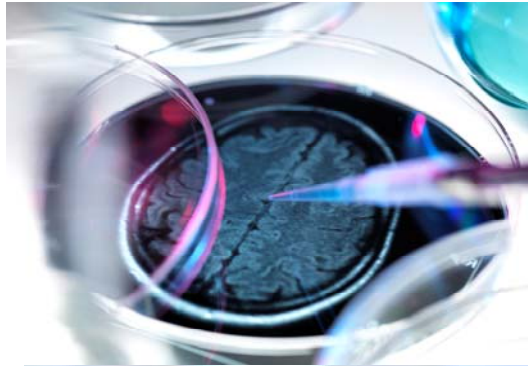


## A Blood based Biomarker can be a Diagnostic Tool for Alzheimer's disease

The conventional process of diagnosing Alzheimer's disease that is still used is a very lengthy process. It involves judging and characterizing the impairments in cognition, behaviour, memory and social functioning.



Researchers from Harvard University and Tel Aviv University have successfully identified a protein in blood that can act as a tool for diagnosis of early symptoms of Alzheimer's disease. The Activity-dependent Neuroprotective Protein (ADNP) is associated with brain formation, and mutations in this protein can frequently lead to autism spectrum disorder. ADNP is the only protein whose concentration decreases significantly in blood in the presence of Alzheimer's disease. The researchers studied the levels of ADNP in normal individuals, cognitively impaired patients and Alzheimer's patients and found that a lower level of ADNP mRNA in serum is associated with a higher amyloid level, and conversely higher ADNP mRNA levels are associated with fewer aggregates in Alzheimer's patients. From this the researchers inferred a strong inverse correlation between ADNP and amyloid, which plays a critical role in development of Alzheimer's disease. Interestingly, higher ADNP levels were also associated with high IQ levels in individuals.

The researchers concluded that monitoring ADNP levels might be a better diagnostic process for Alzheimer's disease as it is less tedious and involves just checking the level of ADNP in blood by non-invasive processes and can lead to better and faster diagnosis and eventually more effective treatment.

–Nausheen Syeara

<http://www.labroots.com/trending/clinical-and-molecular-dx/2444/a-blood-test-reveal-iq-levels-predict-alzheimer-s-risk>

## Being Physically Fit Improves Your Recovery After a Heart Attack

Ordinarily individuals know that physical exercise is a healthy activity to do regularly, alongside eating fruits and vegetables and other healthy foods. Exercise has also been closely studied for its potential capacity to help individuals survive heart attacks. In study, published in the American Journal of Medicine, researchers looked at exercise habits and heart attacks, but this time they concentrated on a patient's history of exercise and its association with their wellbeing in the weeks, months, and years after a heart attack. In this study, researchers consider a patient to be "physically active" if they are exercising at least 150 minutes a week at "moderate intensity" or 75 minutes per week at "high intensity." Depression is three times as likely for heart attack survivors as it is for individuals who never have a heart attack. However, for people who have had a heart attack, they are less likely to develop depression if they are physically fit when their heart attack occurs.

Of the 120,000 participants in the heart attack and physical activity study, 17 percent of people who never exercised



reported being depressed by the end of the study. Only 7.5 percent of people who identified as consistent exercisers developed depression. Inconsistent exercisers fell in between those two statistics.

The results from the study show the clear impact of exercise on heart health after heart attack, especially in terms of mental health. As scientists continue to study heart health and connections to exercise, they expect more benefits to arise for people who exercise regularly.

–Sauda Binte Sunjida

<http://www.labroots.com/trending/cardiology/2551/physically-fit-improves-recovery-heart-attack>

## Blood Biomarkers for Migraines

Episodic migraines affect a large number of people, yet the conditions remain poorly understood. A team of researchers from School of Medicine at Johns Hopkins University have recently discovered a group of lipids called ceramides which has been found to act as blood biomarkers for episodic migraines. Considering the fact of higher predisposition of women to migraines, the study was conducted on women only. Hence, for the study, the researchers performed neurological examinations on a group of 52 women who had been diagnosed with episodic migraine, experiencing on an average of 5.6 headache days per month. Alongside them, the researchers also examined 36 women as

control participants who did not have headaches. The researchers also measured the body mass index of each participant and took samples of their blood. The blood samples were analyzed for the specific class of lipids known as ceramides and comparison was done with the control group. The blood tests indicated that each standard deviation increase in total ceramide level lowered the risk of having migraines more than 92-percent. On average, those with episodic migraines, were found to have around 6,000 nanograms per milliliter of total ceramides in their blood, whereas around 10,500 nanograms per milliliter of total ceramides were detected in the blood of the control participants.

