[vol. 2 // issue 1]

the synapse. .fall 2009

[tulane university neuroscience association]

Iraham ,

EDITOR'S SECTION

- *Just as synapses in the nervous system help neurons communicate, so has this newsletter been possible only with the assistance and feedback of other people. First off, thanks to Dr. Hall and Dr. Kalueff, for taking the time to let the neuroscience community learn about them read their features in the following pages . Credit must also be given to the members of TUNA's Eboard for keeping me on my toes. And of course, much gratitude to Dr. Wee for being an invaluable source of help, as well as being an amazing advisor to our organization.
- But what is the Synapse? Well, this issue is, in part, a retrospection - to let you see what TUNA has done this semester (and is planning for the next). We also have some smashing interviews (definite must-reads), and a few other interesting bits I'd rather you see for yourselves.
- If you'd like to get involved in next semester's Synapse, don't hesitate in contacting me at <u>smitta@tulane.edu</u>. Prior writing experience is not needed.

Enjoy this issue!

-Sunil Mitta, Synapse Editor

volume 2 // issue 1 the synapse fall 2009 tulane neuroscience association



www.tuna.tulane.edu



ear TUNA members

This is my second year serving as your president. This semester has been filled with lots of new ideas and directions that TUNA is taking on. TUNA mission is to promote our organization through social, academic, volunteer, and speaker events. Each year, as president, I set myself a new goal. Last year, my goal was to make TUNA more prominent on campus, and we were able to attain this. As an organization, we have become more established on campus, and are named one of the top three most active academic organizations by our USG Academic Council Chair. In addition, through co-programming and interacting more with other organizations, we were able to develop deep connections with other science organizations on campus.

RESIDENT'S PAGE

This year, my goal for TUNA is to reach out to the community. We have initiated this before the semester started. Over the summer, we were able to establish a partnership with Kaplan Inc., and last month we had created one with The Princeton Review also. From now on, all TUNA member will receive a 10% discount on any course offers through Kaplan, and a \$350 off of any Princeton Review's courses.

Furthermore, we are currently working hard to cooperate with NOLA Outreach to start a teaching program at local high schools, teaching basic Neuroscience. The program is still under revision and logistics are still being work on. Moreover, based off the success of Coffee and Beignet this semester, TUNA is aiming at recreating several similar events next semester to increase professorstudents interaction outside of classroom setting. As of right now, I can tell you that next semester is going to be packed with more TUNA activities.

As TUNA continues to grow, I hope that you, as member of TUNA, will continue to support us by attending our event and giving us feedback on how we are doing as an organization. Your input, good or bad, will only strengthen TUNA. I greatly appreciate your involvement in TUNA this semester, and if you would like to contribute to TUNA in any way, please contact us.

Thank you for all of your support Sincerely, David Tien

What have we been up to?

TUNA's mission to "promote, educate, and conduct activities that aid the Tulane community in gaining a better understanding of the field of neuroscience" would hardly be successful without organizing any of these said activities. For those of you just *rearing* to know what we've done this semester, look no further. Follows is a list and brief descriptions of the many events our members have enjoyed.

TUNA-inspired cake, compliments of Sommer Kirsch (PR)



Anna Tien (VP) and TUNA'S version of Gumby for Homecoming Week



PIZZA ON THE PATIO

If you are a neuroscience major, chances are you love neuroscience. If you are human, then it follows that you probably love pizza. TUNA and the Neuroscience Program has managed to blend these two passions of human neuroscience majors with its hit event, Pizza on the Patio. Held underneath the Stern patio, this social features Tulane's own neuroscience faculty and students, as well as ample opportunity to learn about program offerings and eat perfectly prepared pizza. It's a great way to interact with your professors outside of class and get to know other neuroscience enthusiasts.

