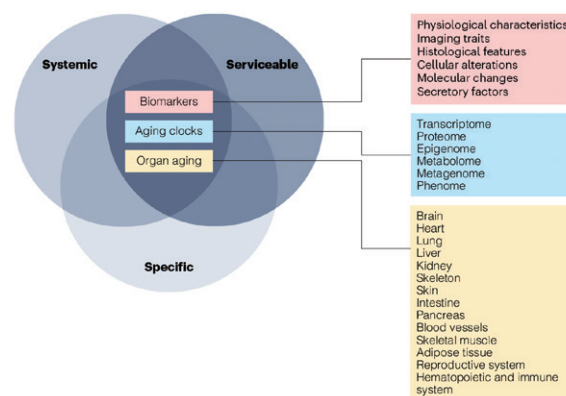


China Launches Major Consortium to Accelerate Aging Research

Appeared in *Nature Medicine* as a Correspondence on July 19, 2023, China launched a new consortium to boost aging research (doi: 10.1038/s41591-023-02444-y). Named the Aging Biomarker Consortium (ABC), it brings together over 90 leading Chinese scientists across disciplines to identify biomarkers of aging and develop standards for their measurement.

Biomarkers indicate biological aging and predict disease risks. However, current ones often lack specificity and systemic representation. The ABC will use multi-omics and AI to comprehensively analyze biomarkers in diverse populations. This big data approach can identify accurate biomarker panels reflecting biological age. Partnerships with global consortia are planned to build an international framework. The ABC also addresses ethical concerns like animal welfare and privacy in aging research.

With China's rapidly aging population, the ABC's



Mission and roadmap of the Aging Biomarker Consortium. (Credit: *Nature Medicine*)

aging biomarker initiatives and collaborative model could accelerate healthy aging solutions. The open consortium represents an exciting new era for aging research in China.

Making Plastics Greener and More Useful



Scientists make polyethylene, a common polymer for making plastic bags, photodegradable, which may offer a new approach to plastic waste reduction. (Image by Pixabay)

Scientists from the Changchun Institute of Applied Chemistry of the Chinese Academy of Sciences (CAS) have developed a new way to make plastics to make it possible to be degradable in ambient environment with proper lighting. This move could help reduce plastic pollution. The new approach produces plastics from ethylene gas and carbon monoxide using specialized catalysts. This innovation incorporates two features to make the new-type plastics superior: the ability to degrade under ultraviolet light, and the new hydrophilic surface induced by introduction of new functional groups. The study was published in *National Science Review* (doi: 10.1093/nsr/nwad039).

Plastics fabricated this way retain the useful bulk properties of conventional polyethylene plastics – they are moldable, lightweight, and sturdy. On top of this, the

trace amounts of ketone groups enable the materials to break down when exposed to sunlight, addressing the problem of plastic persistence in the environment; and the added polar groups allow the plastics to adhere better to other materials, expanding their potential applications.

The researchers say the next step is to optimize

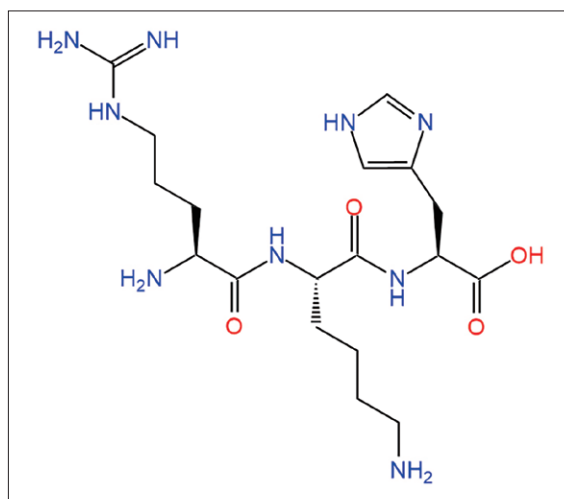
the industrial-scale manufacturing catalytic process. The improved sustainability and functionality of the new plastics could make them attractive alternatives to conventional plastics for certain applications. With further development, these “green” plastics may become a valuable weapon in the fight against plastic waste.

