

Emilie Groen^{1,2}, Jan Hudecek², Lindy Visser¹, Lotte Elshof¹, Lennart Mulder¹, Michael Schaapveld³, Annegien Broeks⁴, Dennis Peters⁴, Hugo Horlings², Esther Lips¹, Jelle Wesseling^{1,3}

¹ Division of Molecular Pathology, ² Department of Pathology, ³ Department of Psychosocial research and Epidemiology, ⁴ Core Facility Molecular Pathology and Biobanking, Netherlands Cancer Institute, Amsterdam

Background

- Ductal carcinoma in situ (DCIS) is often treated to avoid invasive breast cancer, yet many lesions do not progress if untreated
- Risk stratification to distinguish harmless from potentially hazardous DCIS is necessary to avoid overtreatment
- Which pathologic variables predict the outcome? Do pathologists agree on how to score them?

Here, we explored the value and robustness of pathological findings of DCIS by evaluating interobserver agreement in 353 cases among 56 pathologists.

Methods

- 56 European pathologists were asked to score 353 cases of pure DCIS from a national population-based cohort
- To reflect daily practice no instructions were given and cases were not selected
- 10 pathologic variables will be evaluated based on clinical outcome and not expert opinion or consensus diagnosis
- To reduce the workload and the effect of raters' dropout, each participant was assigned **146** (out of 353) cases, 100 scored by everyone and 46 unique cases. Each case would then be scored by at least 10 pathologists
- The first listed 50 cases are the same for everyone, the remaining ones in random order

Results

- 47.170 (51.59% of total) scores have been submitted within 6 weeks
- 25 (out of 56) pathologists have scored all their cases, 13 some of them
- 100 cases scored by at least 25 pathologists

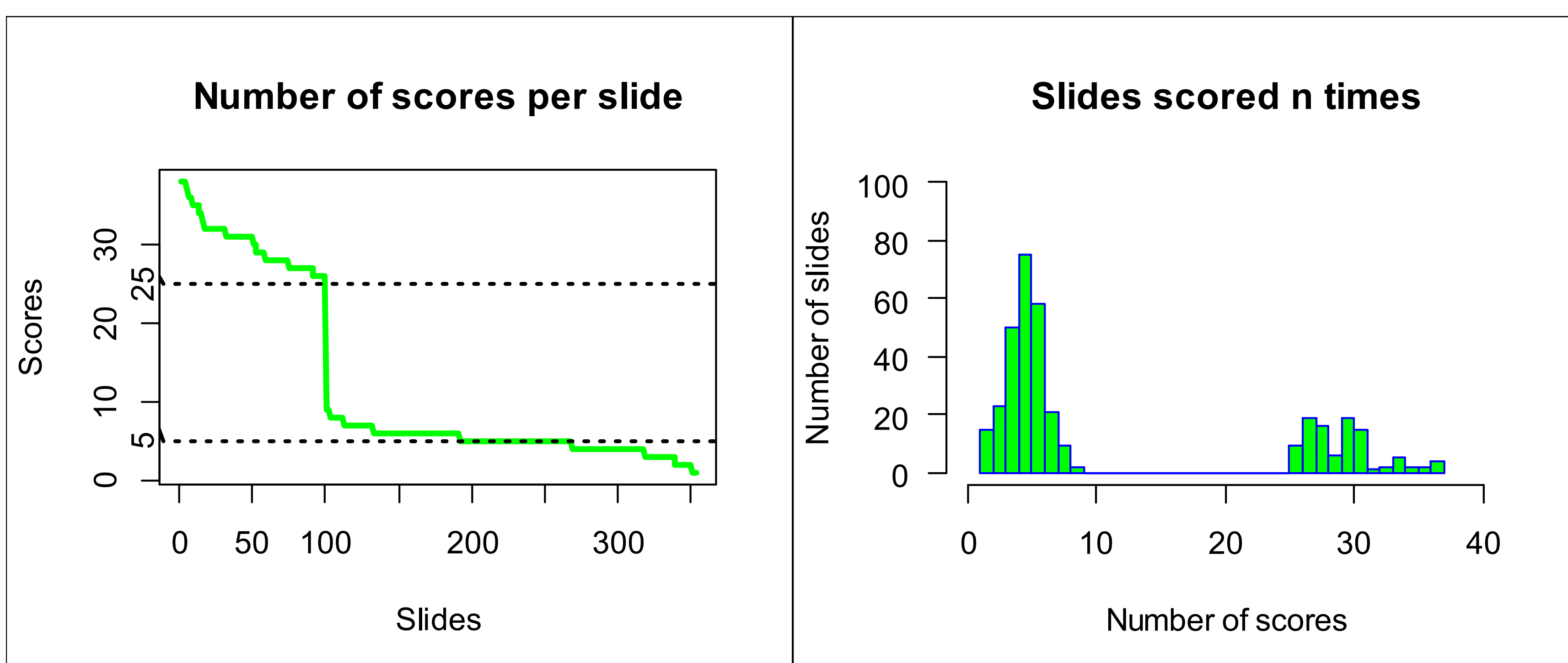


Figure 1a. No slide left behind: every slide scored, 180 slides scored by at least 5 pathologists