MOVIE NIGHT

Some movies are good. Some movies are bad. Some movies force you to reserve judgment indefinitely. Luckily, TUNA hosts a movie night experience that eliminates the bad feelings after watching a movie that didn't quite fit your receptors. You might ask, "How is this possible?" Well, because you're in the best of company, no matter your opinion on the movie, you're guaranteed a delightful evening to remember. This semester, TUNA members and their friends enjoyed *A Beautiful Mind* and refreshments fresh enough to (almost) substitute for a shower.

NOT ONE, BUT TWO NIGHTS OF ADVISING

Science majors can be intense at times, but TUNA's got your back. We know you're busy - constantly dealing with humongous heaps of homework, challenging classes, and those 50+ clubs you signed up for can really get under your cerebral cortex. That's why we offered two advising nights this semester, both featuring the ever-helpful Dr. Wee, to help majors (and even non-majors) plan out their schedules. While we weren't trying to replace the academic advising center, we did offer helpful tips on which classes to take, which professors to avoid, and how to get the most out of the semester.

SPEAKERS

Neuroscience is a very dynamic field - and often, the best way for researchers to showcase their studies is to present them to other people. Last month we featured Dr. Lovera, an LSU neurology professor LSU, Dr. Muneoka, a Tulane faculty member who researches limb regeneration, and Dr. Mohnot, a neurologist from Oschner who studies migraines. This Speaker Series Event was held in Freeman Auditorium in the Woldenburg Art Center, and had undergrads, master's students, and faculty in attendance.

BRAINS AND BEIGNETS

TUNA members spent a relaxing evening discussing science and eating beignets at Cafe DuMonde with Dr. Kalueff and his lab. For more information, check out our exclusive interview with Dr. Kalueff on the next page.

SNOW DAY

With its rich cultural heritage, New Orleans is home to many different kinds of people. However, snow-people are not one of them. Fortunately, the sheer coolness of covering Uptown quad with 5 tons of snow (2 more tons than last year!) and booths stocked with delicious baked goods, trail mix, s'mores, and t-shirts creates the perfect ambience to sculpt some winter masterpieces. Founded by TUNA just last year, Snow Day now boasts the involvement of four other organizations, including the Pre-Med Society, SECS, SEHS, and BEAST.

UPCOMING EVENTS

TEACH FOR NEUROSCIENCE

Tulane University Neuroscience Association will be holding a teaching program at a local high school next semester. We will be going to a high school with small groups of TUNA member's and teaching the student's basic facts about neuroscience. We will also be teaching the student's about a neuroscience major and what it can be used for career wise. We are very excited to get the program started and become involved with the local high school student's in New Orleans.

BRAIN AWARENESS WEEK

Brain Awareness Week is a global initiative focused on promoting the benefits of brain research to the public. In 2010, BAW will be held from March 14 - 20 in conjunction with celebrating the the event's 15th anniversary. Last year, we had activities ranging from TUNA-inspired desserts (see previous page), to a Brain Bee (where the winners walked away with their very own brain models). For a full list of events, visit our websites at <u>www.tuna.tulane.edu</u>.

LAB TOUR

Have you ever wanted to see the inside of a research lab? Great - because we want to show it to you. (If you answered no, then maybe you should skip to the next article...) But if you do, now is your chance to learn about how you can get involved in research. You could even be on the way to getting a Nobel prize, or your name in a textbook. (but no promises).



TUNA members chilling before a meeting.



The quantity of beignets is astounding!

INTERVIEW WITH DR. ALLAN KALUEFF

Allan Kalueff, PhD PhD offers us a unique glimpse into his world

Well, to start off, I was actually one of the students fortunate enough to go to the Brains and Beignets outing, and it was a really memorable experience. What prompted you to do it?

Well, I got an email from the university saying that they have this program, and I personally like beignets, and I can go and enjoy them, but I thought, well, why don't I invite the neuroscience students and members of TUNA to have coffee and beignets and talk about science..and that was it. That was how it was all arranged. We applied for a little grant from the Provost, and we got it. They approved it right away. So then we spoke to David [Tien], the TUNA president, and said well, we'll find some members and Tulane undergraduate students to join, and it was a good experience.

