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CAN OTHER PEOPLE'S STRESS
Change Our Brains?

In a new study published in Nature Neuroscience, Jaideep Bains, PhD and his team at the Cumming School of Medicine's Hotchkiss Brain Institute (HBI) at the University of Calgary have discovered that, in mice, stress transmitted from one mouse can cause change in the brain of another mouse the same way stress in its own brain can. The study also shows that this effect is reversed in female mice following a social interaction, but that the same was not true for male mice.

"Brain changes associated with stress underpin many mental illnesses including PTSD, anxiety disorders and depression," says Bains, professor in the Department of Physiology and Pharmacology and member of the HBI. "Recent studies indicate that stress and emotions can be 'contagious'. Whether this has lasting consequences for the brain is not known."

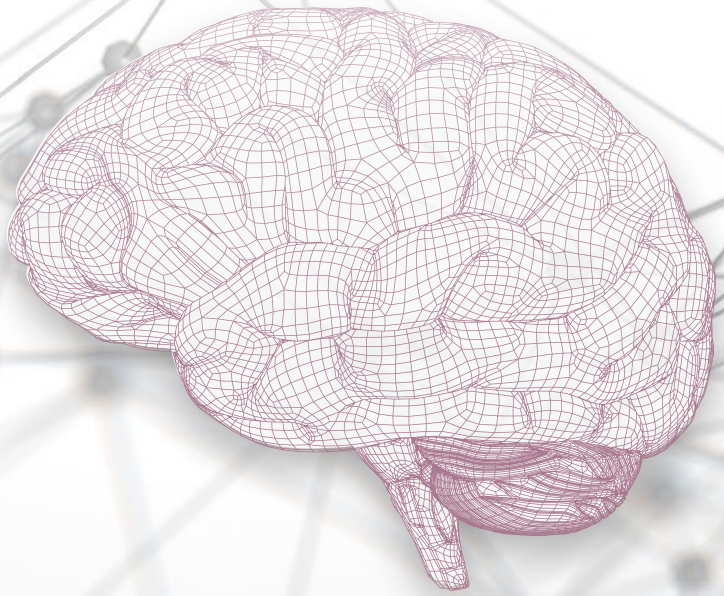
Bains' research team studied the effects of stress on pairs of male and female mice. They removed one mouse from each pair and exposed it to a mild stressor before returning it to its partner. They then examined the responses of CRH neurons, which control the brain's response to stress, in each mouse. This revealed that networks in the brains of both the stressed mouse and the naïve partner were altered in the same way.

The team discovered that the activation of these CRH neurons causes the release of a chemical signal, an 'alarm pheromone', from the mouse that alerts the partner. The partner who detects the signal can, in turn, alert additional members of the group. This propagation of stress signals reveals a key mechanism for the transmission of information that may be critical in the formation of social networks in various species.

Bains suggests that this effect may also be present in humans. "We readily communicate our stress to others, sometimes without even knowing it. There is even evidence that some symptoms of stress can persist in family and loved ones of individuals who suffer from PTSD. On the flip side, the ability to sense another's emotional state is a key part of creating and building social bonds."

This research from the Bains lab indicates that stress and social interactions are intricately linked. The consequences of these interactions can be long-lasting and may influence behaviors at a later time.

University of Calgary. "Is your stress changing my brain? Stress isn't just contagious; it alters the brain on a cellular level." ScienceDaily. www.sciencedaily.com/releases/2018/03/180308143212.htm (accessed March 21, 2018).



SAVE LIVES:
Don't Be a Distracted Driver

According to the Centers for Disease Control and Prevention, nine people are killed and over 1,000 others are injured every day in accidents that involve a distracted driver in the United States. The National Safety Council observes Distracted Driving Awareness Month every April to draw attention to this epidemic.

Distracted driving is driving while doing any other activity that takes your attention away from the road, and it can greatly increase the chance of a motor vehicle crash. While there is little you can do to control other people's driving, there is plenty you can do to reduce your own distractions. There are three main types of distractions:

1. **Visual:** Taking your eyes off the road
2. **Manual:** Taking your hands off the wheel
3. **Cognitive:** Taking your mind off of driving

By practicing safe driving techniques, you can significantly reduce your chances of being involved in an auto accident. In addition to avoiding distractions, it's important to be aware of other drivers around you and make adjustments to your driving accordingly.

Get to your destination safely by avoiding these distractions on the road:

ORAL HEALTH HAS IMPORTANT ROLE
in Cancer Prevention

The bacterium that causes periodontitis, a disease affecting the tissues surrounding the teeth, seems to also play a part in the onset of pancreatic cancer, say the researchers at the University of Helsinki, the Helsinki University Hospital, Finland, and the Karolinska Institutet, Sweden.

