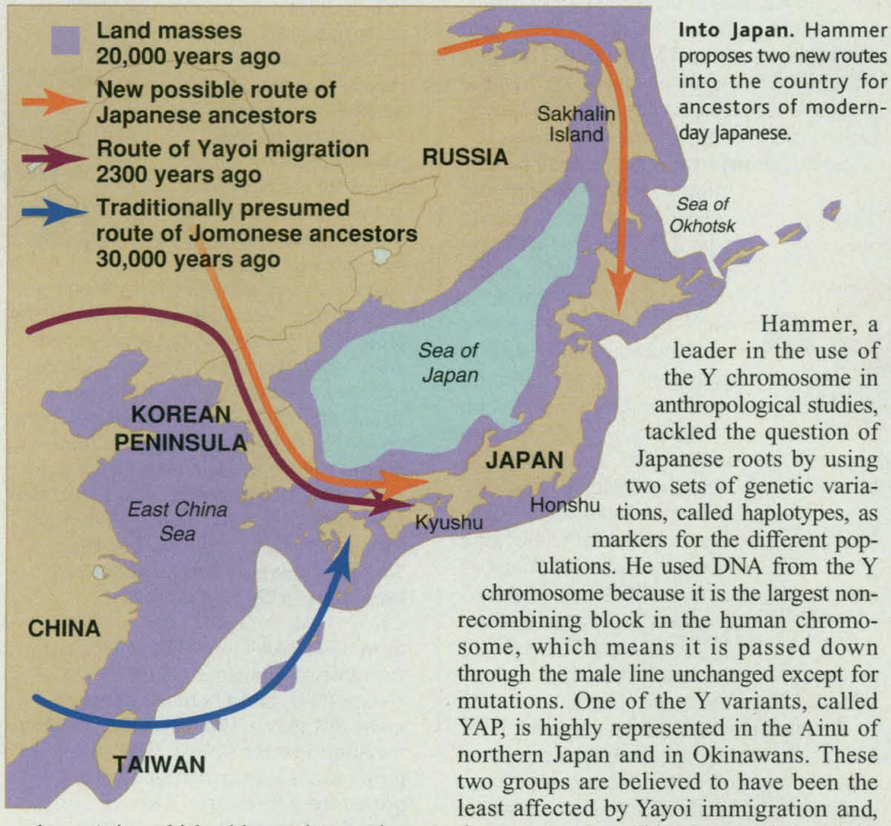
ANTHROPOLOGY

Genetic Clues Revise View of Japanese Roots

KYOTO, JAPAN—Conventional wisdom traces the peopling of the Japanese archipelago to two waves of migrants. The first, the ancestors of the Jomonese, a people who lived cut off from the Asian mainland for 10,000 years and presumably account for many of the distinct cultural and ethnic traits of modern Japanese, are thought to have originated in southeast Asia and island-hopped to southern Japan about 30,000 years ago. The second wave, the Yayoi, originated in northern Asia and traveled down the Korean Peninsula to Kyushu some 2300 years ago, bringing with them rice paddy agriculture and metal tools. What happened next is not clear, including whether the Yayoi mixed with, displaced, or were overwhelmed by the Jomonese.

But a new study of the origins of the Jomonese and Yayoi turns that explanation on its head. Speaking at a conference here last week,* Michael Hammer, an anthropological geneticist at the University of Arizona, Tucson, suggested that the early Jomonese likely originated in central Asia and crossed over a northern land bridge, while the Yayoi may have had roots in southeastern Asia before they headed north and arrived in Kyushu from the west. At the same time, Hammer's work, which is based on an analysis of the Y chromosome in some 2500 men in 60 populations around the world, reinforces the prevailing view that modern Japanese are a hybrid of these two earlier cultures. "These are extremely interesting results, and I expect they will stimulate further work using the Y chromosome," says Keiichi Omoto, an anthropological geneticist at the International Research Center for Japanese Studies (IRCJS) in Kyoto.



Into Japan. Hammer proposes two new routes into the country for ancestors of modern-day Japanese.