It's received a largely positive response - in fact, the Tulane NewWave actually featured us in an email that went out to the entire university.

Right, right. Well, good for us, good for Cafe DuMonde...good for Tulane University.

Yeah, I especially enjoyed hearing about the Ignoble Awards

It was interesting - I have no aspirations regarding those Awards. We'll see about other awards, whether they are possible or not. Science is very competitive. You want to do something that is unique - you will be the one who discovered this and many, many years later people will say, oh, that's the guy who discovered dopamine receptors, that's the guy who discovered GABA, or this new gene for schizophrenia.

And I noticed you had quite a large number of your lab students present [at Brains and Beignets]; how many people do you have working with you?

So, we have six undergraduate students, one medical student, one PhD student, and eighteen master students from pharmacology and neuroscience.

How do you manage such a large group of people - the size is pretty unusual for a lab, right?

Well, it is unusual for a lab, but if you have many projects and everyone can contribute and work twice a week, then you basically have eight people in the lab everyday. That is easier to manage.

What projects are you working on right now?

We're studying anxiety in zebrafish. We study depression and molecular correlates of depression and anxiety in mice. We're using C. elegans, the round worm to study drug responses because they have very primitive behaviors, but many behaviors in C. elegans are serotonogically mediated and therefore, if you are studying certain serotonogically psychotropic drugs it's actually quite useful.



Dr. Kalueff (front row, first on right) and his lab pose for a picture at the ATU Behavioral Sciences Symposium in Arkansas.

So what about you - where did you go to school?

I did my undergraduate in Moscow in physiology. I got my masters at Moscow State University. Then I got the Presidential Scientific Prize and went to England to do research there and since that time I have been traveling to different countries. I got my PhD in physiology in Moscow. Then I went to Finland and did my post-doc, and I did my second PhD in anatomy. Then I went to NIH, where I did my second post-doc as a research fellow. I was invited as a visiting professor to Georgetown and after a year I was invited to join the pharmacology department at Tulane.

To someone so well traveled, how does New Orleans compare to other cities you've been to?

Well, it's very European. For someone from Europe, it's really a great place to be. I really like the palm trees. Here's the thing -when you see the palm tress - because in Europe they didn't really grow in the big cities where I was born and raised - you would usually see them when you're on vacation. In the southern areas, the palm trees cognitively are linked to vacations. When I go out and see the palm tree, my brain tells me, "You're on vacation." But I know that I have to go to work. So this kind of cognitive background creates a unique impression of being on a vacation pretty much all year long.

So it's a very relaxing association.

It is. I find it very interesting. And obviously people who are born and raised In New Orleans would never see it that way.

What drew you to neuroscience? Well, you're not neuroscience per se, the zebra fish anxiety is more..pharmacology? Well, I would call it biological psychiatry. We're interested in the effects of the drugs, but we're also interested in many other things that are unrelated to drugs per se, so it's biological psychiatry - how animal brain disorders can translate to human brain disorders. That's what it is really.

What do you do outside the lab?

Well, I like following politics. I like that part of life - it's very interesting. But most of all I like British castles. That is a very very strange little hobby that I have. So I have to, at least once a year, travel to England, rent a car, drive around the country. And I spent several years during research in England, so I know the country very well, but they still have castles where I haven't been so far. I have a map of all the castles so I can see which ones I've already



visited. My brother, who lives in England, shares the same hobby with me so it's very easy because whenever I travel to him we rent a car and visit the remote castles.

Do you think you'll see them all one day?

Maybe not. But it's not the number, it's the quality time that we have. It's interesting because you can actually touch the castle where the king was imprisoned or where the queen was besieged or where a thousand years ago a king and his queen spent their honeymoon. I think it's very interesting.

What would you tell undergrads who are interested in research?

Start early, work hard, and stay in the lab. You will be absolutely safe. One of our students actually took a day off and parked his car in front of his apartment - during the daytime - and he got a parking ticket. So I told him, "Stay in the lab. If you'd stayed in the lab you wouldn't have gotten this parking ticket.