Figure 1b. Distribution of scores

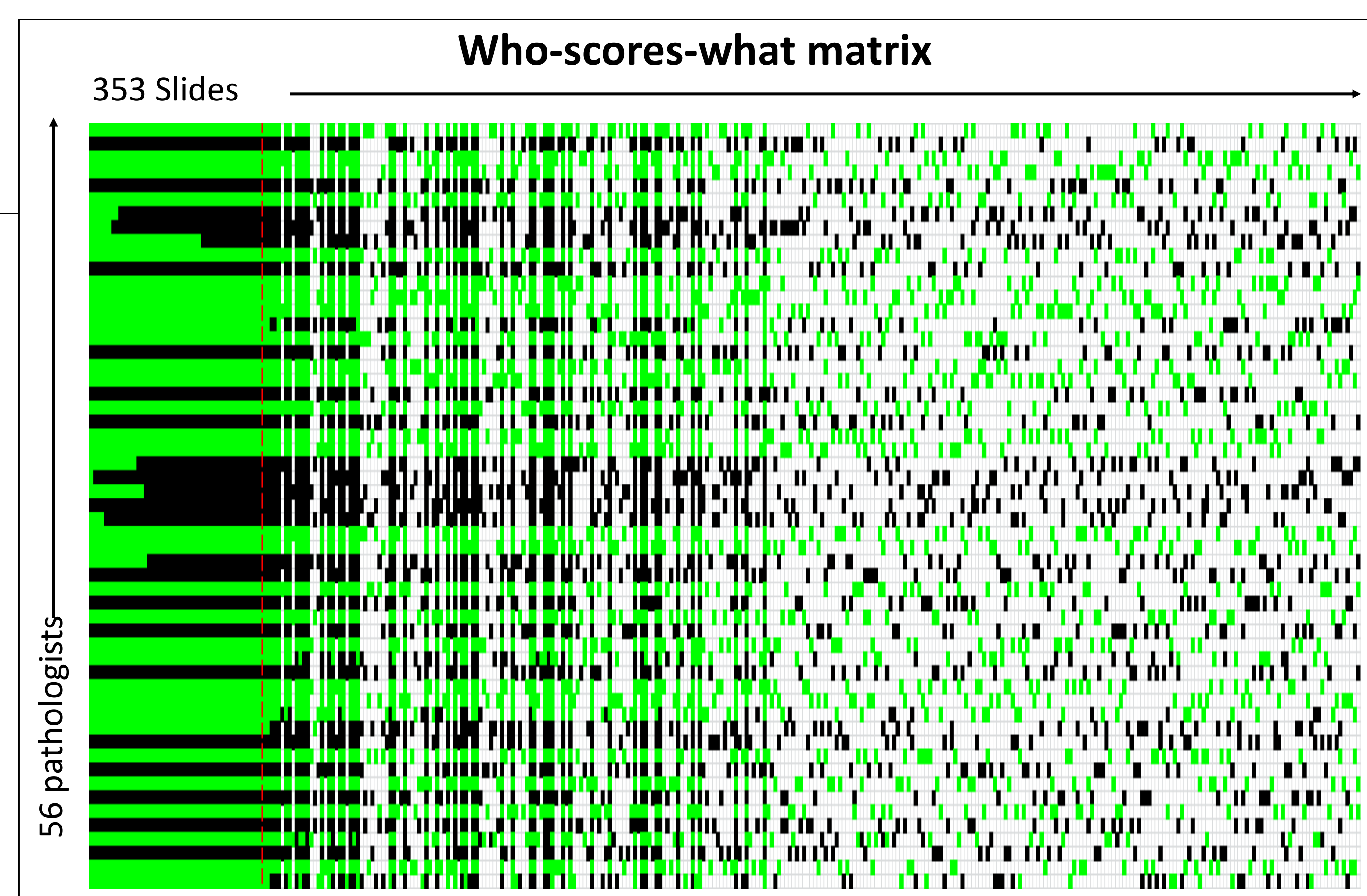


Figure 2. Distribution of slides to score: white = not assigned, black = assigned but not scored yet, green = scored. Red dashed line marks end of first 50 slides.

