



IBNS
International Behavioral
Neuroscience Society

News

Elena Choleris, Editor-in-Chief
Chantelle Terrillion, Guest Editor
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IN THIS ISSUE

Let's Go to Vegas!

by Julianne Jett

The Annual IBNS Meeting 2014 is fast approaching, and will be held June 10 – 15 in Las Vegas, Nevada! We have a great program this year, covering various aspects of Behavioral Neurosciences, including:

Keynote Lecture - Cross-species translational studies of bipolar disorder

Mark Geyer, Ph.D., University of San Diego, La Jolla, CA, USA

Keynote Lecture - Closing the translational gap between mutant mouse models and the clinical reality of psychotic illness

John Waddington, Ph.D., D.Sc, MRIA , Royal College of Surgeons, Dublin, Ireland

Presidential Lecture - Food on the brain – Why is obesity a 21st century problem?

Margaret Morris, Ph.D., University of New South Wales, Sydney, Australia

Bench-to-Bedside Lecture - Coming to our senses: Implications of embodiment for the pathogenesis and treatment of major depression

Charles Raison, M.D., University of Arizona, Tucson, AZ, USA

Find out more about our speakers and symposia [HERE](#).

We hope you all were able to take advantage of the IBNS negotiated room rates at this year's meeting venue, the luxurious [Red Rock Resort](#). The Red Rock Resort provides a beautiful panorama view over the city's skyline at night. It is located on the western slopes of Las Vegas, just 9 miles from the Strip. Additionally, the resort provides access to breathtaking bike and hiking trails in the immediate surround of the hotel. Be sure to utilize the resort's complimentary shuttle to the Strip, as well as the free airport transportation for IBNS attendees.

For further information visit our website at www.ibnsconnect.org. We look forward to seeing you in Las Vegas!



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2015 IBNS Meeting

Fairmont Empress

June 2 – 7, 2015

Victoria, BC Canada

Remembering Bob Blanchard



Elena Choleris, IBNS News, Editor-In-Chief and Stephen Kent, IBNS President

We were deeply saddened when we learned that our colleague and friend Robert (Bob) Blanchard had passed away last November 2013. Our sincere condolences go to Bob's wife Caroline Blanchard. Bob has contributed greatly to our society, our field of science and our research. Indeed, IBNS owes a great deal to Bob Blanchard. He joined IBNS in 1993 and became a regular presence at our conferences, having attended 13 meetings. But Bob did not limit himself to simply attending conferences and presenting the very interesting data that his and Caroline Blanchard's very prolific laboratory generated, he also became very involved in all aspects of our society. He organized and presented at multiple symposia, he served on the council (2002-2005), he was a member on many committees, and he was president of IBNS in 2003. Unsurprisingly, then, given his exceptional contributions to the Society and to the field of behavioral neuroscience, he was also awarded Fellow status of IBNS.

We could spend a long part of this introduction describing Bob's contribution to behavioral neuroscience. However, we would do nothing but reiterate what others have very effectively described in the contributions that follow. Instead, we will summarize Bob's contribution to behavioral neuroscience in one sentence: Bob put "Behavior" into Neuroscience. And we should emphasize "Behavior" as properly investigated by someone who truly understood it, to great depths.

In saying goodbye to Bob we would like to share with IBNS members a few of many memories of Bob we have. One of us, Elena, remembers when in the 90's Bob visited the lab where she was a student at the University of Parma, Italy. The trepidation of meeting the famous scientist disappeared when she discovered that Bob was the friendliest and easiest-going person she knew. She still remembers his smile as he struggled with Italian-size infrastructures. To everybody's amusement, he had to turn sideways and bend his head in order to walk through and under office doors. Bob was a gentle giant. Elena will miss "getting lost" in his beard as he hugged her to great her each and every time they met after that first encounter in Parma. Steve knew Bob as a man of unbridled enthusiasm for science who was generous with his intellect and his spirit. He also credits Bob for his becoming President of IBNS. He clearly remembers stepping out of a shuttle after a Council meeting and having Bob say "you need to be the next President of IBNS, we need an international President". Steve tried to politely suggest that his duties as Chair of Department were more than enough to keep him busy. Bob was not a man to take no for an answer and consequently Steve wasn't surprised when he was nominated.

We now leave the floor to a number of Bob's friends and colleagues who have prepared the contributions below. If other IBNS members wish to tell us their own memories and thoughts on Bob Blanchard, we will be happy to consider additional contributions for the next issue of the IBNS newsletter.



Caroline Blanchard, University of Hawaii

A little history. Bob received his Ph.D. from the University of Iowa in 1962. It was a bit of a rush, because he had been in ROTC as an undergraduate and the Army was claiming its due, with a deadline in March, 1962. Although he had done almost exclusively animal work to that point, he agreed to do a dissertation using human subjects, because it was much faster that way. It—analysis of learning of letter trigrams—was also a mind-numbing experience that further emphasized to him the importance of looking, somewhere along the line, at the big picture, including the evolutionarily adaptive outcomes of behavior choices in situations incorporating crucial elements of natural situations. This, in turn, provided a focus on emotion, which turned out to be a major concern during most of his career.