What are qualities of a "good" researcher?

Well, if you look at our website, there is a quote that I like very much. "Discovery comes from seeing what others have seen, but thinking what nobody has thought." And that was [Albert von] Szent-Gyorgy, the Nobel Prize winner. And I fully agree - it's when you see what others saw, but you see differently and you have a

better understanding of that and you see between the lines and see what many others have failed to see. In science very often you have a phenomenon - and you don't know what it is, and you ignore it. Perhaps that might be something very interesting. To have this talent, to see something that others failed to see,

that's number one. Number two, well, you can call it determination if you want, or how I would call it, positive stubbornness. That's the best description of it. You have to be stubborn if you are interested in something because there will be many obstacles - you want to push the mountains aside, so determination is very important. What's also important is luck - sometimes all you need to do, to make your discovery, is to dump all your stuff into a sink. "How so?" you can ask. Very simply - the guy who got the Nobel Prize for GFP (Green Fluorescent Protein) in biochemistry last year, Martin Chalfie, he told this story. The guys who actually isolated GFP from jellyfish struggled to detect the fluorescence because something was wrong. They extracted the GFP, it should have fluoresced, but it didn't. And then one day, after another failure, they dumped the whole thing into the sink. And right as they were switching the light off, he turned around the whole sink was fluorescent. So the whole thing needed a little bit of basic stuff that was on the sink. So sometimes when you want to make a discovery, all you need to dump your results into the sink.

Do you have any closing remarks?

I can only reiterate the advice that I gave. That's the recipe - start early, do more research, stay in lab, be stubborn, and occasionally, dump all that stuff into the sink, switch the lights, turn around, and see what happens.

Cortical neurons (see article on right)



DR. HALL SPEAKS OUT

Dr. Benjamin Hall, Assistant Professor of CMB, talks about his research, collaborations, and interests.

Well, I want to start with the basics. Where are you from?

I'm from Canada. I went to school in Montreal, at McGill University, and I did my PhD at a small University in Vancouver called Simon Fraser.

And that answered my next question, where you did your undergrad and grad.

I got my Bachelors degree at McGill and then I went to Simon Fraser to work with a researcher named Kerry Delaney. Kerry is an electrophysiologist and calcium imager who trained at the Bell (AT&T) Labs.

Did you major in neuroscience while doing your undergrad?

I majored in Biology, with a focus in neurobiology, and I started doing research in a neuroscience lab the summer before my senior year.

What pushed you into research - how did it become your focus?

It became my focus because I started doing it. I was considering medical school, like most science-minded undergraduates. Then I got into a lab, doing intracellular recordings in snail neurons, and I just fell in love with the research. I fell in love with the idea of doing something completely novel, being the first person to observe something. In addition I enjoyed the schedule: you can work as hard as you want but when things don't go well, you can take some time out to refocus and think about the problem.

Would you say this is your dream job?

That's a good question. I would have to say yes, but you never know – I haven't done everything else. But certainly, the things I appreciate about this job are the things I've always said I wanted to be doing - working on something exciting, something interesting and important, while being my own boss.

What are your current research interests?

Right now the lab is focused on understanding the molecular mechanisms that control cortical synapse development. During cortical circuit formation, trillions of synapses are generated in the brain. After initiation, these synapses differentiate and mature over time. It's this maturation process, in the early postnatal period, that we're really focused on. We want to understand the molecular mechanisms that drive synapse maturation and find out how this process regulates proper cortical development. The work is relevant to many neurodevelopmental disorders, like schizophrenia and autism, and mental retardation. While we're not really focused on solving these diseases we need to improve our understanding of the molecular mechanisms to get to a point where we can connect the molecules and the disorders.

Why Tulane?

My home department is Cell and Molecular Biology (CMB), and the CMB department faculty is a mix of developmental biologists and neuroscientists. Being a developmental neurobiologist it's a perfect fit for me. When you're looking for a faculty position, you really want to be somewhere where people share your research interests - so you have a lot of potential for collaboration. The other thing that really attracted me to this position was the size of the department. In contrast to joining the faculty at a larger university in a big department, when you join a smaller department you feel like you make more of a contribution. And you can't beat living in New Orleans.

