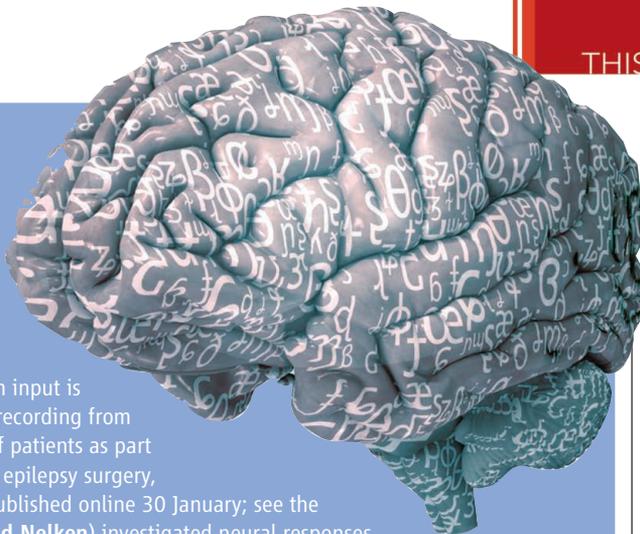


## Deciphering Language >>

Consonants and vowels represent basic building blocks of human language. How their characteristics are extracted from acoustic speech input is not well understood. Directly recording from the superior temporal gyrus of patients as part of their clinical evaluation for epilepsy surgery, **Mesgarani *et al.*** (p. 1006, published online 30 January; see the Perspective by **Grodzinsky and Nelken**) investigated neural responses while the subjects listened to continuous speech. The findings reveal how both vowels and consonants of different phonetic categories are encoded.



chimeric RNA transcript and protein containing sequences from a molecular chaperone fused in frame with sequences from the catalytic domain of protein kinase A. The chimeric protein retained kinase activity *in vitro*. Such recurrent gene fusions in cancer may signal a role in pathogenesis and provide an opportunity for therapeutic intervention.

## Allergen Affinity

Allergic responses are initiated by interaction of allergens with immunoglobulin E (IgE) antibodies, which in turn bind to IgE receptors on the surface of mast cells. **Suzuki *et al.*** (p. 1021, published online 6 February; see the Perspective by **Daëron**) explored how the signaling properties of such receptor complexes differ, depending on the affinity of the IgE antibody for the antigen leading to different allergic responses.

## Know Your Enemy

Fire ants accidentally introduced to North America from their native range in Argentina have been hugely invasive and difficult to eradicate and caused both environmental and economic damage. Recently, another accidentally introduced Argentine ant, the tawny crazy ant, appears to be displacing the fire ants. How? **LeBrun *et al.*** (p. 1014, published online 13 February; see the Perspective by **Kaspari and Weiser**) show that tawny crazy ants have a chemical and behavioral response to the toxic bite of fire ants that vastly reduces their mortality during confrontations and that allows the tawny crazy ants to outcompete their rivals.



## Ordering Cosmic Rays

Earth and other planets are constantly bombarded by cosmic rays (charged particles from the cosmos). The flux of very-high-energy cosmic rays varies according to where we look in the sky. **Schwadron *et al.*** (p. 988, published online 13 February) show that recent measurements of the local interstellar parameters by NASA's Interstellar Boundary Explorer satellite are consistent with observed cosmic ray anisotropies at tera-electron volt energies, implying that local interstellar conditions play a role in ordering very-high-energy cosmic rays in our cosmic vicinity.

## Polymer Film Behavior

An ongoing debate in the understanding of the behavior of thin-film glassy polymers is whether there is nanoconfinement of large molecules or enhanced mobility near a free surface. **Chai *et al.*** (p. 994; see the Perspective by **Chen *et al.***) prepared polymer films with a sharp step in the profile by depositing broken film fragments onto a uniform underlay. Atomic force microscopy revealed changes to the overall film profile with time at various temperatures. A transition was observed from localized motions to relaxation of the entire film at a temperature close to that of the bulk glass transition temperature.

## Once in a While

Many regions at the edge of the Antarctic Ice Sheet have rapidly increased the rates at which they are sliding into the sea and thinning, raising concerns that global warming might cause the sudden collapse of some sections. **Johnson *et al.*** (p. 999, published online 20 February) present data from Pine Island Glacier, which has been thinning and retreating rapidly over the past two decades. The glacier experienced another rapid

thinning around 8000 years ago, which occurred about as quickly as is happening now, and which lasted for 25 to 100 years.

## A Boost for Bismuth Vanadate

In theory, given its light-absorption spectrum, bismuth vanadate should be an effective photoanode for solar water-splitting. However, in prior studies, few of the "holes" generated upon photoexcitation have persisted long enough to strip electrons from water. **Kim and Choi** (p. 990, published online 13 February) now show that the use of a hydrophobic vanadium source in the semiconductor's synthesis results in a high-surface-area morphology with substantially enhanced hole lifetimes. Deposition of two successive catalyst layers enhanced the proportion of holes that reacted with water at the surface, thereby raising the efficiency of the oxygen evolution reaction.

## Oncogenic Suspect Exposed

It can be difficult logistically to study the genomics of rare variants of common cancers. Nevertheless, **Honeyman *et al.*** (p. 1010) studied fibrolamellar hepatocellular carcinoma (FL-HCC), a rare and poorly understood liver tumor that affects adolescents and young adults and for which there is no effective treatment. FL-HCCs from 15 patients all expressed a

## Neandertal Shadows in Us

Non-African modern humans carry a remnant of Neandertal DNA from interbreeding events that have been postulated to have occurred as humans migrated out of Africa. While the total amount of Neandertal sequence is estimated to be less than 3% of the modern genome, the specific retained sequences vary among individuals. Analyzing the genomes of more than 600 Europeans and East Asians, **Vernot and Akey** (p. 1017, published online 29 January) identified Neandertal sequences within modern humans that taken together span approximately 20% of the Neandertal genome. Some Neandertal-derived sequences appear to be under positive selection in humans, including several genes associated with skin phenotypes.