Bob's first post-army research quickly focused on defensive behaviors in animal models: First rats, later mice. Early components involved analysis of behaviors of animals after a single foot shock...just to see what they do, over a longish period of time. After the first couple of animals, the student recording this activity suggested they abandon the study because "they aren't doing anything." This turned out to be "crouching", a term quickly changed to "freezing" as it became clear that the specific posture could be somewhat more flexible if different types of threat stimuli were used. The initial "crouching" paper in 1966 was followed by crouching in the same or a different situation, indicating that this response could be conditioned in a single painful event (1968), and by findings that it (now "freezing") is a significant part of the rat's response to a cat, a pattern substantially reduced by lesions of the amygdala (1971). Over the years related studies detailed changes in the defense patterns of laboratory rats compared to wild animals (e.g. 1981) and something of the brain circuitry involved (1982). A later extension to people took the form of analysis of the relationship of specific defenses (flight, freezing, defensive threat and attack, hiding, risk assessment) to crucial features of the threat stimulus and the situation in which it was encountered; using these to create scenarios for which a substantial number of human subjects selected their first choices (write-ins being solicited as well). People overwhelmingly used the same choices of specific defenses as do rats, with

rather amazing correlations between the specific stimuli/situations and the rat choices offered: favorite example, $r = +.89$ for the correlation between ambiguous threat stimuli and risk assessment activities. These core findings have since been confirmed in some very different places (Wales, Brazil) and the overall analysis provided one of the bases for the development of joystick-type video tasks involving interactions with a symbol for which contact actually delivered a painful shock (studies by Adam Perkins and others).

Mixed in with these studies, over time, was a similar fascination with aggression. This became salient as the Blanchard lab began to use larger animal groupings in the early 1970ties, giving way later to the "Visible Burrow Systems" based originally on the tunnels that rats began almost immediately to dig if provided with space and a deep dirt substrate. Complaints from the animal care personnel prompted abandonment of the dirt substrate, in favor of enclosures incorporating both a "surface" area, under daily light/dark cycles, and, tunnels and chambers that resembled, in number and connectivity, the burrow systems that the rats had dug in dirt. These were under constant infra-red illumination permitting video recording but apparently accepted by the animals as dark.

Major findings from the early aggression work indicated an important distinction between offensive aggression, aimed at acquisition or protection of resources (notably sex partners or territory facilitating control of sex partners as well as other resources, for male rats) vs. defensive aggression, seen in the context of close-in threat or attack, especially but not exclusively, by a conspecific. This distinction involves behavioral differences in addition to those embodied in the eliciting situation: In rats, offensive attack is aimed at the opponent's back. The head would also be a target, were it not for protection afforded by the vibrissae, which fan forward in a rat defending against conspecific attack. The defender's abdomen, on the other hand, is seldom attacked even if freely available, making "on the back" postures, associated with submission, more adaptive for the defender. In contrast, defensive attack is associated with biting directed toward the attacker's head (its vibrissae typically are slicked back, rather than being fanned forward like those of the defender) and in laboratory rats this is quite a rare event, typically occurring in conjunction with a bite (or an experimenter-delivered shock) made on the defending animal. This behavioral distinction potentially serves as a way to approach the brain circuits involved in attack, but as both defense and aggression systems appear to occupy adjacent or even overlapping areas in the hypothalamus, conventional stimulation of these sites has produced results that do not sufficiently resemble the natural responses as to permit a clear view. Perhaps optogenetic methods will provide greater clarity!

An abrupt change in focus for Bob's work occurred about 6 years ago. The specific catalyst was a conversation with Dr. Jacqueline Crawley. In his (never verified) version of the story, she suggested that he "do something useful" by which was meant apply some of the context-focused, labor-intensive behavior analyses for which he was noted, to the study of social behaviors in mice; to be undertaken in aid of enhancing the scope and applicability of animal models of autism. These were to be evaluated using the BTBR T+tf/J mouse, already well-known for a number of autism-relevant behavior changes, as a positive control. Over the next years, and ongoing at the time he died, about half a dozen new tasks relating to social/communicatory and stereotyped/repetitive behaviors in mice were created and analyzed. These produced strong confirmation of the parallels between differences in BTBR behaviors and those of a standard control (C57/BL/6J) mouse, and the behaviors defining autism spectrum disorders. This, in turn, led to analysis of some important molecular systems in a crucial early neurogenic niche in mammalian development, the subventricular zone of the lateral ventricles (LV SVZ). Specifically, heparan sulfate, which has been called "the most information-laden molecule in all of biology" is reduced by about 50% in adult BTBR mice. Subsequent studies, taking a very new direction for the Blanchard lab (particular thanks to Brandon Pearson and Michael Corley!) found heparan sulfate reductions of about 80% in the LV SVZ of young children with autism compared to age-matched typically developing individuals. Ongoing work, which he did not live to see completed, is finding fascinating patterns of gene expression changes and DNA methylation in the LV SVZ of autistic vs. typically developing individuals, and again these differ with age; primarily affecting genes relating to cellular differentiation, proliferation, and migration, in the youngest age cohort.

This brief and deeply interesting excursion into molecular and genetic mechanisms notwithstanding, Bob was a behaviorist. The core of his philosophy was that behavior evolves just as do other aspects of living systems. His view was that if there are 17 different serotonin receptors, how can it be surprising that there is more than one type of defensive behavior, or more than one manifestation of anxiety? This emphasis on analysis of behavior, optimally in settings incorporating evolutionarily relevant features, is one that he urgently attempted to inculcate in his students, of whom he was very proud. He died before he could retire, in a largely but not totally successful effort to provide the last students time and opportunity to defend their dissertations. It was probably just as well. None of us can imagine Bob retired.