The researchers have investigated the role of bacterium that causes periodontitis in the development of oral cancers and certain other cancers, as well as the link between periodontitis and cancer mortality on the population level.

The study, published in the British Journal of Cancer, has, for the first time, proven the existence of a mechanism on the molecular level through which the bacterium associated with periodontitis, Treponema denticola (Td), may also have an effect on the onset of cancer. Researchers found that the primary virulence factor of the Td bacterium, the Td-CTLP proteinase (an enzyme), occurs also in malignant tumors of the gastrointestinal tract in pancreatic cancer.

"These studies have demonstrated for the first time that the virulence factors of the central pathogenic bacteria underlying gum disease are able to spread from the mouth to other parts of the body, most likely in conjunction with the bacteria, and take part in central mechanisms of tissue destruction related to cancer," says Timo Sorsa, a professor at the University of Helsinki.

Researchers have come to the conclusion that low-grade systemic inflammation related to periodontitis facilitates the spreading of oral bacteria and their virulence factors to other parts of the body. They point out that the prevention and early diagnosis of periodontitis are very important not only for patients' oral health, but their overall wellbeing.

University of Helsinki. "Oral health may have an important role in cancer prevention." ScienceDaily. www.sciencedaily.com/releases/2018/01/180116093603.htm (accessed March 21, 2018).

NEW METHOD RESCUES
Donor Organs to Save Lives

A multidisciplinary team led by Gordana Vunjak-Novakovic, Mikati Foundation Professor of Biomedical Engineering and Medical Sciences at Columbia Engineering, and Matt Bacchetta, associate professor of surgery at Columbia University Medical Center and New York-Presbyterian has, for the first time, maintained a fully functional lung outside the body for several days.

Transplantation remains the only definitive treatment for patients with end-stage lung disease, but the number of donor lungs is much smaller than the number of patients in need, and many patients die while on the wait list.

Over the past five years, Vunjak-Novakovic has been collaborating with Bacchetta and Hans Snoeck, professor of medicine, to investigate how to improve low-quality donor lungs and possibly bioengineer lungs for transplantation. Rather than attempting to build new lungs, they developed strategies to rescue damaged donor lungs.

The Columbia team realized that cross circulation–an abandoned surgical procedure used in the 1960s to exchange blood flow between two patients–could enable long-term support of living organs outside the body by providing critical systemic and metabolic factors that are missing from all current technologies.

"Our cross-circulation platform will likely allow us to extend the duration of support to a week or longer if needed, potentially enabling the recovery of severely damaged organs," observes O'Neill. "Beyond prolonging support time, we also demonstrated several therapeutic interventions that vastly improve and accelerate recovery."

The researchers say their new platform could be readily extended to recover other organs that are in high demand for transplant or in need of repair, including livers and kidneys, and they have already begun studies in these directions.

Vunjak-Novakovic adds, "Our goal was to develop a platform that harnesses the full potential of tissue engineering and regenerative medicine toward organ rescue. We hope that our unique technology will benefit the many patients in need and help them live fuller and happier lives."

Columbia University School of Engineering and Applied Science. "New method rescues donor organs to save lives: Engineers, surgeons revive historic technique, pioneer new technology to recover damaged donor lungs." ScienceDaily. www.sciencedaily.com/releases/2017/03/170306114242.htm (accessed March 19, 2018).

APRIL RECIPE
Apple Sage Stuffing

- 4 ounces pecans (chopped)
- 4 tsp. canola oil (divided)
- 1 ½ cups celery (diced)
- 1 ½ cups onions (diced)
- 1 red apple (peeled, diced)
- 2 cups cooked brown rice
- 1 cup cooked wild rice
- ½ cup cranberries (dried)
- 1 jalapeno pepper (chopped)
- 1 ½ Tbsp. fresh sage (chopped)
- ¾ tsp. salt

Heat a large skillet over medium-high heat. Add the pecans and cook for 2-3 minutes or until they begin to brown, stirring frequently. Set aside on a plate. Heat 1 tsp. of the oil over medium heat. Cook the celery and onion for 8 minutes or until they begin to lightly brown on the edge, stirring occasionally. Add the apples and cook for 4 minutes or until fork-tender. Stir in the pecans and the remaining ingredients and cook for 3-4 minutes or until the rice mixture is heated, stirring occasionally.

Yield: 12 servings. Each serving provides 160 Calories, 9 g Fat, 3 g Protein, 20 g Carbohydrates, 3 g Fiber, 1 g Saturated Fat, 160 mg Sodium