



WPA SECTION ON
PERSONALIZED PSYCHIATRY

Activities 2014–2020

Section Officers

Chair

Giampaolo Perna (Italy)

Co-Chair

Charles Nemeroff (USA)

Secretary

Alan Schatzberg (USA)

Section Committee Members

Elisabeth Binder (Germany)

Ned Kalin (USA)

Antonio Egidio Nardi (Brazil)

Carmine Pariante (UK)

Koen Schruers (The Netherlands)

Members

Daniela Caldirola (Italy)

Massimiliano Grassi (Italy)

Paolo Cavedini (Italy)

Paolo Girardi (Italy)

Amit Etkin (USA)

Jordan Smoller (USA)

Radu Saveanu (USA)

Philip Harvey (USA)

Madhukar Trivedi (USA)

Richard Shelton (USA)

Antonio Egidio Nardi (Brazil)

Rafael Freire (Brazil)

Francisco del Olmo Romero (Spain)

Manuel Martin Carrasco (Spain)

Rene Hurlemann (Germany)

Tunc Alkin (Turkey)

Joseph Zohar (Israel)

Bernard Lerer (Israel)

Jean Pierre Lepine (France)

Keith Kendrick (China)

James Kennedy (Canada)

Dan Stein (South Africa)

James Kennedy (Canada)

Website: <http://www.personalizedpsychiatry.org>

PERSONALIZED PSYCHIATRY WPA SECTION

A specific website on the section has been created (www.personalizedpsychiatry.com) with education materials included (video, and links to full text of papers related published in pubmed) from several members of the section.

With the aim of developing both education among psychiatrist and scientific exchange among researchers we decided to build a new scientific journal with Elsevier. After a huge effort the journal "**Personalized Medicine in Psychiatry**" is now available and the first issue published (<http://www.personalizedmedpsych.com/current>) with Giampaolo Perna (Chair of the section) and Charles Nemeroff (Co-Chair of the section) and Co-Editors in Chief.

Collaborations aim at research and develop personalized psychiatry tools has been established between the department of Section Chair Giampaolo Perna (including the two other Section members, Daniela Caldirola and Massimiliano Grassi) and both Maastricht University (member of the Section committee: Koen Schruers) and Miami University (Section co-chair: Charles Nemeroff). Relationships with researchers specialized in the field of Personalized Medicine in Psychiatry have been strengthened cooperating in meetings (U. Lueken invited to the AIAMC Congress in Rome, June 2017; T. Schlaepfer invited to the Hermanas Hospitalarias national congress on "Personalized Medicine in Psychiatry" that will be held in Milano next October)

Several symposium and lectures by members of the sections and related to Personalized Psychiatry have been included in well known scientific meeting with relevant participation of colleagues:

- Expo 2015: The future of mental health: feeding, empowering, treating. Milan, Italy, 2015;
- 46th ISPNE Annual Conference, Miami, USA, 2016;
- Anxiety and Depression Conference 2016, Philadelphia, USA, 2016;
- Management of treatment resistant psychiatric disorders. Course of the Neuroscience School of Advanced Studies, Florence, Italia, 2016;
- 2nd Annual Advances in Diagnosis, Neurobiology, and Treatment of Psychiatric Disorders, Universidad de Colombia, Colombia, 2017;
- 27th Annual Summer Seminars: Essential Psychopharmacology 2016: From Neuroscience to Advances in Treatment. Edgartown, USA, 2016;
- APA's 168th Annual Meeting 2015, Toronto, Canada;
- APA's 169th Annual Meeting 2016, Atlanta, USA;
- WPA XVII Meeting, Berlin, 2017
- "Anxiety and Depression Conference 2018", Washington, USA.
- APA's 171nd Annual Meeting 2018, New York, USA.
- "57th Annual Congress of the ACNP, Hollywood, Florida, USA, 2018.
- "7th European Conference on Schizophrenia Research (ECSR), Berlin, Germany, 2019
- "59th Annual Congress of the ACNP, Orlando, Florida, USA, 2019.

Publications on Personalized Psychiatry from members of the section

Section chair Giampaolo Perna and co-chair Charles Nemeroff opened and co-edited the new Elsevier journal "Personalized Medicine in Psychiatry"
(<http://www.personalizedmedpsych.com>).

An editorial describing the aim of the journal: Perna G, Nemeroff CB Personalized Medicine in Psychiatry: Back to the Future. *Personalized Medicine in Psychiatry* 1, 1.

and on the website of the journal several several papers are freely available.