Are you collaborating with anyone right now?

Within Tulane I am in the process of setting up a project in collaboration with Dr. Vasudevan here in CMB. Outside of the department, I'm working with a professor in Biomedical Engineering, Dr. Michael Moore. We're using optical genetic methods to control neuronal activity by transfecting optically



Dr. Hall: Neuroscience Faculty/Assistant Professor of CMB

excitable protein channels halorhodopsin (inhibitory) and channelrhodopsin (excitatory) into neurons, and then hitting them with the right wavelength of light. Doing this we can actually turn the neurons on and off - we can manipulate the activity and then study how it regulates the development of cortical synapses. Outside of Tulane I have collaborations in place with Dr. Amar Sahay at Columbia University, Dr. Mike Ehlers at Duke University, Dr. Richard Weinberg at UNC Chapel Hill, and Dr. Brigitte van Zundert, at the University of Concepcion in Chile. In addition I have ongoing collaborations with my Postdoctoral laboratory in San Diego.

What has been one of the most exciting moments in your lab?

Well, the lab is still really young but one exciting moment recently involves this

project I was just telling you about, using the channel- and halo-rhodopsin proteins. Dr. Moore is developing is a photo-stimulating array that we can put onto our microscope to allow control over multiple points of light, allowing us to produce complex patterns of activity in our neuronal cultures. Our first step was to get these constructs into our neurons and test the channel proteins. We did that recently by genetically transfecting a bunch of neurons with the halorhodopsin protein. Then we recorded from the transfected neurons and there was just this incredible moment when we flicked the light on and off and watched the cells respond. With a flick of a switch we were controlling the excitability of these neurons, and that was pretty cool.

And do you foresee any medical application for this?

Of course, in fact there's a company called Optogenetics Incorporated, started by a guy named Karl Deisseroth at Stanford. His group has generated a number of different light sensitive channels, and they're putting these into viruses and/or genetically encoding them into laboratory animals. They have some impressive videos online in which they bring the light in through a fiber optic cable into the head of the animal and they actually control the behavior of animals in vivo.

Do you have any advice for aspiring researchers?

If you're interested in research, or think you're interested in research, you need to go and talk to your professors and tell them you're interested. You need to get into a lab and just start trying some techniques - because you never know - the research might be what you want to do, or it might not be, but you won't know until you try it.

What improvements would you make to your lab if you had unlimited funding?

(Laughter) I'd just hire more people the toughest thing about my position, as a new investigator, is that you don't have a lot of funding when you're building your lab. The most limiting aspect is the salary - it costs a lot to pay grad students, post-docs, technicians, etc. This is an important point, it means a lot of young professors are looking for undergrads to help out, because they're essentially free labor. But beyond that paying a lot of money for salary is a very taxing part of a lab budget. More money means more people, and more people means more ideas, and a better, more exciting environment.

What are your goals for the next 5-10 years?

Secure some major grants, and be successful in my teaching. As a principle investigator who is also a starting professor, you've really got to set up your courses and make sure that that aspect of your job is as successful as your research. In terms of the research, I just want to keep publishing good papers and making recognized contributions in the field.

So, what are you teaching?

This semester I'm teaching a 400/600 level course called molecular neurobiology. It's been offered before and was taught by Dr. Inglis, but I've retooled it and made it my own. Next semester I'm introducing a 600 level course that will be restricted to graduate students called, Advanced Topics in Molecular Neurobiology.

What are your outside interests?

I'm a big sports fan, I like to support the Tulane teams - I have season tickets for both football and baseball and I'm a pretty avid runner. I run a lot of races including team relays – I organize a relay team of 12 people and we've traveled all over the country running 200-mile relays. I like to travel too. This year I've been to Paris and I just got back from Ireland.

So, we've kind of covered this already, but what are some things most people don't know about you?