Paul F. Brain, Swansea University. Bob Blanchard was a big, larger than life behavioral scientist with whom I spent much time over some 40 years as we both had an interest in aggressive behavior of rodents. Indeed, I and my family spent three happy summer sessions in Hawaii with him and Caroline, we traded positions on the Executive of the International Society for Research on Aggression (all 3 of us served as President of that organization) and we worked together on books and conferences. Bob was an original enthusiast about every aspect of neurobiology and researched a wide variety of areas, developing insightful and novel approaches. His enthusiasm was contagious, a fact that will be confirmed by talking to his many collaborators and students. Perhaps my favorite memory is putting on a NATO funded conference in Northern Italy with him which generated a book Blanchard, R.J., Brain, P.F., Blanchard, D.C. and Parmigiani, S. (1989), eds. *Ethoexperimental Approaches to the Study of Behavior*, Kluwer Academic Press, Dordrecht. The thrust of the meeting was to consider the advantages and disadvantages of the 2 basic approaches to behavioural analysis in animals. Psychology generally offers good experimental control but the evolutionary utilities of the observed activities are vague. Ethology is characterised by weak experimental control but the observed behaviours have obvious ultimate explanations. We suggested and illustrated, where possible, creating situations where the advantages could be emphasized and the disadvantages minimised. Bob coined this 'the Ethoexperimental Approach'. We will all miss you, Big man.



Yoav Litvin, The Rockefeller University. I remember hearing that a husband and wife team of professors from Hawaii was coming to visit the Tel Aviv University research zoo. I was at the end of my B.Sc. and was searching for a final project at the zoology department. The couple was to do behavioral research on some colonies of wild rodents. Immediately I conjured the stereotypical image of two smiling, tanned figures wearing shorts and flip-flops and holding surfboards... Then I met the Blanchards and was pleasantly surprised at the accuracy of my mental image, other than the boards of course. When I first met Dr. Bob Blanchard his profound knowledge, confident yet unassuming demeanor, sharp wit and robust stature took me by surprise. We began working together and I quickly felt infected by Bob's intense passion and drive for the study of animal behavior. My admiration continued to grow as I delved into

the literature and became familiar with the Blanchards' seminal contributions to the field of Behavioral Neuroscience. In fact, I was so charmed and fascinated by the Blanchards that uprooting from my native Tel Aviv all the way to its antipode of Honolulu, Hawaii seemed like the smartest thing I could do; and indeed, it was one of the best decisions I have ever made.

During my grad school years at the Blanchard Lab I grew to greatly admire Bob Blanchard for his personality and mentorship. Simply put, research under Bob's guidance was exciting! The Blanchards' unique expertise and unorthodox approach to the study of behavior made work at the lab challenging and rewarding. Their innovative approach encouraged unconventional thinking and I felt constantly stimulated. In addition, the Blanchards knew and were admired by literally everyone in the field and were very gracious about it, introducing us, their students, to all of their collaborators and friends, with the hope that we forge professional and personal relationships that may help our careers.

Bob Blanchard had a unique blend of character that I had never encountered before, or since: he was authoritative and assertive gentle and kind, a combination that made him a true leader. Together with Dr. Caroline Blanchard, they ran the lab in a sort of symbiotic harmony that made me feel simultaneously in one of the top research labs in the world and at home. Bob Blanchard was multifaceted: he was an esteemed professor, the president of IBNS and a great mentor. Still, anyone who knew him personally would agree that none of those superlatives captured the essence of the man. Bob Blanchard was truly a one-of-a-kind personality. Let's be clear, he was not the type of man everyone liked. If you were into social etiquette he would most likely rub you the wrong way. He spoke his mind at all times, sometimes with scathing results, others with wit that would split your gut laughing, but always with integrity.

I feel extremely fortunate to have known Bob Blanchard as a mentor and friend. He will always remain an inspiration and role model.



Neil McNaughton, University of Otago. My most salient memory of Bob is of an evening in August 1989 at the seventh international Australasian Winter Conference on Brain Research in Queenstown, New Zealand. With the aid of a bottle of whisky and the steadfast support of Caroline, he convinced me of the value of ethoexperimental analysis in general and its application to the distinction between fear and anxiety in particular. In contrast to the conventional behaviour analysis that I was used to, they argued in their paper at the conference that "an additional and very different approach to

[emotion] stems from analysis of its possible functional significance. This approach is based on the premise that important and pervasive human action tendencies, particularly those which occur across a wide range of cultures and specific learning situations, are very likely to have their origin in the functionally significant behaviour patterns of nonhuman animals". Since then one of my lectures to third year students on biopsychology has been devoted to their visible burrow system. I was particularly taken by their concept of defensive distance, which seemed an immensely elegant way of encapsulating a large amount of behavioural data in an externally measurable but essentially cognitive construct. This model, for me, led naturally to the idea that fear and anxiety differ in functional terms on an orthogonal dimension of defensive direction. A decade later these dimensions were the key determinant of the particular form into which I revised Jeffrey Gray's theory of the neuropsychology of anxiety. As I noted then, "in producing this second edition, I owe a particular intellectual debt to Robert and Caroline Blanchard"; in addition their laboratory provided critical behavioural, lesion and drug data that convinced Jeffrey of the need to abandon his previous position on the distinction between fear and anxiety. A quarter of a century after that evening in Queenstown, I am still working through the consequences of the insights that Bob gave me then.



John Rodgers, University of Leeds (UK). Fond memories of 'the bear'. As someone who had just recently defended a doctoral thesis on the amygdala and aggression in laboratory rats, I was already very familiar with

Bob's research when we first met almost 40 years ago. That initial encounter took place during the Second Biennial Meeting of the *International Society for Research on Aggression* (ISRA) held in Paris July 1976. As a conference novice, I was astounded (though obviously flattered) when, after my very nervous talk, Bob invited me for a post-session beer with himself, Caroline, and Holger Ursin. And the rest, as they say, is history. Our friendship grew steadily over the following decade, chiefly through mutual participation in scientific conferences (such as SfN, ISRA, NATO-ASIs, IBNS, International Schools of Ethology) on both sides of the pond. Common interests blossomed into a very productive period (1987-1993) of collaborative research on the pharmacology of anti-predator defence, yielding (I've just checked) some 20 co-authored publications: quite a feat in a world sans email! During this highly memorable time, I had the great pleasure of visiting casa Blanchard on several occasions, working in the Bekesy Lab not only with Bob and Caroline but also their colleagues/visiting researchers/ students (Padua Carobrez, Guy

