Japanese scientists embrace creepy-crawlies

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Firms in Japan are changing people's perceptions about common spiders, worms and insect larvae. These seemingly unwanted creatures have unique features that could be useful for many applications that benefit humans, according to an article in *Chemical & Engineering News* (C&EN), the weekly newsmagazine of the American Chemical Society.

Both small and large firms in Japan have warmed up to the idea of researching creepy-crawlies because these creatures are cost efficient and alleviate ethical concerns about using rats or other mammals for testing, freelance contributor Katsumori Matsuoka writes. Genome Pharmaceuticals Institute (GPI), for example, is using silkworms as animal models to study human disease, identifying a compound in soil bacteria that could be used to treat Staphylococcus aureus infections. The company is also using silkworms to screen for functional food ingredients, discovering that lactic acid bacteria can be added to food to boost immune systems.

Remarkably, nematodes can detect cancer in human urine, an ability being exploited by scientists at Hirotsu Bio Science for a cancer diagnostic kit. Still other firms are using silkworms' and spiders' natural abilities to produce silk for clothing, construction materials and biomonitoring. In 2021, Spiber will start production of spider silk at a new structured-protein fermentation facility in Thailand—the world's largest of its kind. Two Japanese trading firms, Itochu and Marubeni, invested $10 million each in a venture called Musca, which seeks to use fly larvae to convert the excreta of livestock into fertilizer and animal feed. These surprising discoveries suggest that creepy-crawlies deserve

more appreciation and less revulsion.

More information: cenm.ag/spider-silk

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