Could Gut Bacteria Hold a Cure for Sepsis?

A new study in *Gut* reveals a promising avenue for treating sepsis, the dangerous immune reaction that can lead to organ failure and death in severe infections (doi: 10.1136/gutjnl-2023-329996). A joint research team from the University of Science and Technology of China (USTC) and Southern Medical University in China found that levels of a beneficial gut microbe called *Akkermansia muciniphila* (AKK) are reduced in septic patients. When administered to mice with experimental sepsis, AKK dramatically improved survival. How does a gut microbe fight off sepsis originating from infections elsewhere in the body? The secret lies in a short peptide generated by AKK Arg-Lys-His or RKH.

Metabolism studies found RKH to be a potent calming agent that blocks inflammatory signaling in immune cells. RKH acts like a key fitting into a lock to prevent overactivation of the immune system. This prevents the uncontrolled inflammatory storm that characterizes deadly sepsis.

Excitingly, the researchers can reproduce the protective effects of AKK using RKH treatment alone in mice. Even better, RKH appeared safe and effective at



A tripeptide Arg-Lys-His (RKH) generated by a beneficial gut microbe could protect against sepsis in animal models. (Image by Allpeptide)

curbing inflammation in a pig model, demonstrating its potential for human use. While further clinical trials are needed, these results reveal that the answer to treating sepsis may have been inside us all along – in the form of helpful bacteria in the gut microbiome.

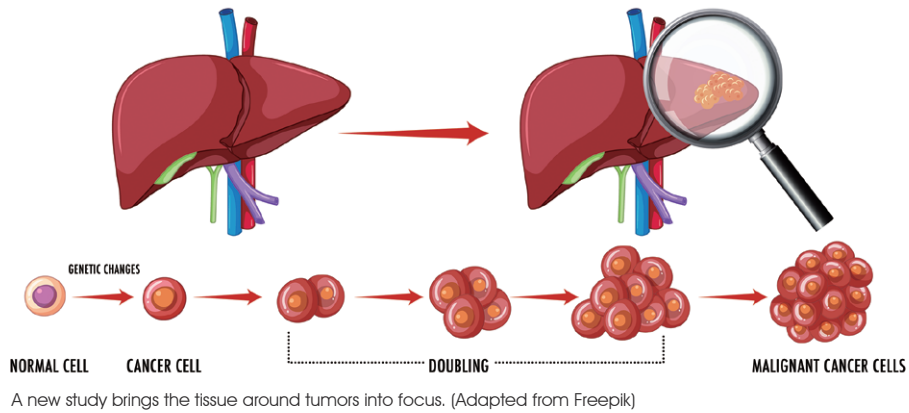
Looking into the Tissue Adjacent to Tumors

Cancer doesn't just suddenly appear – it develops over time, shaped by complex interactions between tumor cells and their surrounding environment. Researchers have gained intriguing new insights into liver cancer development by comprehensively analyzing the proteins in liver tissue adjacent to tumors (National

Science Review, doi: 10.1093/nsr/nwad167).

Using advanced technology, the team quantified over 6,000 proteins in adjacent tissue samples from 159 liver cancer patients. They uncovered substantial patient differences, finding two main subtypes with distinct protein profiles. One subtype had high metabolism and

Not Just the Tumor: Looking into the Tissue Adjacent to Tumors



resembled a healthy liver more closely. However, the other subtype showed signs of liver injury and more active immune cells, associated with poorer prognosis.

Comparing adjacent tissue to tumors and healthy livers revealed progressive protein changes during cancer development. The findings highlight how tumors can

remodel their neighborhood, while adjacent tissue may give rise to biomarkers or targets for early detection or prevention. Studying molecular differences in adjacent tissue enables potential applications for prolonging patient survival and suppressing liver cancer recurrence.