Hammer, a leader in the use of the Y chromosome in anthropological studies, tackled the question of Japanese roots by using two sets of genetic variations, called haplotypes, as markers for the different populations. He used DNA from the Y chromosome because it is the largest nonrecombining block in the human chromosome, which means it is passed down through the male line unchanged except for mutations. One of the Y variants, called YAP, is highly represented in the Ainu of northern Japan and in Okinawans. These two groups are believed to have been the least affected by Yayoi immigration and, thus, seen as possibly characteristic of the Jomonese. Hammer figured a different haplotype, designated as 1J and common among both Koreans and Japanese, might be a Yayoi indicator.

His findings support the theory that the occurrence of the two haplotypes should vary with distance from northern Kyushu, the Yayoi point of entry. YAP occurs in the population more frequently with increasing distance from northern Kyushu, while the ratio of the population with the 1J haplotype is highest in northern Kyushu and decreases with increasing distance. "These results are consistent with the hybridization theory," Hammer concludes.

The studies trace only the male lineage, but other studies presented at the meeting that analyze the female line also support the hybridization theory. Hammer's work goes a step further, however, by exploring the origins and migration patterns of the Jomonese and Yayoi. Relying on blood samples already collected around the world for other purposes, he found that YAP, or a closely related variant, only showed up in populations from Japan, Tibet, and sub-Saharan Africa. Hammer believes that the sub-Saharan variant evolved after the variants found in both Tibet and Japan. Variants of the 1J haplotype were common in Japan and Korea, but also appeared in Manchuria and southeast Asia.

To explain these patterns, Hammer theorizes that YAP originated in central Asia 50,000 years ago. People carrying YAP dispersed across the east and west, perhaps under pressure from new waves of immigrants. Eventually YAP peoples were pushed to the fringe areas of Tibet and Japan, and all traces of YAP in central Asia were subsequently obliterated by mixing. The ancestors of the Jomonese crossed a land bridge to Japan about 30,000 years ago and were cut off from the mainland when water levels rose about 12,000 years ago. Another group migrated all the way to Africa, he speculates.

The 1J haplotype emerged in southeast Asia and was carried north and east, Hammer believes, eventually spreading to the Korean peninsula and Japan. Tracing the Yayoi to southeast Asia "needs much more work," he admits, adding that his theory nevertheless is consistent with the origin 8000 years ago of paddy rice agriculture in south Asia.

Support for Hammer's scenario splits along specialty lines. Omoto notes that a northern origin for the Jomonese "fits very nicely" with his own earlier work using classical genetic markers such as enzymes. But Kazuro Hanihara, a physical anthropologist also at IRCJS, says, "I'm not able to agree." The morphological evidence, such as skull shapes and teeth characteristics in fossils found throughout Asia, tie the Jomonese to southeast Asia, he believes.

Even harder for everyone to swallow is the premise of a migration to Africa. "There is no fossil evidence for any migration [of any type] into Africa," says Chris Stringer, a physical anthropologist at the Natural History Museum, London. Omoto says a more convincing theory would posit that YAP originated in Africa and was somehow retained in a few isolated populations. Hammer's answer is that it may be time to reexamine the conventional view that migrations were always out of Africa and never back in.

Scientists hope to find ways to resolve this and other conflicting evidence being gathered by geneticists, anthropologists, and archaeologists. William Wang, a linguist at the City University of Hong Kong, says, "Each discipline provides just one window to the past. We need several viewpoints to get an accurate picture." Stringer says that finding a way to blend the genetic and anthropological evi-

SOURCE: K. OMOTO

* Recent Progress in the Studies of the Origins of the Japanese, 22 to 23 February, Kyoto.

dence into a consistent picture of Japanese origins, which is presumed to rest on two distinct waves of migrants, "could set an example for [work on] other regions" with more complex migratory patterns.

–DENNIS NORMILE

SCIENTIFIC MISCONDUCT

Chinese Journals Pledge Crackdown

BEIJING—Chinese journals and scientific societies have embraced a new code of conduct designed to reduce the incidence of plagiarism, fabrication, and other acts of misconduct. The policies, adopted last month at a national meeting here, are meant to alert editors and authors to a problem that Chinese authorities see as a threat to their rising investment in research.

The campaign, organized by the China Association for Science and Technology (CAST), is the most visible to date on this sensitive topic (*Science*, 18 October 1996, p. 337). Two 1997 cases, involving duplicate publication of research from its magazines, prompted the association's Committee of Morality and Rights of Science and Technology Researchers to convene a meeting of representatives from several hundred scientific societies and journals. On 1 February the group endorsed a seven-part "Moral Convention."

