

# Latest Publications



1. Abbasi, W., Yaseen, A., Hassan, F.U., Andleeb, S. and Minhas, F. (2020). **ISLAND: in-silico proteins binding affinity prediction using sequence information**. *BioData Min* **13**(1), pp. 20. [link](#)
2. Abdullahi Sidi, F., Bingham, V., Craig, S. G., McQuaid, S., James, J., Humphries, M. P. & Salto-Tellez, M. (2020) **PD-L1 Multiplex and Quantitative Image Analysis for Molecular Diagnostics**. *Cancers (Basel)*, **13** (1): [link](#)
3. Alemi Koohbanani, N., Jahanifar, M., Zamani Tajadin, N. & Rajpoot, N. (2020) **NuClick: A deep learning framework for interactive segmentation of microscopic images**. *Med Image Anal*, **65** 101771. [link](#)
4. Althobiti, M., Muftah, A. A., Aleskandarany, M. A., Joseph, C., Toss, M. S., Green, A. & Rakha, E. (2020) **The prognostic significance of BMI1 expression in invasive breast cancer is dependent on its molecular subtypes**. *Breast Cancer Res Treat*, **182** (3): 581-589. [link](#)
5. Awan, R., Benes, K., Azam, A., Song, T. H., Shaban, M., Verrill, C., Tsang, Y. W., Snead, D., Minhas, F. & Rajpoot, N. (2021) **Deep learning based digital cell profiles for risk stratification of urine cytology images**. *Cytometry A*, [link](#)
6. Azam, A. S., Miligy, I. M., Kimani, P. K., Maqbool, H., Hewitt, K., Rajpoot, N. M. & Snead, D. R. J. (2020) **Diagnostic concordance and discordance in digital pathology: a systematic review and meta-analysis**. *J Clin Pathol*, [link](#)
7. Browning, L., Colling, R., Rakha, E., Rajpoot, N., Rittscher, J., James, J. A., Salto-Tellez, M., Snead, D. R. J. & Verrill, C. (2020) **Digital pathology and artificial intelligence will be key to supporting clinical and academic cellular pathology through COVID-19 and future crises: the PathLAKE consortium perspective**. *J Clin Pathol*, [link](#)
8. Browning, L., Fryer, E., Roskell, D., White, K., Colling, R., Rittscher, J. & Verrill, C. (2021) **Role of digital pathology in diagnostic histopathology in the response to COVID-19: results from a survey of experience in a UK tertiary referral hospital**. *J Clin Pathol*, **74** (2): 129-132. [link](#)
9. Browning L, Colling R, Verrill C. **WHO/ISUP grading of clear cell renal cell carcinoma and papillary renal cell carcinoma; validation of grading on the digital pathology**

# Latest Publications



- platform and perspectives on reproducibility of grade.** *Diagn Pathol.* 2021 Aug 21;16(1):75. [link](#)
10. Chatrian, A., Colling, R., Browning, L., Alham, N., Sirinukunwattana, K., Malacrino, S., Haghghat, M., Aberdeen, A., Monks, A., Moxley-Wyles, B., Rakha, E., Snead, D., Rittscher, J. and Verrill, C. (2021). **Artificial intelligence for advance requesting of immunohistochemistry in diagnostically uncertain prostate biopsies.** *Mod Pathol* pp. [link](#)
  11. Colling, R., Colling, H., Browning, L. and Verrill, C. (2021). **Validation of grading of non-invasive urothelial carcinoma by digital pathology for routine diagnosis.** *BMC Cancer* **21**(1), pp. 995. [link](#)
  12. Eitzinger, S., Asif, A., Watters, K. E., Iavarone, A. T., Knott, G. J., Doudna, J. A. & Minhas, F. U. A. A. (2020) **Machine learning predicts new anti-CRISPR proteins.** *Nucleic Acids Res*, 48 (9): 4698-4708. [link](#)
  13. Elsharawy, K. A., Althobiti, M., Mohammed, O. J., Aljohani, A. I., Toss, M. S., Green, A. R. & Rakha, E. A. (2021) **Nucleolar protein 10 (NOP10) predicts poor prognosis in invasive breast cancer.** *Breast Cancer Res Treat*, 185 (3): 615-627. [link](#)
  14. Ghosh, A., Sirinukunwattana, K., Khalid Alham, N., Browning, L., Colling, R., Protheroe, A., Protheroe, E., Jones, S., Aberdeen, A., Rittscher, J. and Verrill, C. (2021). **The Potential of Artificial Intelligence to Detect Lymphovascular Invasion in Testicular Cancer.** *Cancers (Basel)* **13**(6), pp. [link](#)
  15. Graham, S., Epstein, D. & Rajpoot, N. (2020) **Dense Steerable Filter CNNs for Exploiting Rotational Symmetry in Histology Images.** *IEEE Trans Med Imaging*, 39 (12): 4124-4136. [link](#)
  16. Humphries, M.P., Maxwell, P. and Salto-Tellez, M. (2021). **QuPath: The global impact of an open source digital pathology system.** *Comput Struct Biotechnol J* **19**pp. 852-859. [link](#)
  17. Javed, S., Mahmood, A., Fraz, M. M., Koohbanani, N. A., Benes, K., Tsang, Y. W., Hewitt, K., Epstein, D., Snead, D. & Rajpoot, N. (2020) **Cellular community detection for tissue phenotyping in colorectal cancer histology images.** *Med Image Anal*, 63 101696. [link](#)

