaging parameters and choosing the parameters which gave the best image quality (bearing in mind that we did not need to adhere to “ALARA” – a radiation protection term for “as low as reasonably achievable” – given that our subjects were not humans). The images were hung on a mammogram viewer and directly captured with a Canon PowerShot digital camera.

For those who are more inclined to physics, “mAs” refers to milliampere-seconds – a measure of radiation produced (milliamperage) over a set amount of time (seconds) via an X-ray tube.⁴ Kilovoltage peak (kVp) is the peak voltage applied to the X-ray tube. It determines the highest energy of X-ray photon.⁵ Both mAs and kVp affect the radiation dose.

Please see here a truncated version of the X-ray flower quiz that was held at the Asian Civilisations Museum during the SRS ASM 2015, where the top three prizes were Apple products.



1 What is the name of this flower?



2
a. What is the name of this flower?
b. What abnormality can you see on this flower? If you can detect this, you are on your way to becoming a budding radiologist.



3 What is the name of this flower?



4 What is the name of this flower?



5 What is the name of this flower?



6 What is the name of this flower?

Flip over to see if you've guessed them all!

Answers



1

African Daisy (*Osteospermum*)



2

- a. Tulip (*Tulipa*)
- b. Fracture of the tip of the superiormost leaflet which lies immediate left lateral to the flower



3

Baby's Breath (*Gypsophila*)



4

Golden Phoenix (*Phoenix Pusilla*)



5

Rose (*Rosa*)



6

Anthurium

Afternote

"Saving Gaia" was unheard of in the mid-2000s and more than 100 stalks of flowers were sacrificed in this trial-and-error process. More than 100 mammographic films were utilised in this process and the main components of an X-ray film would be silver bromide, gelatin and cellulose triacetate.

Acknowledgements

I would like to thank Ms Ang Mui Ee, then principal radiographer of the breast unit, NUH DDI; Dr Loke Siu Cheng, then medical officer, NUH DDI; Dr Irene Lim, then radiologist in charge of breast, DDI NUH; Prof Wang Shih Chang, then head of department, NUH DDI; and Dr Chan Lai Peng, head of the social subcommittee of the SRS ASM organising committee 2015.

Disclaimers and support

The author does not claim to be a botanist or horticulturist and all flower names were provided by staff of the NUH flower shop. All flowers were bought using the author's own funds. Mammographic film and CT contrast were kindly provided by NUH DDI in support of the SRS ASM 2015. ♦

References

1. The World Bank. Singapore data. Available at: <http://bit.ly/2HYMhpi>.
2. Department of Statistics Singapore. Latest data. Available at: <http://bit.ly/2HCS5Wu>.
3. Health Promotion Board. HPB marks 10th anniversary of breast screening programme with Singapore's largest pink ribbon formation. Available at: <http://bit.ly/2YJqZmi>.
4. Radiopaedia. Milliampere-seconds (mAs). Available at: <http://bit.ly/2HEgfA3>.
5. Radiopaedia. Kilovoltage peak. Available at: <http://bit.ly/2xGQv00>.