A lot of people don't know that I'm Canadian. They don't know that I'm a good hockey player.

You play hockey?

Of course – if you're Canadian you grew up playing hockey. What else, I play some golf and I've recently started sailing again. I sailed when I was young and picked it up again when I moved here. When you move from somewhere, like I did from San Diego, you lose a lot of your outdoor activities. I also can't surf anymore so now I'm sailing again.

How has living in New Orleans affected you as a person, or your interests - you mentioned you can't surf anymore.

The things you lose, you gain a lot too. The restaurants and the music scene, they just can't be beat.

Where do you go for inspiration like when you're stuck on a hard problem?

I go right back to the outdoor activities. You know, you've just got to get away from the lab, even for a brief amount of time. Just make it worth it - whether it's going for a run or something else - take your mind off the problem and often the best insights you have – at least I find - are when you're not thinking about things.

Awesome, well, it was great talking to you.

Thank you.

MOTOR DEFICITS PROVIDE INSIGHT INTO AUTISM BY MATT PRENDERGAST

Despite the many strides science has made into understanding the various neurological conditions that afflict people, our knowledge of Autistic Spectrum Disorders (ASD) has advanced very little by comparison. Besides classical autism (which is often simply called autism - although in this article, autism refers to the whole Autistic Spectrum), the Autistic Spectrum consists of two other disorders: Asperger's Syndrome and Pervasive Developmental Disorder – Not Otherwise Specified (PDD-NOS). The present diagnostic criteria for ASD listed in the DSM-IV involve three areas: impairments in social skills, deficits in communication (or language), and repetitive and restricted interests.

The difficulties in these areas manifest themselves in many ways, including a lack of eye contact, an aversion for physical contact with others, delayed and peculiar use of language, difficulty understanding the emotions of others and one's own emotions, repetition of words or phrases, and an obsession with specific, narrow subjects. Many on the Autistic Spectrum also display strict adherence to a routine, with even the most minor changes causing great distress, hand flapping, clumsiness, and unusual sensory capabilities. Those with classical autism display severe forms of these symptoms and most often score poorly on tests of intelligence. However, it is unknown at this time whether these poor test scores are merely the result of an inability to communicate properly with others or if they truly reflect a decrease in intelligence.

On the other hand, people with Asperger's Syndrome are of average to above average intelligence, and do not display the language delays associated with classical autism. Furthermore, the symptoms that are common to both classical autism and Asperger's are milder in those with Asperger's Syndrome than in people with classical autism. Those who meet some of the criteria for an ASD, but do not exhibit enough symptoms to be diagnosed with either classical autism or Asperger's, instead fall into the "catch-all" diagnosis of PDD-NOS. One interesting note about Asperger's is that since its symptoms are generally mild, and most with this "disorder" go on to live perfectly normal lives, many in the scientific community consider Asperger's to be a difference rather than a deficiency. This view is backed up by the fact that some of the greatest minds in history such as Thomas Jefferson, Einstein, and Mozart displayed characteristics of Asperger's Syndrome.

Whilst science may know the symptoms of ASD, our understanding of the causes and neurological basis of these disorders remains scare. However, this situation may soon be changing. Two recent government studies have shown that about 1 in 100 children in the US have an ASD, higher than the previously reported figure of 1 in 150. Scientists do not know if this increase in diagnosis is the result of better detection methods and broader definitions of ASD or if the numbers of ASD are in fact on the rise, but one thing is certain: over the past couple of years, autism awareness has been on the rise. In light of this increased focused on ASD, President Obama and Congress have made funding into autism research a priority. Thus, more scientists are investigating autism than ever before. One of the most interesting research areas in autism involves studying the clumsiness normally associated with ASD. The most prominent and debilitating symptoms of ASD are the social and language deficiencies that are the hallmark of the disorder, but at the same time, studies into the motor deficits associated with ASD may prove more fruitful in the short term than those into social and language difficulties.