Griebel, Ron Hammer, Kevin Hori, Stefano Parmigiani, the late Jon Shepherd, Scott Weiss, Errol Yudko), hosting Bob and Caroline during reciprocal visits to the UK (their gifts of the latest Teenage Mutant Ninja Turtle figurines did much for the street cred of my then very young son), sharing hotel rooms with the big man, and even benefiting from his expertise as an ophthalmologist - it was Bob who, during an after-dinner walkabout in Amsterdam (*Behavioural Pharmacology of 5-HT Meeting*, 1987), first drew attention to my urgent need for spectacles. I learned much from these academic and social interactions with 'the Blanchards', not least the value of an ethoexperimental approach to the study of behaviour - something I hope to have successfully applied in more recent research on the neurobiology of stress analgesia, anxiety and appetite. There is little doubt in my mind that Bob Blanchard had a very significant influence on several generations of behavioural neuroscientists and, for this most laudable of reasons, he will be sorely missed. I personally mourn the loss of a good friend who helped greatly at various stages of my career and whose clarity of thought and booming voice I shall never forget. *John Rodgers, Professor of Behavioural Pharmacology, Institute of Psychological Sciences, University of Leeds (UK), March 2014.*



David Eilam, Tel-Aviv University. Bob Blanchard was like a father to me. We first met 20 years ago in a Birmingham UK conference. During breakfast Bob came to me and said "you must be David Eilam from Israel - I am Bob

Blanchard from Hawaii", and I answered - "OK, I see how you recognize me - we are the only ones here with tan skin..." - we both laughed and this was the beginning of our wonderful relations. As typical to Bob and Caroline, both respected and distinguished scientists, they tended to "adopt" junior researchers and support them throughout the academia difficulties as well as guiding and providing inciting ideas. I have been luck to be one of their "children". Their ideas inspired me to develop a new line of research in my lab, as I acknowledged in a 2005 article: "*I am grateful to Drs Robert and Caroline Blanchard who encouraged and guided me in acquiring a perspective of wild animals and predator-prey encounters in the study of defensive behavior*".

All the people that know Bob and Caroline attest that are the nicest people in the academia, along with their amazing complementary approach in research, where Bob brought the ethology and experience in experimentation and Caroline brought the rich literature and wonderful writing skill to put together exemplary scientific production. When visiting their lab I witnessed how they (and their students) enjoyed research: Bob was entertaining with planning, "inventing", and

running novel experimental settings, while Caroline was happily and smartly reading and writing.

Bob's way was of immense warmth and generosity. It was just typical that in a banquet at the end of a Hungary conference, he asked what the local delicacy is, and then ordered it for all participants. At my very personal perspective, the greatest privilege was that Bob and Caroline treated us like their family: before few years they flew 6 hours just to see our newborn son, congratulate us, and of course to bring many presents - I would not expect all that even from my biological family. Indeed, when Bob died, the only moments of pride and comfort in sadness were receiving from others messages saying that "Bob was like my father", reassuring my own feelings. Bob Blanchard will live in our hearts and pleasant memories forever.



Lorey Takahashi, University of Hawaii. When I began to work in Bob's laboratory as an undergraduate, I quickly realized that doing research was something that is fun to do. Bob brought infectious enthusiasm to the lab where he trained us to study the

behavior of animals and we obtained firsthand knowledge of many of his early insights into the behavioral functions of animals such as aggressive and defensive behavior. Bob was passionate about his research and I will miss him for mentoring me and giving me my first sense of direction to an academic career.



Newton Canteras, University of São Paulo. Bob Blanchard - insightfulness and generosity. Bob

Blanchard was one of the most important scientists for the studies on fear and aggression, and lately, on animal models of autism, as well. Together with his wife Caroline Blanchard, Bob developed a unique way of approaching the structure of natural defensive and aggressive responses. In 1999, I had the privilege to meet Bob at the Society for Neuroscience Meeting, and since then I could testify his tremendous insightfulness and generosity. I remember once that Bob made a very candid comment on one of my studies, and at the beginning, I thought that he hadn't understood well my findings, but later on, I mean four years later, I was able to see that his comments were right on the spot. Another characteristic of Bob was his tremendous generosity, Bob was always very supportive, and helped me enormously to spread my work on neural circuits mediating defensive behavior. I was fortunate

enough to have the chance to meet and work with Bob Blanchard, to whom I owe a great deal.



Cliff Summers, University of South Dakota. **Attention, keen attention to detail.** Bob Blanchard, along with his wife Caroline, made us all keenly aware that without clear headed and even intimate attention to detail, the

mysteries of social dynamics could be hidden by a fog of complex behavioral interaction. Bob and Caroline worked together, and taught the world, from their earliest work to the most recent, that social behavior, like all behavior, is understood by paying attention to highly nuanced movements, body positions, and even facial expressions. This truth is evident in all vertebrate animal systems, including humans. I was first introduced to Bob, Caroline, and their work by my postdoctoral advisor Neil Greenberg. Although at the time we were working on social interactions and aggression in a small subtropical lizard, *Anolis carolinensis*, and they were working on rodents, it was this attention to nuance, and to the specific biology and ecology of the animal model at hand, which proved to be a guiding light. Bob and Caroline hold up that light for everyone. They led the way for all of us in many other regards as well, not the least of which is showing us all how a loving couple can work together and generate a massive and important body of work, as well as a reassuring role model for harmonious collaboration, both in the lab and at home. My wife Tangi and I also work together, and we found serious joy and comfort in their partnership. Together their work followed inspired instincts and generated significant progress in conceptual and physical models; and in the process advanced our understanding of neural circuitries and neurochemical modulation. Their visible burrow system shaped my thinking from the first moment I saw it, and it continues to. During the entire recent development of my own conceptual and physical model of social decision-making I used the VBS as *the* standard of excellence. Bob was always extremely generous, and even when we disagreed (which wasn't very often) he would help me figure out difficulties in any way he could. It is this friendship, with his deep and abiding interest in all that I was attempting, that I will miss the most. I witnessed him share this way, with many other scientists, regardless of their level of experience. His, and Caroline's, accomplishments are too numerous to list, but it is necessary to mention their extremely important contributions to the larger field of animal models that serve to provide preclinical evidence and potential therapies for human disease and disorders. Their recent work on Autism is a primer on how it should be done. In the end, Bob and Caroline have always recognized that consideration of a model animal's