Personalized psychiatry papers co-authored by section members in the 2014-2020 triennium (selection):

1. Alhajji L, Nemeroff CB (2015) Personalized Medicine and Mood Disorders. *Psychiatr Clin North Am* 38, 395-403.
2. Arnow BA, Blasey C, Williams LM, Palmer DM, Rekshan W, Schatzberg AF, Etkin A, Kulkarni J, Luther JF, Rush AJ (2015) Depression Subtypes in Predicting Antidepressant Response: A Report From the iSPOT-D Trial. *Am J Psychiatry* 172, 743-750.
3. Arns M, Bruder G, Hegerl U, Spooner C, Palmer DM, Etkin A, Fallahpour K, Gatt JM, Hirshberg L, Gordon E (2016) EEG alpha asymmetry as a gender-specific predictor of outcome to acute treatment with different antidepressant medications in the randomized iSPOT-D study. *Clin Neurophysiol* 127, 509-519.
4. Barak-Corren Y, Castro VM, Javitt S, Hoffnagle AG, Dai Y, Perlis RH, Nock MK, Smoller JW, Reis BY (2017) Predicting Suicidal Behavior From Longitudinal Electronic Health Records. *Am J Psychiatry* 174, 154-162.
5. Bauer M, Glenn T, Alda M, Andreassen OA, Angelopoulos E, Ardu R, Baethge C, Bauer R, Bellivier F, Belmaker RH, Berk M, Bjella TD, Bossini L, Bersudsky Y, Cheung EY, Conell J, Del Zompo M, Dodd S, Etain B, Fagiolini A, Frye MA, Fountoulakis KN, Garneau-Fournier J, Gonzalez-Pinto A, Harima H, Hassel S, Henry C, Iacovides A, Isometsa ET, Kapczinski F, Kliwicki S, Konig B, Krogh R, Kunz M, Lafer B, Larsen ER, Lewitzka U, Lopez-Jaramillo C, MacQueen G, Manchia M, Marsh W, Martinez-Cengotitabengoa M, Melle I, Monteith S, Morken G, Munoz R, Nery FG, O'Donovan C, Osher Y, Pfennig A, Quiroz D, Ramesar R, Rasgon N, Reif A, Ritter P, Rybakowski JK, Sagduyu K, Scippa AM, Severus E, Simhandl C, Stein DJ, Strejilevich S, Hatim Sulaiman A, Suominen K, Tagata H, Tatebayashi Y, Torrent C, Vieta E, Viswanath B, Wanchoo MJ, Zetin M, Whybrow PC (2015) Influence of birth cohort on age of onset cluster analysis in bipolar I disorder. *Eur Psychiatry* 30, 99-105.
6. Blumenthal SR, Castro VM, Clements CC, Rosenfield HR, Murphy SN, Fava M, Weilburg JB, Erb JL, Churchill SE, Kohane IS, Smoller JW, Perlis RH (2014) An electronic health records study of long-term weight gain following antidepressant use. *JAMA Psychiatry* 71, 889-896.
7. Borro M, Simmaco M, Aceti A, Barni S, De Luca A, Fineschi V, Frati P, Girardi P, Miozzo M, Nati G, Nicoletti F, Santini D, Marchetti P (2016) H2020 and Beyond: Skip Discrepancy between Theory and Practice of Personalized Medicine. A Position Paper by the Italian Society of Personalized Medicine. *Curr Pharm Biotechnol* 17, 926-929.
8. Borsini A, Alboni S, Horowitz MA, Tojo LM, Cannazza G, Su KP, Pariante CM, Zunszain PA (2017). Rescue of IL-1 β -induced reduction of human neurogenesis by omega-3 fatty acids and antidepressants. *Brain Behav Immun*. 2017 Oct;65:230-23
9. Brandl EJ, Kennedy JL, Muller DJ (2014) Pharmacogenetics of antipsychotics. *Can J Psychiatry*

59, 76-88.

