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PSYCHOLOGY

Calibrating Confidence

One of the challenges in reasoning by means of a deliberative and conscious process is the weighting of evidence that is reported by other humans. For people sitting as jurors in a trial, this translates into deciding whether to believe what a witness says. Previous studies have demonstrated that confidently uttered statements are believed more often and that being accurate on other issues, even those peripheral to the adjudicated question, is conducive to being believed.

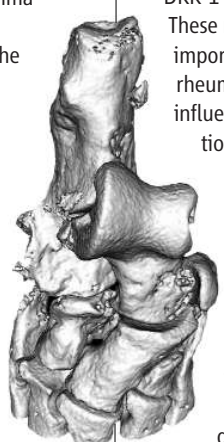
Tenney *et al.* show an interaction between these parameters in mock trials of civil (car accident) and criminal (burglary) cases. Two witnesses were equally confident in asserting their recollections of how the accident had occurred, yet one was uncertain about other events that had taken place on that day whereas the other professed a complete and accurate recall. Subsequently, both witnesses were shown to have been correct about the weather conditions at the time of the incident, but both were also shown to have been in error in placing a personal appointment (entirely unrelated to the accident) on that same day. Although, as expected, the credibility of the supremely confident witness was rated higher initially, the less confident witness was regarded as being more credible after their fallibility had been revealed. — GJC

Psychol. Sci. **18**, 46 (2007).

BIOMEDICINE

Remodeling the Joint

Rheumatoid arthritis is a debilitating autoimmune disorder that is characterized by a profound remodeling of tissue architecture at the joint, which results, most notably, in a permanent loss of bone. Therapies that reduce joint inflammation have been somewhat successful in delaying the onset and progression of the disease, but they have not been able to reverse joint damage once it has occurred. Because the recovery of joint function in rheumatoid arthritis will probably require therapeutic approaches that trigger the formation of new bone, there is growing interest in understanding the molecular mechanisms that regulate bone remodeling within the joint.



Bone erosion (pitted surfaces) in a mouse model of rheumatoid arthritis.

Following up on previous evidence that identified the Wnt signaling pathway as a determinant of bone mass, Diarra *et al*. investigated whether manipulation of this pathway would affect joint pathology in mice overexpressing the pro-inflammatory molecule tumor necrosis factor–α (TNF-α), a widely used animal model of human rheumatoid arthritis. They found that the antibody-mediated blockade of Dickkopf-1 (DKK-1), which is an endogenous inhibitor of Wnt signaling, induced the formation of osteophytes (bone spurs) at the inflamed joints and also prevented the resorption of bone by specialized cells called osteoclasts. As was consistent with the mouse data, they observed that DKK-1 was expressed at aberrantly high levels in joint specimens from humans with rheumatoid arthritis and that in both species DKK-1 expression was induced by TNF-α. These results identify the Wnt pathway as an important regulator of joint remodeling in rheumatoid arthritis. Because Wnt signals influence both the formation and the destruction of bone, future therapies targeting this pathway could in principle be applied not only to rheumatoid arthritis, which is characterized by bone loss, but also to osteoarthritis and other diseases of the joint. — PAK

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ECOLOGY/EVOLUTION

No End of History

Teasing apart the relative roles of historical and contemporary climatic elements in determining species richness is one of the core quests of biogeographical research. Hitherto, success has been limited because of the correlative nature of models used. Rahbek *et al.* have developed a new class of spatially explicit, mechanistic models that use individual species distributions as a basic currency. Application of these predictive models to the distributions of birds in South America shows that current climate explains the distributions only of the most widespread species. Their results indicate that historical factors and community assembly processes may be more important in determining the distributions of species with narrower ranges; these species are, of course, generally of greater relevance in terms of conservation efforts. In turn, this adds to growing appreciation of the importance of incorporating longer-term considerations in conservation planning. — AMS

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PHYSICS

Looking for Lorentz Violations

Although symmetries underlie deep principles in physics (such as the conservation of momentum), ultraprecise measurements have revealed slight exceptions such as the CP (charge-parity) violation in some radioactive decays. Lorentz symmetry, which dictates that experimental measurements should not depend on whether the apparatus is moving at steady velocity or

CREDITS (TOP TO BOTTOM): PHOTOS.COM; DIARRA *ET AL., NAT. MED.* 10.1038/NM1538 (2007)