Your scores in comparison

Select a question: 1. DCIS present? (if not, please give the diagnosis under comments)

Thumbnail	Name	Your Answer	All pathologists		
			Yes	No	Not assessable
	00QB	Yes	38	0	0
	08TO	Yes	38	0	0
	0KGS	Yes	38	0	0

Figure 3. Personalized feedback: each participant will receive a detailed report comparing their answers to the other participants

Conclusions

- Interobserver agreement classifying DCIS will determine which pathologic variables can be robustly used for reliable risk stratification.
- Careful randomization allows for reduction of workload and mitigates effect of raters' dropout.
- Slide Score allows creating studies using automation and enables gathering histopathological variables and evaluating interobserver agreement on a large scale.

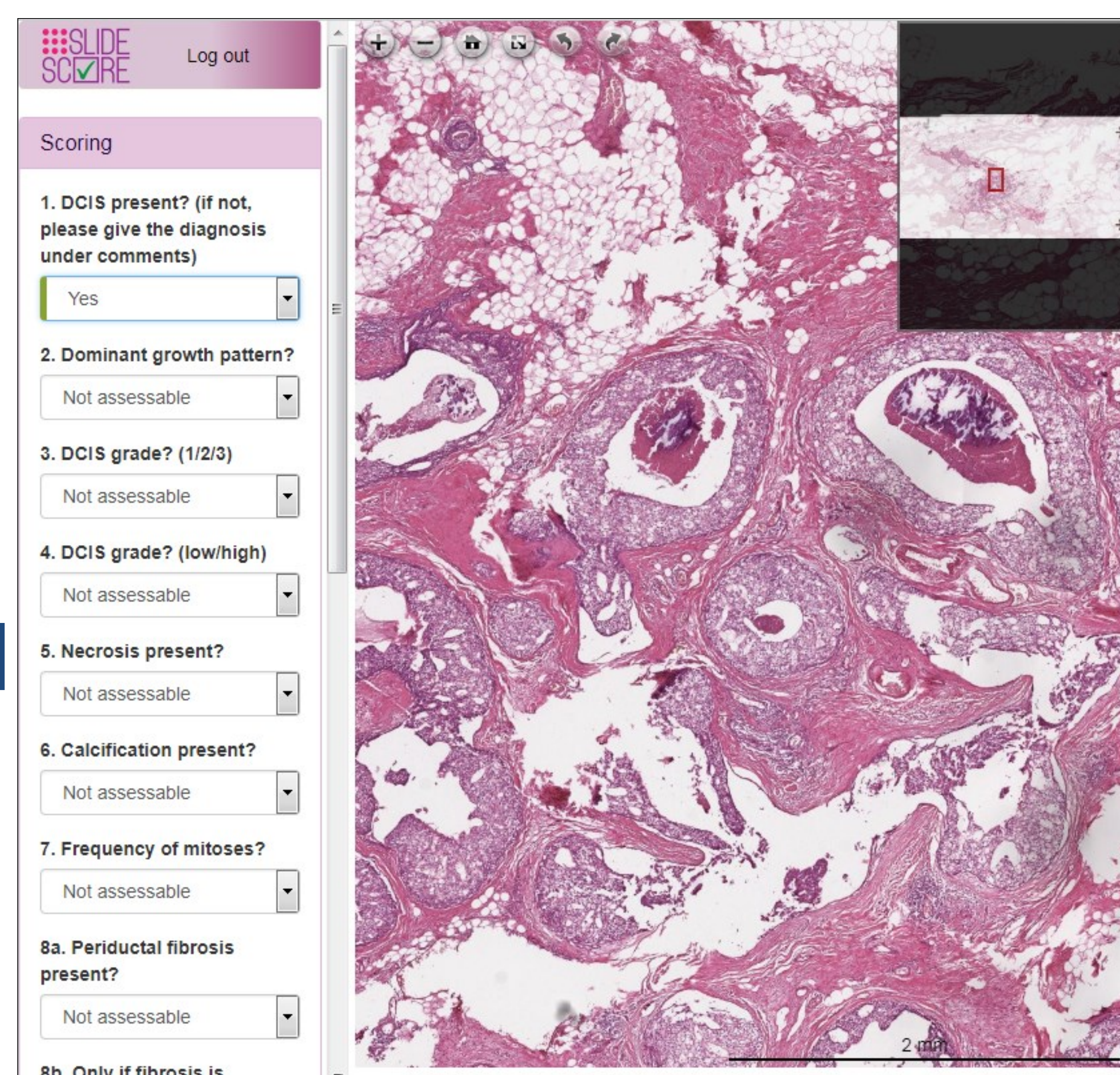


Figure 4. Digital scoring form using in-house developed Slide Score www.slidescore.com