topathologically. Granular cell nevus features epithelioid and spindle cells with nuclear enlargement and pleomorphism and abundant, finely granular, lightly pigmented, periodic acid-Schiff (PAS)–positive cytoplasm in a background of melanophages.[1,2] Similar to melanoma, GCN can demonstrate a pushing margin with loss of maturation and HMB45 expression. Young age at diagnosis, lack of associated conjunctival melanosis, bulbar location, cysts, and the absence of mitotic figures with a low Ki-67 proliferative index are helpful clinical and pathologic diagnostic clues that serve to distinguish GCN from melanoma.

Granular cell nevus and combined GCN are morphologically similar to deep penetrating nevus (DPN) and combined DPN (superficial DPN, melanocytic nevus with focal atypical epithelioid components, or clonal/inverted nevus). Similar to GCN, DPN expresses HMB45 intensely and demonstrates a low Ki-67 proliferative index. Deep penetrating nevus can rarely metastasize and is regarded as an intermediate melanocytic lesion in the most recent World Health Organization (WHO) *Classification of Skin Tumours*.[3] Deep penetrating nevus is underrecognized in the conjunctiva and is not formally included in the current *WHO Classification of Tumours of the Eye*.[4] Recent studies[4,5] identified activation of the mitogen-activated protein (MAP) kinase and dysregulation of β-catenin pathways in cutaneous and conjunctival DPN. Šekoranja et al[4] and de la Fouchardière et al[5] showed that DPN strongly expresses nuclear β-catenin and its downstream effector cyclin D1 (CCND1), thus distinguishing DPN from other nevus variants.

In light of these recent data, we reevaluated 6 of the previously reported nevi with granular cell change with the PAS stain and immunohistochemical stains for β-catenin, CCND1, and PRAME. We found that PRAME was negative in all 6 lesions, further confirming their benign nature (Figure). Four lesions strongly and diffusely coexpressed nuclear β-catenin and CCND1 in the GCN component and were PAS negative, leading to reclassification of these lesions as combined DPN. In contrast, the GCN component in 2 lesions was β-catenin negative and PAS positive, whereas CCND1 was diffusely expressed in 1 of 2 lesions. Thus, it is possible that 2 PAS-positive and β-catenin–negative lesions are bona fide combined GCN. Alternatively, these lesions may represent a variant of combined DPN. Molecular studies are required to more conclusively distinguish between these possibilities. Finally, although DPN is considered to have potential for aggressive behavior, none of our reclassified 4 conjunctival DPNs recurred, supporting the previously reported benign nature of these lesions in conjunctival location.[1,4]

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Physician Licensing and Credentialing: The Blockchain Can Save Us

To the Editor.—The current process of licensing and credentialing (LC) US physicians is highly inefficient.[1] Obtaining initial LC, maintaining it, and obtaining LC in additional jurisdictions requires contact with central document repositories such as medical schools, licensing boards, and medical practices to confirm a physician's medical school diploma, previous active/inactive LC, previous employment, records of disciplinary action, etc. The process is slightly different for the federal government, each state and medical practice, and entails a substantial waiting period and expense.

Although the first well-publicized iteration of a blockchain was conceived as the basis of a new financial system, blockchain technology also has applicability in any system with deficit of trust such as physician LC. A blockchain can be designed as a decentralized, verifiable, constantly updated, and unalterable ledger of information that eliminates intermediaries and allows for rapid communication.[2] In practical terms, once a physician has been awarded a diploma, passed boards, or any other LC-relevant event has transpired, the information can be entered into the LC blockchain. When the physician needs new LC, the medical board of that state could instantly access the LC blockchain. Smart contracts[3] could be used to determine if, based on specific criteria, an LC request can be automatically approved or whether a manual document review is required. Once new LC has been completed, it can be recorded in the LC blockchain. Various levels of access can be created to serve the needs of different stakeholders. For example, limited information such as the physician's license number and standing with the board can be available to the public, while the board or medical practice can have access to additional information, such as the physician's home address and records regarding prior disciplinary action.