The researchers also discovered two other lipids that were linked to an increased risk of migraine. These lipids belonged to a type called sphingomyelin. To verify their findings, the researchers tested the blood of 14 participants for these lipids. In doing so, they were able to accurately predict which samples belonged to



participants with episodic migraine and which belonged to control participants. However, a number of limitations may need to be addressed in future studies. As the participants were all female and most of the headaches experienced were accompanied by aura, the findings may not extend to other forms of headache or other demographic groups. Despite these shortcomings, Dr. Karl Ekblom, of the Karolinska Institute in Stockholm, Sweden, believes that this study could be very significant if the findings can be repeated. **–Noshin Muhtasim**  
<http://www.labroots.com/trending/neuroscience/1677/blood-biomarker-for-migraines>

### Catching Small Cell Lung Cancer Before Metastasis

**S**mall cell lung cancer (SCLC) has a long history of evading the immune system and scientists have been trying to study how it does so. Patients with SCLC rarely get diagnosed before the cancer has metastasized and scientists from the Medical University of Vienna in Austria, where huge number of people are dying from lung cancer, were finally able to obtain enough cancer cell material to determine how these tumors remain so pervasive. Difficulty in SCLC detection most often leads to poor prognoses and harsh treatments. Irradiation and cytotoxic chemotherapy are the only options, since surgery is ineffective. Cytotoxic chemotherapeutic drugs are injected into the bloodstream with the goal of impeding cancer cell ability to divide and grow, leading to their destruction. Since normal human cells need to divide and grow to survive, so this therapy often leads to an array of unfortunate side effects for cancer patients. In developing a new method for obtaining and cultivating samples for study, Hamilton and his team made major advances in the battle against SCLC. Their established method for "cultivating the circulating tumor cells (CTCs)" made it possible for the team to determine the mechanisms behind the cancer cells' immune system evasion. First, CTCs manipulate the local microenvironment to stimulate monocyte

differentiation into macrophages. Initially this seems counterintuitive since macrophages function to phagocytose abnormal cells like tumor cells. However, CTCs also alter



macrophage cytokine expression to the point where the lymphocytes not only fail to attack and kill the cancerous cells, but also change the local conditions themselves to enhance CTCs' ability to spread. In the words of the scientific team, "CTCs

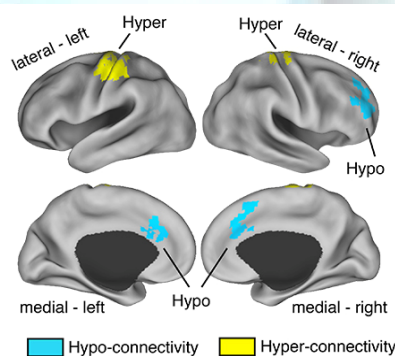
are competent to specifically manipulate tumor-associated macrophages to increase invasiveness, angiogenesis, immunosuppression, and possibly lipid catabolism." Now that the team from Vienna has delineated the process of SCLC evasion of the immune system, the next step will be to determine how cancer recurrence is accompanied by resistance to treatment.

**–Fabiha Tasnim**

<http://www.labroots.com/trending/immunology/1941/finally-catching-small-cell-lung-cancer-before-metastasis>

### Forecasting Schizophrenia

**S**cientists have found a way to forecast schizophrenia which affects one percent of the world population. It was previously observed that a schizophrenia patient has significantly altered connection between thalamus and frontal cortex of the brain. Due to irregular signal transmission from the thalamus, frontal cortex of the brain experiences difficulty in cognition and ultimately develops cognitive abnormality like schizophrenia which leads to psychosis at a later stage.



prefrontal cortex even before the onset of the disease. They followed the high-risk patients for 2 more years and found that patients with excess connectivity developed psychosis but the control group did not. Professor Tyrone Cannon, who is one of the leading scientists in this study, felt that further investigation into the mechanism of this increased connectivity is needed before they can make more accurate prediction before the disease starts. In many cases, schizophrenia is treatable if it is diagnosed at an early stage. This diagnostic tool will, therefore, be very useful in detecting the disease early and helping the physicians offer appropriate treatment before the mental condition of the patient deteriorate any further.

**–Md. Samiul Alam Rajib**

<http://www.labroots.com/trending/neuroscience/1503/brain-abnormalities-and-schizophrenia>

Recently in a study, scientists from Yale University observed that patients with high risk of developing psychosis have markedly increased signal rate between the thalamus and