



Brain awareness week in Croatia

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„Men ought to know that from the brain, and from the brain only, arise our pleasures, joys, laughter and jests, as well as our sorrows, pains, griefs and tears.....When the brain is still, a man can think properly!” Hippocrates (5th century B.C.)

In 2014, Brain Awareness Week (BAW) in Croatia took place from March 10th to 16th. It was for the 13th time that Croatian Society for Neuroscience (CSfN) organized this event, being a part of a worldwide campaign to increase public awareness of the importance of brain research.

How and when was the idea of this kind of a public outreach initiative born? BAW was organized for the 19th time in the world in 2014, however the story of BAW begun much earlier – in 1950, by the establishment of Dana Foundation by American philanthropist Charles A. Dana and his wife Eleanor Naylor Dana. Dana Foundation has been committed to advancing scientific research and education, focusing later on the field of brain research. In 1992, the Dana Alliance for Brain Initiative was founded by most eminent neuroscientists who dedicated themselves to increase the public support for brain research. This initiative occurred in early years of „The Decade of the Brain” (1990-2000). Besides setting research goals for the decade, the initiative expanded further with the idea of brain research advocacy and neuroscience popularization campaign – Brain Awareness Week, organized for the first time in 1995. From that date, the initiative has been growing and is recognized worldwide: the year 2014 is declared as The Year of the Brain in Europe by the efforts and dedication of European Brain Council while the 21st century is declared as the Century of the Mind.

The global interest for brain research is quite understandable – our unique brain determines us as individuals, governs our emotions, dreams, reasoning, decisions, and makes us social beings. The interest in the functions of human brain dates from antique (and even older periods of human history) – Hippocrates proposed that brain is the seat of intelligence and Plato believed as well that mental processes are going on in brain tissue. Reflecting on any topic related to functioning of human society requires knowledge on biological and evolutionary basis of psychology, behavior, consciousness, social relations and communication. For a neuroscientist, searching for the exact relationship between human brain tissue function and extremely complex and individual patterns of mind and cognition is somewhat like a quest for a holy grail – exciting, adventurous, and challenging. What is also important for the wellbeing of human society is maintenance and improvement of health. Unfortunately, the data on disorders related to malfunction of nervous system in today’s world are dramatic – it has been estimated that nearly 40% of European population suffers from a mental disorder;



Figure 1. Drawings made by pupils from Elementary School Turanj, participants of the workshops: „How brain works?” and „What is hidden in our brain?” (BAW, 2011).

that mental disorders together with neurological diseases such as stroke, brain injuries, Parkinson’s disease, Alzheimer’s disease, multiple sclerosis contribute up to 30% of total health burden in Europe; that cost of brain disorders in Europe for the period of January – May 2014 has already reached 303 billion euros! Thus, one of the most significant tasks of neuroscientists is to search for causes of neurological and mental disorders and to develop efficient applications of basic research in diagnostics and treatment.

Croatian Society for Neuroscience was founded in 2000 with the main office at the Croatian Institute for Brain Research, School of Medicine in Zagreb. The activities and aims of CSfN include: promotion of research in all neuroscience areas; gathering scientists from different fields with the same interest for advancement of understanding the structure and function of human nervous tissue; communicating with public and disseminating information on importance, progress and benefits of brain research. With great enthusiasm, the members of CSfN organized the first Croatian Brain Awareness Week in 2001. As years have passed by, the CSfN has grown to more than 250 members encompassing scientists, teachers, students and clinicians coming from either scientific institutes (Institute Ruđer Bošković, Institute for Physics) or Croatian universities (University of Zagreb, Osijek, Rijeka, Split, Zadar, Dubrovnik) and clinics. With growth of CSfN, activities associated to organization of BAW expanded and became more and more recognized by public and media. In addition, the efforts in organizing this event were regularly supported as small projects granted by Funding Programme of Federation of European Neuroscience Societies (FENS). The main ideas of

organizing BAW in Croatia is to promote dialogue between (neuro)scientists and public, to spark interest in neuroscience in preschool and school kids, to acquaint a broad population with state of art in brain research, to tighten collaboration between groups of specialists involved in particular fields of neuroscience. We fulfill all these ideas by organizing workshops, lectures, presenta-



tions, round tables; we open the doors of institutes, laboratories and classrooms to general public; we play and educate and try to present neuroscience topics as creatively and attractively as possible.

Each year CSfN chooses several BAW main topics. In 2014, we dealt with three „hot” neuroscience themes: *Social brain*; *Brain and pain*; *Neural networks and behavior*. Why did we choose out these topics? First, new insights into biological basis of specifically human traits of social interactions and behavior are now enabled by modern powerful neuroimaging techniques. Functional magnetic resonance imaging reveals brain areas involved in social behavior. Interestingly, some of those brain structures (cingular cortex, orbital area of frontal cortex, certain areas of parietal, occipital and temporal cortex, insula, amygdala) have been previously related to emotions, motivation and cognitive functions. Each social contact is evaluated emotionally, and this evaluation often proceeds at the subconscious level. What is even more tempting for understanding the formation of a certain social behavior is that some of the mentioned brain areas contain so called mirror neurons essential for imitation, recognition and interpretation of the behavior of other beings. It seems that connections of the deep limbic structures with the rest of the brain, which are constantly active, underlie a psychiatric/psychological concept of self. Further investigation should clarify the importance of complex processes enabling proper interactions of brain, mind, emotions and body for the development of human brain. Within the topic *Brain and pain* we presented how brain interprets the painful stimuli; interesting cultural differences in pain interpretation and experience; recent advances in treatment of acute and chronic pain. The topic *Neural networks and behavior* showed how core questions in neuroscience are being approached from technical point of view, and how today neuroscience and electronics highly converge. Utilization of electronic devices and robotics in medicine is not science fiction any more but reality, for instance „da Vinci surgical system” in which the operation is done with perfect precision by a robot controlled by surgeon, or using robotic and prosthetic „arms” in patients with amputation or paralysis.

In years to come, the members of CSfN will continue to disseminate relevant scientific information from the field of brain research to the general public. Audience of the BAW in Croatia has grown from hundreds of people at the very starts of event organization to several thousand participants of all ages each year. CSfN strives to be a responsible partner in dialogue between scientists and our citizens. However, the highest prize for our efforts is recognition and interest for science from the youngest participants, briefly, nicely and simply stated by a 10-year old child hosted at Croatian Institute for Brain Research: „I now know what I am going to be when I grow up – a neuroscientist!”

Topics of BAW in Croatia (2003-2014)

2003

- Century of Mind
- Brain and aging
- Brain development (from the cell to the mind)

2004

- New advances and challenges in brain research
- Brain and hormones
- Birth and death of neurons
- Depression

2005

- Autism
- Brain research and European research space
- New advances and challenges in brain research

2006

- Mental disorders
- New advances and challenges in brain research

2007

- Neuroethics: Utilization of neuroimaging?
- Developmental rehabilitation
- Neuroscience of aging

2008

- Brain and aggression
- Brain injury
- Neuroimaging

2009

- What makes us human?
- Evolution of language and symbolic reasoning
- Specific diseases of human brain

2010

- Brain and creativity
- Brain and arts
- Brain imaging

2011

- Learning brain (Brain and education)
- Neuroeconomics
- New advances and challenges in brain research

2012

- Brain maturation and aging
- Brain and decision-making
- Brain and stress

2013

- Altered states of consciousness
- Neurobiology of addiction
- Brain and movement

2014

- Social brain
- Brain and pain
- Neural networks and behavior