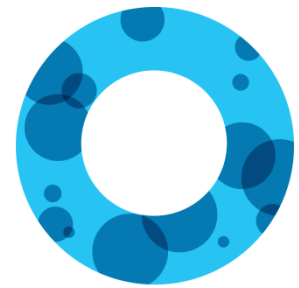
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18. Javed, S., Mahmood, A., Werghi, N., Benes, K. and Rajpoot, N. (2020b). **Multiplex Cellular Communities in Multi-Gigapixel Colorectal Cancer Histology Images for Tissue Phenotyping**. IEEE Trans Image Process pp. [link](#)
19. Joseph, C., Alsaleem, M. A., Toss, M. S., Kariri, Y. A., Althobiti, M., Alsaeed, S., Aljohani, A. I., Narasimha, P. L., Mongan, N. P., Green, A. R. & Rakha, E. A. (2020) **The ITIM-Containing Receptor: Leukocyte-Associated Immunoglobulin-Like Receptor-1 (LAIR-1) Modulates Immune Response and Confers Poor Prognosis in Invasive Breast Carcinoma**. Cancers (Basel), 13 (1): [link](#)
20. Kariri, Y. A., Aleskandarany, M. A., Joseph, C., Kurozumi, S., Mohammed, O. J., Toss, M. S., Green, A. R. & Rakha, E. A. (2020) **Molecular Complexity of Lymphovascular Invasion: The Role of Cell Migration in Breast Cancer as a Prototype**. Pathobiology, 87 (4): 218-231. [link](#)
21. Mahmood, H., Shaban, M., Indave, B. I., Santos-Silva, A. R., Rajpoot, N. & Khurram, S. A. (2020) **Use of artificial intelligence in diagnosis of head and neck precancerous and cancerous lesions: A systematic review**. Oral Oncol, 110 104885. [link](#)
22. Mahmood, H., Shaban, M., Rajpoot, N. and Khurram, S.A. (2021). **Artificial Intelligence-based methods in head and neck cancer diagnosis: an overview**. Br J Cancer **124**(12), pp. 1934-1940. [link](#)
23. Miligy, I. M., Toss, M. S., Shiino, S., Oni, G., Syed, B. M., Khout, H., Tan, Q. T., Green, A. R., Macmillan, R. D., Robertson, J. F. R. & Rakha, E. A. (2020) **The clinical significance of oestrogen receptor expression in breast ductal carcinoma in situ**. Br J Cancer, 123 (10): 1513-1520. [link](#)
24. Rakha, E. A., Alsaleem, M., ElSharawy, K. A., Toss, M. S., Raafat, S., Mihai, R., Minhas, F. A., Green, A. R., Rajpoot, N. M., Dalton, L. W. & Mongan, N. P. (2020) **Visual histological assessment of morphological features reflects the underlying molecular profile in invasive breast cancer: a morphomolecular study**. Histopathology, 77 (4): 631-645. [link](#)
25. Rakha, E.A., Toss, M., Shiino, S., Gamble, P., Jaroensri, R., Mermel, C.H. and Chen, P.C. (2021). **Current and future applications of artificial intelligence in pathology: a clinical perspective**. J Clin Pathol **74**(7), pp. 409-414. [link](#)

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26. Shaban, M., Awan, R., Fraz, M. M., Azam, A., Tsang, Y. W., Snead, D. & Rajpoot, N. M. (2020) **Context-Aware Convolutional Neural Network for Grading of Colorectal Cancer Histology Images**. IEEE Trans Med Imaging, 39 (7): 2395-2405. [link](#)
27. Sirinukunwattana, K., Domingo, E., Richman, S., Redmond, K., Blake, A., Verrill, C., et al (2021). **Image-based consensus molecular subtype (imCMS) classification of colorectal cancer using deep learning**. Gut **70**(3), pp. 544-554. [link](#)
28. Sorell, T., Rajpoot, N. & Verrill, C. (2021) **Ethical issues in computational pathology**. J Med Ethics, [link](#)
29. Viratham Pulsawatdi, A., Craig, S. G., Bingham, V., McCombe, K., Humphries, M. P., Senevirathne, S., Richman, S. D., Quirke, P., Campo, L., Domingo, E., Maughan, T. S., James, J. A. & Salto-Tellez, M. (2020) **A robust multiplex immunofluorescence and digital pathology workflow for the characterisation of the tumour immune microenvironment**. Mol Oncol, 14 (10): 2384-2402. [link](#)
30. Williams, B. J., Brettle, D., Aslam, M., Barrett, P., Bryson, G., Cross, S., Snead, D., Verrill, C., Clarke, E., Wright, A. & Treanor, D. (2020) **Guidance for Remote Reporting of Digital Pathology Slides During Periods of Exceptional Service Pressure: An Emergency Response from the UK Royal College of Pathologists**. J Pathol Inform, 11 12. [link](#)