

HAWAII JOURNAL WATCH

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Highlights of recent research from the University of Hawai'i and the Hawai'i State Department of Health

NEW COMPOUNDS IDENTIFIED IN MAUNA KEA SOIL

Soil from the top of Mauna Kea contains fungi that may produce anti-cancer or cancer preventative compounds. Researchers including Shugeng Cao PhD, of the Daniel K. Inouye College of Pharmacy, studied a fungal strain called *Aspergillus terreus* FS107 from a soil sample using high performance liquid chromatography (HPLC). Six compounds were isolated, including 2 new compounds that the researchers named tryptoquivaline W and tryptoquivaline X. Their structures were determined using mass spectrometry and nuclear magnetic resonance analysis. The researchers then tested the activity of the compounds against human cancer cells. Among the 4 known compounds, 2 inhibited the activity of NF- κ B, a transcription factor involved in the cellular response to stress. The researchers concluded these compounds may potentially mediate a cancer chemopreventive response in human cells.

- Zaman KAU, Hu Z, Wu X, Cao S. Tryptoquivalines W and X, two new compounds from a Hawaiian fungal strain and their biological activities. *Tetrahedron Lett.* 2020;61(14):151730. doi:10.1016/j.tetlet.2020.151730

FACTORS ASSOCIATED WITH SURVIVAL OF RARE LIVER CANCER

Cancer of the liver and bile ducts, called combined hepatocellular and cholangiocarcinoma (HCC/CC), is an aggressive cancer with generally poor prognosis. Researchers including Eric Wien MD, of the John A. Burns School of Medicine, examined data from the Surveillance, Epidemiology, and End Results (SEER) database on 497 patients with HCC/CC from 2004 to 2015. Results showed median survival was 6 months. Multivariate logistic regression showed that tumor size of less than 50 mm, undergoing surgical resection, and undergoing liver transplant were associated with 5-year survival. Patients in the Asian/Pacific Islander group had a significantly higher rate of surgical resection compared with non-Asians (35.7% vs 21.1%), and a higher rate of 5-year survival (15.4% vs 8.0%). The greater prevalence of hepatitis B in Asia may play a role – it may prompt surveillance and earlier detection, or the virus may lead to cancers that develop without co-occurring cirrhosis, allowing for more surgical management. The researchers concluded that further study is needed to explain racial/ethnic differences and the role of underlying liver disease in patients with HCC/CC.

- Sempokuya T, Wien EA, Pattison RJ, Ma J, Wong LL. Factors associated with 5-year survival of combined hepatocellular and cholangiocarcinoma. *World J Hepatol.* 2020;12(11):1020-1030. doi:10.4254/wjh.v12.i11.1020

AN APP CAN FACILITATE HPV VACCINATION

Young men who have sex with men (MSM) face a higher prevalence of human papillomavirus (HPV) related diseases. Researchers led by Holly Fontenot PhD, of the School of Nursing and Dental Hygiene, developed an app to reach young MSM, deliver HPV

information, and facilitate vaccination. Participants ages 18-26 were recruited over 6 months via ads on an MSM dating app. Among 338 potential participants who accessed the study web page, 42 downloaded the app. Usage data showed participants primarily accessed the app's educational components and the app's functions to book appointments, set reminders, or access directions to clinics. Of the 35 participants who were unvaccinated, not up-to-date, or not reporting status, 8 (23%) used the app to facilitate receiving the HPV vaccine. The findings show that an app can help youth develop action plans and facilitate health behaviors.

- Fontenot HB, White BP, Rosenberger JG, et al. Mobile app strategy to facilitate human papillomavirus vaccination among young men who have sex with men: Pilot intervention study. *J Med Internet Res.* 2020;22(11):e22878. doi:10.2196/22878

BILE ACID METABOLISM MAY PLAY A ROLE IN ALZHEIMER'S DISEASE

Many metabolic processes are altered in people with Alzheimer's disease (AD). Researchers including Wei Jia PhD, of the University of Hawai'i Cancer Center, used data from post-mortem brain samples to create transcription profiles of genes involved in the metabolism of cholesterol and bile acids. From the profiles, the researchers analyzed metabolic activity in various brain regions. Results showed that the transport of the amino acid taurine, the synthesis of bile acids, and the metabolism of cholesterol differed significantly between the brains of people with AD compared with cognitively normal individuals. Moreover, the researchers identified transcription factors that interact with these genes. They also found evidence suggesting bile acids from the gut are transported to the brain. The researchers concluded more research is needed on bile acid metabolism in AD.

- Baloni P, Funk CC, Yan J, et al. Metabolic network analysis reveals altered bile acid synthesis and metabolism in Alzheimer's disease. *Cell Rep Med.* 2020;1(8):100138. doi:10.1016/j.xcrm.2020.100138

MORE FREQUENT VISITS TO A CHIROPRACTOR MAY HELP WITH CHRONIC PAIN

For patients with chronic low back or neck pain who are under the care of a chiropractor, visits more than once per week may be linked with better improvement. Researchers including Eric Hurwitz DC, PhD, with the Office of Public Health Studies, conducted a prospective study with 1665 patients over a 3-month period. Results showed patients' ratings of pain decreased slightly but significantly over the study period. Those with higher levels of pain and disability had more frequent visits, and those who saw their chiropractor more than once weekly showed significantly faster improvement. The findings suggest that patients may reach a plateau, or level of maximum therapeutic improvement, and that visits more often than once weekly are needed to maintain that level of improvement.

- Herman PM, Edgington SE, Sorbero ME, Hurwitz EL, Goertz CM, Coulter ID. Visit frequency and outcomes for patients using ongoing chiropractic care for chronic low-back and neck pain: An observational longitudinal study. *Pain Physician.* 2021;24(1):E61-E74.