natural behavior was the only way an animal model could give us insight into our own. Attention to those kinds of detail will always lead the way. That is what Bob Blanchard did for all of us.



Mu Yang, University of California Davis School of Medicine.

My Big Boss Bob. The first time I heard Bob's deep sonorous voice was on the phone when I was finishing the last semester as a

Psych major undergraduate in Beijing University. The year was 1999. I was applying for the graduate program at University of Hawaii, but the chance of getting in looked slim because of my mediocre GRE score and so-so GPA.

After few minutes of conversation, Bob blurted out "You speak English well, how come your GRE score was so low?!" "The stupid test doesn't prove anything! I will show you that I can talk!" I almost screamed, a sort of "defensive behavior" as I later realized. (I still think maybe I got in UH for having exhibited defensive behaviors...) Bob laughed, and the phone vibrated as if a set of drums were being played. With that, my career as a neuroscientist, and my life in the US, started.

The six and half years that I spent as a graduate student in the Blanchards' lab was full of challenges. Bob was passionate about natural defensive behaviors in animals and was constantly planning out new and exciting experiments. My all-time favorite experiment was the Mouse Defensive Test Battery, or MDTB as we fondly called it. To elicit defensive behaviors from experimental mice, we graduate students had to chase the mice around in an oval runway in full speed. There's nothing better than getting your workout in while you are doing science! Bob sent me to New York City on a collaboration trip two weeks after 9/11. The trip involved my 100LB self rolling a 90LB ginormous black case containing a portable MDTB apparatus through Newark airport in September 2001. I was so nervous at the security checkpoint, pretty sure I was calling Bob all sorts names at the moment. After the trip though, I felt so brave I walked around like a Spiderman for a week.

The biggest challenge I was given was to develop a new mouse model of anxiety-like behaviors. Bob encouraged me to make the best use of my creativity and to do my own trials and errors. After numerous frustrating fails, I published the Rat Exposure Test (RET) model of anxiety-like behaviors. The cool thing is, people actually started to use it in their research! I've developed more behavioral paradigms since then, but RET was my favorite, because it was my first, and because I was challenged to the max. I think that's Bob's way of cultivating young scientists: he never held your hands or tried to shield you from failures, instead, he gave you the general direction and

forced you to find your own way. I was a timid naïve Chinese girl when I joined the Blanchards' lab, and graduated a confident young female scientist. Now an Assistant Professor at UC Davis, I still think back my days in graduate school, and how much I have Bob to thank for making me into the resilient person who I am today.



Michael Corley, University of Hawaii.

Bob dedicated his life to behavioral neuroscience and will be remembered as a pioneer. His simple and elegant insights about ethologically relevant behaviors in rodents

advanced our understanding and use of animal models in behavioral neuroscience. Many will miss Bob's appreciation and wisdom about an observed behavioral phenomenon in a rat, mouse, or other species. Along with his extensive scientific contributions, Bob provided opportunities for many young neuroscientists including me. He gave others and myself the opportunities to attain a PhD, develop as independent neuroscientists, and pursue careers in academia. My fondest memories of Bob were listening to the stories and seeing the pictures about his incredible traveling experiences observing animals in their natural environments. He had visited Africa and talked most of the beauty of the African wildcat, the ancestor of the domestic cat. His most recent adventure had been to the Pantanal in a canoe to view jaguars on the banks of the river. Bob had seen and done so much in his life and warmly shared his life experiences and scientific knowledge with others. As I move forward, I will always remember Bob and the impact he had on me during my start as a neuroscientist.

Antonio de Pádua Carobrez, Federal University of Santa Catarina.

I was his Post Doc in 1991 for 7 months, when the Lab in Hawaii was working on rodents colonies and the anxiety/fear-defense test battery. During the hard work on weekdays I learned how to extract and interpret behavioral data in rodents. On the other hand, during our casual Friday chat around 3 pm, I learned how to expand the findings to the real thinking and reasoning called Science. After 20 years I can say that Bob and Caroline's had a huge influence in my career. Nowadays while I am interested in the neural mediation of rodent coping strategies in stressful situations, I constantly go back to their 1970's or 1980's seminal papers where I can find explanations for some of my present questions. This can testify their ever contemporaneous ideas. My last chat with Bob was in 2012 by email I was trying to understand the freezing response as a defensive behavior that can range from active arrest to a passive arrest, where some scanning and risk assessment will take place. If this is true,

there are lots of mistake in the literature posing freezing as exclusive a passive type of defensive behavior. Bob's answer: "Hi Padua, I had regarded freezing as a more intense form of crouching. Probably involving increased muscle tension and serves as a preparation to other active defenses (flight, Defensive attack). We had tried to quantify the postural differences showing this variation. So if an animal freezes in anticipation of an attack jump its a clear preparation for defensive attack. So I think your right. Hope to see you soon. Bob." These observations and ideas were already published in 1969. Needless to say that I will miss you very much. Mahalo.