The one-page statement asks journal editors to refrain from publishing poor-quality, "from-a-buddy" articles, to reject articles of questionable authorship, and to weed out multiple submissions. It suggests that authors found to have committed plagiarism, fabrication, or falsification of data be warned in writing, followed by a boycott of future articles, notification of their home institution, and public disclosure of their misdeeds. CAST is also thinking about asking all journals signing the convention to reject any articles for up to 10 years from authors found guilty of misconduct, and to make their names public.

In addition to recommending ways to stamp out misconduct, the convention also affirms the role of authors and seeks to promote better communications between journals and the scientific community. It asks journals to notify authors of the status of their submissions within a reasonable period of time and to respect their "rights and interests."

Chinese journals and science officials have long been concerned about scientific misconduct, especially plagiarism, but the two 1997 incidents brought the issue to a head. In one case, an associate professor at the Higher Education Research Center of Nanjing Teachers' University copied an entire article on pay disparities in the labor market from *Science and Technology Guide*, a monthly CAST publication that is widely circulated, and published it in another, less prominent journal. The plagiarism was discovered after the two journals merged their editorial offices and CAST became publisher of both journals. The second incident involved a faculty member at the Institute of Higher Education of Tongji University in Shanghai, who copied an article in the *Guide* about chaos theory. The plagiarism was spotted by a reader.

Both plagiarists were identified in a May 1997 article in the *Guide*, which has decided not to accept any more submissions from the authors. "There must be no compromise over dishonesty and no cover-up. Taking pity will harm the cause of science," says Cai Decheng, former standing vice president of the *Guide*.

Chinese scientists and journal editors see the convention as a useful tool and a necessary step in combating misconduct. "These cases of misconduct have ruined scientific values and damaged academic standards," says Zhang Yutai, first secretary of the CAST Secretariat. But some scientists worry that it will not be sufficient to root out the problem. "The burden of proof is mainly on the journals themselves," notes one director of CAST who requested anonymity. "But it is difficult for editors to raise copyright or other legal issues with the wrongdoer." Journals that decide to conduct investigations often get little help from the home institutions, notes one editor: "Some institutions and universities cover up the wrongdoing to protect their own reputation."

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>
> **—Cai Decheng**

The process needs to go a step further, agrees Tsou Chen-lu, a professor of biophysics and former head of the National Laboratory of Biomacromolecules in Beijing. "What we need is a convention on morality and behavior of Chinese science researchers that builds upon this convention," says Tsou. Without a broad national policy, he and other scientists fear that self-interest may stifle efforts to root out misconduct.

–JUSTIN WANG

Justin Wang writes for *China Features* in Beijing.

CREDIT: SAM KITTNER

ScienceScope

The Devil Is in the Data Rita Colwell (below), director of the National Science Foundation, has taken the unusual step of opposing new data access regulations being proposed by her own Administration. The law, written last year by Senator Richard Shelby (R–AL), is designed to force taxpayer-funded scientists to turn over their raw data to anyone who files a Freedom of Information Act request. The White House Office of Management and Budget (OMB), however, has attempted to limit the law's reach by interpreting it narrowly (*Science*, 12 February, p. 914). Under rules the OMB hopes to finalize by 30 September, researchers would have to disclose only published data used to develop policy or rules.

But that compromise doesn't sit well with Colwell. "No matter how narrowly drawn," the rule "will likely harm the process of research in all fields," she wrote in a 22 February letter to OMB Director Jacob Lew. Instead, she urges the White House to get behind a bill sponsored by Representative George Brown (D–CA) that would repeal the law.

Australia's Food Court A special "citizens court" will put genetically modified (GM) foods on trial in Australia next week. Sponsors of the unusual courtroom drama, including the Australian Museum and private groups, hope it will help forge a consensus on how the government should regulate the controversial products.

On 10 March, 14 lay jurors will gather at the Old Parliament House in Canberra to begin questioning a range of experts on eight hotly debated questions, including whether Australia should support international regulation. The jury's verdicts—to be rendered after 3 days of testimony—could help shape government regulations, such as GM food labeling requirements due in May. Observers hope the trial, modeled after a public-input process developed in the Netherlands, will help steer officials to wise decisions. Jurors "can be pretty damned insightful and see through the guff to the heart of the matter," says biologist Richard Jefferson of Cambia, a Canberra-based agricultural research institute.

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