10. Brandl EJ, Lett TA, Chowdhury NI, Tiwari AK, Bakanidze G, Meltzer HY, Potkin SG, Lieberman JA, Kennedy JL, Muller DJ (2016) The role of the ITIH3 rs2535629 variant in antipsychotic response. *Schizophr Res* 176, 131-135.
11. Caldirola D, Perna G (2015) Is there a role for pharmacogenetics in the treatment of panic disorder? *Pharmacogenomics* 16, 771-774.
12. Caldirola D., and Perna G., "Toward a personalized therapy for panic disorder: preliminary considerations from a work in progress". *Neuropsychiatric Disease and Treatment*,15:1957-70, 2019.
13. Castro VM, Minnier J, Murphy SN, Kohane I, Churchill SE, Gainer V, Cai T, Hoffnagle AG, Dai Y, Block S, Weill SR, Nadal-Vicens M, Pollastri AR, Rosenquist JN, Goryachev S, Ongur D, Sklar P, Perlis RH, Smoller JW (2015) Validation of electronic health record phenotyping of bipolar disorder cases and controls. *Am J Psychiatry* 172, 363-372.
14. Cattaneo A, Ferrari C, Uher R, Bocchio-Chiavetto L, Riva MA, Pariante CM (2016) Absolute Measurements of Macrophage Migration Inhibitory Factor and Interleukin-1-beta mRNA Levels Accurately Predict Treatment Response in Depressed Patients. *Int J Neuropsychopharmacol* 19.
15. Chekroud AM, Gueorguieva R, Krumholz HM, Trivedi MH, Krystal JH, McCarthy G (2017) Reevaluating the Efficacy and Predictability of Antidepressant Treatments: A Symptom Clustering Approach. *JAMA Psychiatry* 74, 370-378.
16. Chekroud AM, Zotti RJ, Shehzad Z, Gueorguieva R, Johnson MK, Trivedi MH, Cannon TD, Krystal JH, Corlett PR (2016) Cross-trial prediction of treatment outcome in depression: a machine learning approach. *Lancet Psychiatry* 3, 243-250.
17. Chowdhury NI, Souza RP, Tiwari AK, Brandl EJ, Sicard M, Meltzer HY, Lieberman JA, Kennedy JL, Muller DJ (2014) Investigation of melanocortin system gene variants in antipsychotic-induced weight gain. *World J Biol Psychiatry* 15, 251-258.
18. Colle R, Gressier F, Verstuyft C, Deflesselle E, Lepine JP, Ferreri F, Hardy P, Guilloux JP, Petit AC, Feve B, Falissard B, Becquemont L, Corruble E (2015) Brain-derived neurotrophic factor Val66Met polymorphism and 6-month antidepressant remission in depressed Caucasian patients. *J Affect Disord* 175, 233-240.
19. Crossley NA, Marques TR, Taylor H, Chaddock C, Dell'Acqua F, Reinders AA, Mondelli V, DiForti M, Simmons A, David AS, Kapur S, Pariante CM, Murray RM, Dazzan P (2017) Connectomic correlates of response to treatment in first-episode psychosis. *Brain* 140, 487-496.
20. Day CV, Gatt JM, Etkin A, DeBattista C, Schatzberg AF, Williams LM (2015) Cognitive and emotional biomarkers of melancholic depression: An iSPOT-D report. *J Affect Disord* 176, 141-150.
21. Day CV, John Rush A, Harris AW, Boyce PM, Rekshan W, Etkin A, DeBattista C, Schatzberg AF, Arnow BA, Williams LM (2015) Impairment and distress patterns distinguishing the melancholic depression subtype: an iSPOT-D report. *J Affect Disord* 174, 493-502.
22. de Medeiros Alves V, ACP ES, de Souza EVM, de Lima Francisco LCF, de Moura EL, de-Melo-Neto VL, Nardi AE (2017) Suicide attempt in mental disorders (MeDi): Association with 5-HTT, IL-10 and TNF-alpha polymorphisms. *J Psychiatr Res* 91, 36-46.
23. de Medeiros Alves V, Bezerra DG, de Andrade TG, de Melo Neto VL, Nardi AE (2015) Genetic Polymorphisms Might Predict Suicide Attempts in Mental Disorder Patients: A Systematic Review And Meta-Analysis. *CNS Neurol Disord Drug Targets* 14, 820-827.
24. [Drysedale AT, Grosenick L, Downar J, Dunlop K, Mansouri F, Meng Y, Fetcho RN, Zebley B, Oathes DJ, Etkin A, Schatzberg AF, Sudheimer K, Keller J, Mayberg HS, Gunning FM, Alexopoulos GS, Fox MD, Pascual-Leone A, Voss HU, Casey BJ, Dubin MJ, Liston C (2017) Resting-state

