



---

## The Psychopharmacology of Depression and Anxiety and Their Treatment

**Catherine Harmer**

*Department of Psychiatry, University of Oxford, UK*

---

© Copyright 2014 Textrum Ltd. All rights reserved.

Correspondence to: [Catherine.harmer@psych.ox.ac.uk](mailto:Catherine.harmer@psych.ox.ac.uk)

Received 18-Dec-2014; accepted 18-Dec-2014

---

### Table of Contents

Introduction

### Introduction

I am delighted to introduce this special issue on the psychopharmacology of depression and anxiety and their treatment. This issue provides a translational perspective of recent research utilising established and novel techniques, which challenges traditional inter-disciplinary barriers. The interplay between psychology, pharmacology, neuroscience and psychiatry is essential for understanding mechanisms which support illness and their treatment and may allow novel questions both to be posed and answered. This translational approach has been a key strength of research over the last decade and it is has been my pleasure to invite and read the reviews in this issue which tackle these questions by leading experts in the field.

In the first article in this issue, Philip Cowen provides an elegant perspective on the neurochemistry and current pharmacological treatment of major depression. This review draws on neuroendocrine challenge test data, amino acid depletion techniques, receptor ligand PET, inflammatory marker assessment and MRS of GABA and glutamate concentrations in the brain. Key directions for the future are considered including whether these markers may be useful for predicting response to different treatments in depression and allow subgrouping to occur based on neurobiological processes. Following on from this, Anjali Sankar and Cynthia Fu review the literature on neuroimaging markers of depression and its treatment. The effects of both pharmacological and psychological interventions for depression are considered within the same framework, which will be important for improving treatment stratification and combined intervention approaches of the future. In particular, the paper reviews the effects of treatment on neural responses to emotional information and cognitive tasks, neural connectivity and response prediction using neuroimaging approaches. Oliver Robinson and Jonathan Roiser complement these perspectives by considering the role of serotonin in aversive inhibition and its implications for the aetiology and treatment of depression. This review considers data from behavioural studies, computational modelling and neuroimaging and the findings are presented in a comprehensive framework. Specifically it is argued that serotonin plays a role in the inhibition of aversive behavioural responses, underpinned by modulation of prefrontal–amygdala–BNST circuits. As such this approach links the neurochemistry and functional neuroanatomy of depression with key psychological processes emphasising the value of a trans-discipline approach.

The discovery of new treatments for depression has been hampered by the lack of valid animal models of depression to explore mechanisms and provide early screening assays for candidate treatments. These limitations and possible solutions are considered in a timely review by Emma Robinson. This focuses on recent developments in modelling depression and treatment action in animals using cognitive affective bias measures as well as models of cognitive deficits in depression. These cognitive and emotional bias models are more closely linked to the psychological processes which are important in human models of illness and hold promise for the early characterisation of novel treatments. Stress is an important risk factor for depression and anxiety and manipulations of the neuroendocrine stress system are potential targets for future treatment development. David Baumeister, Stafford Lightman and Carmine Pariante review the clinical and molecular role of this system in depression and present a framework for understanding the translation between environmental stressors, molecular mechanisms and clinical presentation. This review also considers the effects of treatments for depression on HPA functioning and how this system may be targeted through novel approaches. This highlights the importance of understanding the role of stress, its biological underpinnings and potential opportunities for interventions at multiple levels of function. Finally, Andrea Reinecke and I provide an integrated perspective on understanding treatment in anxiety disorders and discuss a vision for the combined use of psychological and pharmacological treatment strategies using an experimental medicine framework.

The focus of this special issue is a rapidly expanding area of research where traditional barriers are being overcome and researchers and clinicians are adopting integrative perspectives. There are many challenges to come and we are still in the infancy of understanding complex systems responsible for supporting psychological distress and illness. The reviews in this special issue show that important progress has already been made and are instrumental in posing questions for the challenges ahead.