There are three main reasons for this. The first is that motor skills are far more quantifiable than social and communicative skills. For example, one can easily test for motor abilities in a lab but evaluating social skills is far more difficult to do in a lab setting. If one wanted to test how well an autistic child could "read" a conversation, how does one create a conversation in a lab without it seeming artificial? The second reason is that the brain's motor systems are much better mapped out than those used for socializing and communication. Finally, although motor skills seem much different from social and communicative skills, more similarities exist upon closer examination. For the normal child both social and motor skills are picked up naturally and automatically, as opposed to things like math and reading which must be intellectually and consciously learned.

On the other hand, for the autistic child, not only do school subjects have to be consciously learned, but also social skills must be intellectually picked up as the autistic individual does not naturally know the social norms. If science can show that autistic individuals have to consciously learn motor abilities just as they learn social and language abilities, we may be able to draw parallels between these two deficiencies and thus better understand the basis for these communicative deficits. Scientists at the Kennedy Krieger Institute in Baltimore are doing research to prove

that, and so far the evidence from two separate studies provides convincing proof. In the first study both autistic and regular children were asked to perform simple motor tasks whilst the researchers used functional MRI to see which brain regions were active. In both groups activity increased in the primary motor cortex, thalamus, cerebellum, and supplementary motor area (SMA). In the autistic children though, the cerebellum was less active than in the control group. One of the cerebellum's roles is to make motor tasks habitual and automatic after they have been performed for a while. Furthermore, the autistic group showed an increased activation of the SMA, which is located in the cortex anterior to the primary motor cortex and is thus associated with conscious control of motor skills. Taken together, these two pieces of evidence show that for autistic children motor skills often remain voluntary whereas these same skills become automatic for normal children. This study also gives credence to the theory that autism involves an overgrowth of localized, short-distance, intra-region connections and an undergrowth of long-distance, inter-region connections, as the same study showed that connections between cortical motor areas and the cerebellum are compromised in autistic children.

The second study involved three groups, a control, an autistic, and an ADHD, being tested on how well they performed various motor tasks. Then the researchers used anatomic MRI to measure the amount of localized, intra-region white matter in the subjects' motor cortex. As expected the ADHD and autistic groups performed worse than the normal group. However, an interesting pattern emerged when the white matter volume was compared to the subjects' performances. In the ADHD and control groups, a higher volume of



localized white matter in the motor cortex usually indicated a higher score on the test of motor ability. This trend was reversed in the autistic group; a higher volume of white matter in the motor cortex was associated with a worse score on the test. This study indicates that in autism, an overgrowth of localized connections causes poorer functioning which further validates the theory that in autism an overgrowth of short connections and undergrowth of long connections are responsible for the impairments in function. Since the cerebellum has been shown to also play other roles in brain functioning besides movement, one must wonder if perhaps poor connections between cortical region and the cerebellum could explain some of the social and communicative deficits found in autism. The researchers up in Baltimore plan to continue to study the motor movements of autistic people in hopes of learning more about autism.

tuna is:

David Tien - President Anna Tien - External VP Shelly Guwara - Internal VP Sopan Mohnot - Secretary Lien Trinh - Treasurer Sommer Kirsch - PR Sarah Lewis - Social Chair Mona Moghareh - Outreach Chair Sunil Mitta - Synapse Chair Ivan Zapolsky - Webmaster Jared Santoro - Historian Sen Xu - Glia Chair

If you would like to join the following committees, contact: Social: <u>wwwis2@tulane.edu</u> Outreach: <u>mmoghar@tulane.edu</u> Synapse: <u>mitta@tulane.edu</u> synapse staff Sunil Mitta Mona Moghareh Matt Prendergast

picture credits

6: zebrafish:blogs.nature.com/nm/spoonful/2008/03 7: cortical neuron: enborbio.com/album/images/ ChkNFH-neuron-2.jpg 10: autism ribbon: autismtrc.org/images/ asalogolarge.gif 11: autism puzzle: jkayedesigns.com/supportcause/ 6.57_AUTISM-CURE-PUZZLE.JPG

Johnson 'or