Iain S. McGregor, University of Sydney. I was immensely saddened to hear of Bob Blanchard's passing. Like many in IBNS, I always considered Bob something of a "scientific dad" and always found his work stimulating and inspiring.

On reflection, I liked his work so much I think I probably stole more than a few of his ideas. I told him as much one time and he retorted: "Don't worry, I've stolen more than a few back!" Generosity and humour were both integral parts of the man. I was deeply honoured that big Bob would even dream of stealing anything from me.

As a young undergraduate I had always enjoyed neuroscience and psychopharmacology but never really understood the whole associative learning thing. Having studied at Oxford, where Psychology shared the building with Zoology, animal behaviour for me was always ethological, and lever pressing was a somewhat nonsensical way to examine animal behaviour, even in the lab. In the wrestling match in my mind, Tinbergen and Lorenz always beat Rescorla and Wagner.

So when I first read the Blanchard ethoexperimental work everything resonated in perfect celestial harmony. As well as making perfect theoretical sense it was so exotic and colourful: ultrasonic vocalizations, bringing cats into the rat lab, visible burrow systems, sex, fights and squeaks. Magic! Not a lever anywhere in sight.

In the late 1990s I started out on my first bout of Blanchard mimicry with my PhD student Rob Dielenberg trying to record ultrasonic vocalizations in rats and link these vocalizations to behaviour and emotion.

Dielenberg and I were both musicians and so the subtext was that this research theme allowed us to purchase expensive audio equipment using my research grant, equipment that could also be used for recording our bands during the evening. But don't tell anyone!

We were having some trouble getting our rats to squeak, and Dielenberg, having read the Blanchard work showing predator-induced ultrasonic alarm calls in rats, started playing around with cat-related stimuli.

It was at this point that we discovered that a collar worn by my tabby cat at home was a powerful way of provoking defensive behaviour in rats. We quickly forgot about squeaks and set about exploring the neural and pharmacological basis of cat odour avoidance in rodents. Bob and Caroline Blanchard of course already knew all about cat odour and rats: our "genius" was simply to put a wooden hide box in the arena so we could easily quantify hiding to the cat odour.

Some fifteen years, countless publications and numerous citations later I am very happy with the outcome of my bouts of Blanchard mimicry. More recently, my graduate student Michael Bowen has been looking at how predatory threat causes defensive aggregation in rats: the antecedents of this work again being the classic visible burrow system work of the Blanchards. We are very much in their debt.

Australia being relatively close to Hawaii I had the pleasure of visiting the Blanchards on many occasions, staying in their magnificent home, visiting their lab, where Bob was often to be found like a genial, contented giant of a man fiddling in his shed. His most inspired moment in science? "Marrying Caroline", he said.

Always hospitable, always curious, always welcoming, Bob and Caroline have been brilliant people to know. Of course, it was not just the two Blanchards themselves, but the whole social network that they open up for young researchers: so many brilliant scientists and friends, with Bob and Caroline as the central suns in a galaxy of stars and a world of opportunities.

My research group would always enjoy their regular visits to Sydney too: on one famous occasion Bob and Caroline gave a "tag team" talk at our colloquium – 30 min each in front of a fairly sizeable audience. One of the pair, who will remain nameless, went a fair bit over their 30 min time allocation, leaving the other with a lot less than 30 min for their own segment. I won't tell you who was who: but suffice to say we never heard the end of it! It was good to know that even the Blanchard's had their small domestic squabbles at times, albeit not about the washing up or putting the garbage out.

I also treasure the memory of Bob and Caroline visiting our home in the Blue Mountains outside Sydney and a lazy afternoon on the verandah with friends eating, drinking, talking science and laughing. It was that afternoon that I found that the Blanchards had not only "invented" freezing as a measure of fear (the classic "crouching" paper) but also had come up with the first novel object recognition test! What didn't they invent in our field, I wonder?

Bob was a huge figure both physically and mentally with more than a passing resemblance to a certain red suited individual who climbs down chimneys and delivers presents to small people each December. Bob recounted how he had gotten on a plane one time and the rather attractive young stewardess had said: "Hey, do you know that you look like Santa Claus?" To which Bob immediately retorted: "well sit on my knee then and I'll give you a present!" Priceless.

We will miss the dry one-liners almost as much as the scientific acumen and insight. I know that Bob is no longer with us in physical presence, but his ideas will live on for centuries to come. We will all miss him greatly, and we will honour him I hope by continuing down our scientific paths with humour, generosity and creativity.



Nathan Pentkowski, Arizona State University.

Bob Blanchard was my primary mentor and committee chair during my doctoral training in the Department of Psychology at the University of Hawaii.

During this time, I spent five wonderful years in Bob and Caroline's laboratory, primarily studying the neural mechanisms of defensive behavior.

Bob was a pioneer, not only in the characterization of animal behavior specifically, but also in the field of behavioral neuroscience in general. Bob believed that in order to properly understand and study animal behavior a good scientist should first characterize the behavior of the species of interest in its own natural environment. Once those behaviors are fully characterized, then scientists should isolate and maximize those behaviors in a semi-naturalistic laboratory setting. This approach not only inspired me to incorporate ethological approaches in my research, but it also greatly shaped the fields' understanding of animal defensive and aggressive behavior. Indeed, Bob's seminal work was the first to describe the response that rodents have to fearful (i.e., freezing, flight) and anxiety-provoking (i.e., risk assessment) predatory threat stimuli.