The main benefits of such an approach are its trustworthiness and efficiency. Documents uploaded directly by central authorities (eg, medical school, medical board) can become accessible immediately, eliminating verbal, email, or other time-consuming communications between central authorities. The result is rapid transmission of information and decreased expense. In addition, blockchains are dependent on robust cryptography, which is resistant to attacks by malicious entities. As such, despite not being initially designed

for this purpose, blockchain technology is potentially an excellent vehicle for storing and accessing LC documents.

There are various barriers to implementation of blockchain-focused LC. First, building a blockchain needs funding and technical knowledge. Second, the LC processes at the state, federal, and practice levels have slight differences (such as the need for distinct documents) and are likely difficult to change. Third, an LC blockchain would decrease the need for personnel involved in the current LC process and would also decrease medical board revenues. Political will, redistribution of personnel, and finding new ways to fund medical boards will be required to create and implement such a new LC system.

Assuming that an LC blockchain does gain limited implementation, harmonization across LC stakeholders and, eventually, national, and possibly international, adoption across medical specialties will be possible.

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On the Adoption of Preprints in Pathology Research

To the Editor.—The preprint movement has in recent years been picking up steam as more fields move to adopt the use of preprint servers. Preprints are papers that are uploaded to servers before being submitted to established journals for peer review and publication. Preprints are entering the clinical research disciplines and the biosciences through venues such as *arXiv*, *bioRxiv*, *medRxiv*, and others. Preprints allow for the rapid dissemination of information, provide a record of priority, and are helpful for scientists to be able to share their contribution to the field.[1–3] The pros and cons of preprints are summarized in the Table. Many major publishers have started to accept submissions of papers initially uploaded to preprint servers.[4] It is unclear, however, if pathology journals have joined this trend. Thus, we aimed to evaluate the accessibility of preprint policies across pathology journals with an impact factor.

Advantages and Disadvantages of Preprints

Benefits	Disadvantages
Fast delivery of data	No peer review
Minimal formatting requirements	No retraction
Rapid processing/posting	Lack of awareness by medical researchers
DOI and PMID indexing	
Free	
Allowed by top journals/major publishers	

Abbreviations: DOI, digital object identifier; PMID, PubMed identifier.

InCites Journal Citation Reports 2019 (Clarivate Analytics, Philadelphia, Pennsylvania) was used to identify 78 pathology journals. We manually screened out 20 non–English language-based and forensic journals. We then visited the author guidelines page of each of the 58 journals for preprint policy and submission timeline information. If the policy was unclear after searching for "preprint," we sent an email to the editorial office inquiring about the journal's preprint policy. In these cases, we also attempted to search for publisher policies that were not explicitly stated in the author guidelines. All data were tabulated and statistical analysis was performed in Google Sheets (Google Inc, Mountain View, California).

Of 58 journals, 45 (78%) were accepting submissions previously uploaded to preprint servers. Seven journals (12%) were unwilling to accept submissions that had been previously uploaded on preprint servers. Six journals (10%) did not respond to our email inquiry. Twenty-seven journals (47%) had easily accessible preprint policies stated on their Web sites, and we sent emails to 31 journals (53%) whose preprint policies were unclear. The average response time for email inquiries was 1.6 ± 1.9 working days (range, 1–7 working days).

Less than half of the journals provided information about their editorial timeline. The mean time from submission to first decision was 23.6 ± 18.3 days (n = 28; range, 2–74 days). The mean time from submission to final decision was indicated as 76.7 ± 45.1 days (n = 23; range, 17–227 days).

Our data show that preprints have become the norm among pathology journals. However, journals often do not make their preprint policies easily accessible to authors, and 12% (7 of 58) of the journals we investigated were not accepting preprints. It remains important for journals to more clearly communicate their preprint policies to authors.

Furthermore, the data show that it takes months for papers to be accepted for publication. This, combined with the low acceptance rate of submitted manuscripts (from 10% to 15% among top-tier pathology journals to 30% on average), creates an apparent dilemma in quick result sharing.

We encourage pathologists to make use of preprint servers for the rapid dissemination of knowledge, and advocate for more accessible and preprint-friendly policies across all pathology journals.

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