

Gene May Offer Clues To Asian Superbug Epidemic

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<http://www.asianscientist.com/health-medicine/methicillin-resistant-s-aureus-sasx-china-asia-2012/>

AsianScientist (Apr. 24, 2012) - Chinese scientists together with National Institutes of Health (NIH) colleagues have discovered a rapidly emerging *Staphylococcus aureus* gene, called *sasX*, which is playing a pivotal role in establishing methicillin-resistant *S. aureus* (MRSA) epidemics across Asia.

MRSA is a leading cause of severe infections in hospitals and epidemics happen in waves, a process whose molecular underpinnings are not fully understood.

As the *sasX* gene is considered to be extremely rare, it took researchers by surprise to find that *sasX* was prevalent in 807 patient samples of invasive *S. aureus* taken over the past decade from three Chinese hospitals.

More concerningly, the gene's frequency is increasing significantly: From 2003 to 2011, the percentage of MRSA samples containing *sasX* almost doubled, from 21 to 39 percent.

The researchers determined in laboratory and mouse studies that *sasX* helps bacteria to colonize in the nose, cause skin abscesses and lung disease, and evade human immune defenses.

Further, the scientists say their work provides additional evidence for the theory of horizontal gene transfer (DNA exchange between different strains of bacteria) of highly virulent new MRSA bacterial clones. Notably, the *sasX* gene is embedded in a so-called mobile genetic element, a DNA segment that can transfer easily between strains.

While most *sasX*-positive samples found in the study were from the ST239 group - the predominant MRSA lineage in China and large parts of Asia, the team predicts that the frequency of *sasX* will increase internationally based on evidence of *sasX* transfer to non-ST239 groups of MRSA clones.

To curb this growing epidemic, the team plans to both monitor the gene's spread and work to develop therapeutics to prevent MRSA strains expressing *sasX* from colonizing and infecting people.

The article can be found at: [Li M et al. MRSA epidemic linked to a quickly spreading colonization and virulence determinant.](#)

Source: [NIAID](#).

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