As a mentor Bob taught me the value of hard work, often stating that "the only reward for conducting great science is the opportunity to conduct more work". I found it remarkable to have a mentor that

put as much, if not more, time and effort into his work than his students. In fact, during Monday morning lab meetings one of Bob's favorite quotes was "I was lonely over the weekend; you all must have been out having fun?" This of course was his funny sarcastic way of letting us know he was in lab all weekend, and that he knew we were not.

Outside of science one of Bob's great passions was traveling and exploring all facets of the world. I have never met, and probably never will meet, anyone as well traveled as Bob or Caroline. His sense of adventure and world curiosity inspired me to travel and experience different cultures. I loved listening to his stories and seeing photographs from their adventures traveling the world. From remote African safaris and camel expeditions through the Gobi Desert, to posh cruises through the Dead and Mediterranean Seas, Bob truly was an international behavioral neuroscientist.

In closing, it was a pleasure and an honor to be mentored by one of the fields' great visionaries. I truly believe that his pioneering work will continue to shape future generations of behavioral neuroscientists for many years to come. I will very much miss Bob's scientific guidance and personal advice, and of course his extraordinary sense of humor.



Stefan M. Brudzynski, Brock University.
Remembering Bob Blanchard. Passing away of Bob is a terrible loss to our field. Bob was one of the most prolific and respected scientists in behavioral and

neurobehavioral experimental science for more than half a century. I became familiar with Bob and Caroline publications in the late 1960s and early 1970s. These studies represented true behavioral analyses with attention to details and were usually associated with brain-and-behavior approach. Reading these publications was very inspiring. At those early decades of my career, the main experimental subjects for neurobehavioral studies were still cats and dogs, particularly in relation to aggressive and defensive behaviors induced by electrical stimulation of the brain. In relative comparison, it was a natural conclusion and a general concern that rodents' behavior is impoverished and they might not be the best experimental subjects for such studies. Bob and Caroline publications presented very convincing evidences that not only rats and mice but all small mammals have homolog behaviors driven by homolog limbic structures, but more importantly,

they can be successfully used for neurobehavioral experimental studies of mammalian brain. I met Bob for the first time in 1993 during one of the first meetings of the IBNS. We had since then a lot of common topics for discussion. I liked particularly Bob's synthetic and comparative approach to behavioral studies. He was not only talking about one particular experiment or one interesting result but always had extensive approach using "battery" of tests, comparing mice with rats, laboratory animals with wild animals, and was looking for general adaptive behavioral functions and relationships among mammals (e.g., the idea of antipredator behavior). The most lasting influence Bob had on my own research was tendency to study natural situations (e.g., using cat as a threatening stimulus, or cat's odor stimulus) and study as natural situations and conditions as possible still in the laboratory conditions (e.g., colonies of rats in the visible burrow system). I have learned from Bob a wealth of knowledge and he instigated a lot of good experimental ideas I could use in my studies and I will be missing discussions with him.



Thank you to everyone who contributed submissions



Congratulations to the 2014 IBNS Travel Award Winners!

by Julienne Jett

The IBNS Education and Training Committee extends their congratulations to each of the awardees listed below. The IBNS Travel Award provides financial support to student and postdoctoral members in efforts to ease the cost of attending the Annual IBNS Conference. This year's applicant pool was large and especially strong, with many highly qualified applications from around the world. Given the budget this year, IBNS was able to fund a total of 21 travel awards from 6 countries! The distance traveled was taken into consideration in regards to the amount awarded to each recipient. We would like to thank the IBNS Education and Training Committee for their time in reviewing applicants, and look forward to seeing our award winners present their research at the upcoming meeting in Las Vegas!

Graduate Student Travel Award Recipients:

- Allison Auchter, University of Texas at Austin, USA
- Gregory Barord, Brooklyn College, USA
- Michael Barrus, University of British Columbia, Canada
- Blanca Sofia Beas, University of Florida, USA
- Michael Bowen, University of Sydney, Australia
- Xi Chu, University of Tromso, Norway
- Caylen Cloutier, University of Western Ontario, Canada
- Paul Cocker, University of British Columbia, Canada
- Lauren DePoy, Emory University, USA
- Kelsy Ervin, University of Guelph, Canada
- Julianne Jett, University of Texas HSC, USA
- Samantha Mahabir, University of Toronto Mississauga, Canada
- Elizabeth Manning, The Florey Institute, Australia
- Chantelle Terrillon, University of Maryland, USA
- Lucas Watterson, Arizona State University, USA

Postdoctoral Student Travel Award Recipients:

- Wendy Adams, University of British Columbia, Canada
- Davide Amato, University Hospital Erlangen, Germany
- Marci Mitchell, Yale University, USA
- Caitlin Orsini, University of Florida, USA
- Tomasz Schneider, University of Oxford, UK
- Fiona Zeeb, Centre for Addiction and Mental Health, Canada

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IBNS CALL FOR NEWS

Would you like to submit an article or member news for our next IBNS News edition? We would love to hear from you!

Please make your submission to [Elena Choleris](mailto:Elena.Choleris@ibnsconnect.org)

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IBNS Brain Safety Initiative

by Chantelle Terrillion

This year for the first time, IBNS will be going out into the community during the annual meeting to educate children about the importance of brain safety. Through a new initiative, IBNS, in collaboration with the local organizing committee and education & training committee, will be supporting the Brain Safety Awareness Initiative. As part of this initiative, a group of students will take time during the meeting to go to William V. Wright Elementary to teach children how to practice brain safety. These presentations will include information on how the brain works that is accessible to young children and interactive demonstrations about how accidents can injure an unprotected brain! In addition, IBNS will be donating funds to the local school district to help provide bike helmets, one of the most important brain safety tools for kids, to children who may otherwise go without one.

