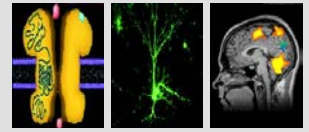## IGSN / SFB 1280 / BIOME
CONFERENCE

EXTINCTION LEARNING:
THE NEURAL, BEHAVIOURAL, ONTOGENETIC, EDUCATIONAL, AND CLINICAL MECHANISMS

April 24 - 25, 2018   Veranstaltungszentrum, Ruhr University Bochum

Wednesday   April 25, 13:10 – 16:00

Session 4   **Bridging the gap – Implications for psychopathology**

ANN MEULDERS

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Pain-related fear and avoidance in chronic pain: an associative learning account

Pain-related fear can be acquired through classical conditioning, that is, after pairing a neutral movement (conditioned stimulus, CS) with a painful stimulus (unconditioned stimulus, US), this movement starts to elicit protective responses (conditioned response, CR). For example, movements associated with increased pain tend to be avoided, leading to increasing disability. Learning theory further predicts that pain-related fear (1) will spread to novel movements similar to the original CS+ but not to those that are similar to the CS- (*fear generalization*); chronic pain patients however show persistent overgeneralization leading to the proliferation of disabling fear and avoidance. (2) Pain-related fear can be reduced by exposure to the painful CS+ movement in absence of the pain-US (*fear extinction*). In recent years, most of the research has focused on passive pain-related fear learning (psychophysiological correlates and verbal reports) largely ignoring the behavioral component, i.e. active, avoidance behavior. However, fear and avoidance are known not always to correlate highly, and may influence each other. For example, (3) allowing avoidance behavior and safety behavior during treatment may hamper fear extinction learning (*protection from extinction*). In addition, (4) *operant learning processes* may play an important role in pain-related avoidance behavior and extinction of avoidance behavior is challenging given its self-reinforcing nature (an avoidance response intrinsically leads to the absence of the negative outcome). In this talk, I will present a series of experiments demonstrating these learning principles using a proprioceptive fear conditioning paradigm as well as an operant pain-related avoidance paradigm.