Please consider donating to the IBNS Brain Safety Initiative to help IBNS make a strong impact in the community. For those attending the annual meeting, be sure to make your donation prior to May 1, 2014, to be entered into a drawing for two tickets to any production show on the Las Vegas strip during the meeting. You will be entered into the drawing once for every \$25 you donate. The second place prize will be a portable power bank, suitable for charging your smartphone or tablet when an outlet isn't available, which is valued at approximately \$100.00.



Current Donation Level

FOR MORE INFORMATION

If you would like to learn more about this initiative or make a donation, please visit the IBNS website [HERE](#) or contact [Jonathan Brigman](#).

THANK YOU for your support of this exciting new initiative!

Member News

Honors and Awards:



Corina Bondi (Ph.D), a postdoctoral associate in the laboratory of Dr. Anthony Kline at the University of Pittsburgh, recently received a travel award to present her research at the 11th Symposium of The International Neurotrauma Society in Budapest, Hungary. Dr. Bondi will give an oral presentation on attentional set shifting and environmental enrichment after experimental traumatic brain injury titled *Environmental enrichment restores attentional set-shifting and behavioral flexibility after controlled cortical impact injury in male rats*.



Davide Amato (Ph.D), a postdoctoral associate in the laboratory of Dr. Christian Müller at the University Hospital Erlangen, Germany, recently received the Bowman Foundation Travel Award to attend the 2014 Schizophrenia International Research Society Convention this April in Florence, Italy. Dr. Amato will present a poster of his research titled *Increased pre-synaptic striatal uptake of dopamine as a potential mechanism of antipsychotic failure*.



Richard Beninger (Ph.D), a Joint Professor and the Head of the Department of Psychology at Queen's University, Ontario, Canada, was the guest speaker for the 29th Annual Donald O. Hebb Memorial Lecture at the Dalhousie University in Halifax, Nova Scotia, Canada. Donald Hebb was one of the leading psychologists of the 20th century, and is credited with pioneering and greatly advancing the field of neuropsychology throughout his career. Being invited to speak at the annual memorial lecture is a prestigious honor. Dr. Beninger's lecture was titled *Brain mechanisms of reward-related learning: Dopamine, incentive learning and inverse incentive learning*.



Joyonna Gamble-George, a 3rd year graduate student in the laboratory of Dr. Sachin Patel at Vanderbilt University School of Medicine, was recently awarded the opportunity to attend the 64th Lindau Nobel Laureate Meeting this summer in Lindau, Germany. More than 20,000 young scientists from 80 countries applied to attend, but only 600 were awarded! At this meeting, Joyonna will have the opportunity to meet and network with Nobel Laureates to discuss future research approaches to medicine.

Publications:

Corina Bondi (Ph.D), recently had a first-authored paper accepted to the *Journal of Neurotrauma* (2014) titled *Old dog, new tricks: The attentional set-shifting test as a novel cognitive behavioral task after controlled cortical impact injury*. This novel work has introduced the attentional set-shifting task, a cognitive paradigm that assesses prefrontal cortical function in rodents, to the field of Neurotrauma. Additionally, her comprehensive review paper entitled "Environmental enrichment as a viable neurorehabilitation strategy for experimental traumatic brain injury" was also accepted for publication in the *Journal of Neurotrauma* (2014).



Marangelie Criado-Marrero, a 3rd year graduate student in the laboratory of Dr. James Porter at the Ponce School of Medicine and Health Science, Puerto Rico, recently published a first-authored paper titled *Modulating fear extinction memory by manipulating SK potassium channels in the infralimbic cortex* (*Frontiers in Neuroscience*, 2014). Her studies demonstrated that blocking SK channels in the infralimbic cortex enhanced intrinsic excitability of local pyramidal neurons, and that similar pharmacological intervention in the infralimbic cortex prior to extinction training facilitated extinction recall.



Aashish Morani (M.Pharm, PhD), a Research Associate in the Department of Biomedical Sciences at East Tennessee State University, had a paper published in the *European Journal of Pharmacology* (2013) titled *The 2-methoxy methyl analogue of salvinorin A attenuates cocaine-induced drug seeking and sucrose reinforcements in rats*. His study found that κ opioid receptor activation by more

potent Sal A analogues, such as 2-methoxy-methyl salvinorin B, modulates cocaine-seeking behavior non-selectively without causing sedation, suggesting an improved side effect profile.



Heather Richardson (Ph.D) and her graduate student, Jesse McClure, at the University of Massachusetts Amherst, recently published a paper titled *Isolating the delay component of impulsive choice in adolescent rats* (*Frontiers in Integrative Neuroscience*, 2014). Jesse, who is first-author on the paper, received the Vincent Diether Award from the Neuroscience and Behavior Graduate Program at Amherst for his performance on this research and significant contributions to the neuroscience community through outreach endeavors.



Tim Karl (Ph.D), a Research Fellow at Neuroscience Research Australia, just published a paper with his graduate student, David Cheng, titled *Chronic cannabidiol treatment improves social and object recognition in double transgenic APP^{swe}/PS1 Δ E9 mice* (*Psychopharmacology*, 2014). The study found that a non-psychoactive component of the cannabis plant, called cannabidiol, has therapeutic potential for Alzheimer's disease as it reversed cognitive deficits in Alzheimer's disease transgenic mice.

Career Updates:



Tomasz Schneider (MA, Ph.D) has accepted a Lecturer in Neuropharmacology position at the School of Medicine, Pharmacy and Health at the University of Durham, United Kingdom. Dr. Schneider will open a Behavioral Pharmacology lab at Durham, where he will continue his research on the development and evaluation of animal models for neurodevelopmental disorders. Additionally, his lab will investigate the genetic and molecular mechanisms of experience-dependent plasticity, as well as novel therapeutics that may mimic or enhance the beneficial effects of environmental stimulation.