- connectivity biomarkers define neurophysiological subtypes of depression. *Nat Med* 23, 28-38.
25. Dunlop BW, Kelley ME, Aponte-Rivera V, Mletzko-Crowe T, Kinkead B, Ritchie JC, Nemeroff CB, Craighead WE, Mayberg HS (2017) Effects of Patient Preferences on Outcomes in the Predictors of Remission in Depression to Individual and Combined Treatments (PReDICT) Study. *Am J Psychiatry* 174, 546-556.
 26. Dunlop BW, Rajendra JK, Craighead WE, Kelley ME, McGrath CL, Choi KS, Kinkead B, Nemeroff CB, Mayberg HS (2017) Functional Connectivity of the Subcallosal Cingulate Cortex And Differential Outcomes to Treatment With Cognitive-Behavioral Therapy or Antidepressant Medication for Major Depressive Disorder. *Am J Psychiatry* 174, 533-545.
 27. Etkin A (2014) Neuroimaging and the future of personalized treatment in psychiatry. *Depress Anxiety* 31, 899-901.
 28. Etkin A, Patenaude B, Song YJ, Usherwood T, Rekshan W, Schatzberg AF, Rush AJ, Williams LM (2015) A cognitive-emotional biomarker for predicting remission with antidepressant medications: a report from the iSPOT-D trial. *Neuropsychopharmacology* 40, 1332-1342.
 29. Fabbri C, Corponi F, Albani D, Raimondi I, Forloni G, Schruers K, Kasper S, Kautzky A, Zohar J, Souery D, Montgomery S, Cristalli CP, Mantovani V, Mendlewicz J, Serretti A. Pleiotropic genes in psychiatry: Calcium channels and the stress-related FKBP5 gene in antidepressant resistance (2017). *Prog Neuropsychopharmacol Biol Psychiatry* Oct 5.
 30. Ferreira-Garcia R, Mochcovitch M, Costa do Cabo M, Nardi AE, Christophe Freire R (2017) Predictors of Pharmacotherapy Response in Generalized Anxiety Disorder: A Systematic Review. *Harv Rev Psychiatry* 25, 65-79.
 31. Fornaro M, Orsolini L, Marini S, De Berardis D, Perna G, Valchera A, Gananca L, Solmi M, Veronese N, Stubbs B (2016) The prevalence and predictors of bipolar and borderline personality disorders comorbidity: Systematic review and meta-analysis. *J Affect Disord* 195, 105-118.
 32. Fonzo GA, Goodkind MS, Oathes DJ, Zaiko YV, Harvey M, Peng KK, Weiss ME, Thompson AL, Zack SE, Lindley SE, Arnow BA, Jo B, Gross JJ, Rothbaum BO, Etkin A (2017) PTSD Psychotherapy Outcome Predicted by Brain Activation During Emotional Reactivity and Regulation. *Am J Psychiatry*. Jul 18
 33. Fournier JC, Chase HW, Greenberg T, Etkin A, Almeida JR, Stiffler R, Deckersbach T, Weyandt S, Cooper C, Toups M, Carmody T, Kurian B, Peltier S, Adams P, McInnis MG, Oquendo MA, McGrath PJ, Fava M, Weissman M, Parsey R, Trivedi MH, Phillips ML.(2017) Neuroticism and Individual Differences in Neural Function in Unmedicated Major Depression: Findings from the EMBARC Study. *Biol Psychiatry Cogn Neurosci Neuroimaging*. 2017 Mar;2(2):138-148
 34. Freire RC, Amrein R, Mochcovitch MD, Dias GP, Machado S, Versiani M, Arias-Carrion O, Carta MG, Nardi AE (2017) A 6-Year Posttreatment Follow-up of Panic Disorder Patients: Treatment With Clonazepam Predicts Lower Recurrence Than Treatment With Paroxetine. *J Clin Psychopharmacol* 37, 429-434.
 35. Goldschmidt MG, Villarreal MF, de Achaval D, Drucaroff LJ, Costanzo EY, Castro MN, Pahissa J, Camprodon J, Nemeroff C, Guinjoan SM (2014) Cluster B personality symptoms in persons at genetic risk for schizophrenia are associated with social competence and activation of the right temporo-parietal junction during emotion processing. *Psychiatry Res* 221, 30-36.
 36. Goldstein-Piekarski AN, Korgaonkar MS, Green E, Suppes T, Schatzberg AF, Hastie T, Nemeroff CB, Williams LM (2016) Human amygdala engagement moderated by early life stress exposure is a biobehavioral target for predicting recovery on antidepressants. *Proc Natl Acad Sci U S A* 113, 11955-11960.
 37. Goldstein-Piekarski AN, Holt-Gosselin B, O'Hora K, Williams LM (2020). Integrating sleep, neuroimaging, and computational approaches for precision psychiatry. *Neuropsychopharmacology*. 45(1):192-204.
 38. Grant N, Hotopf M, Breen G, Cleare A, Grey N, Hepgul N, King S, Moran P, Pariante CM, Wingrove

- J, Young AH, Tylee A (2014) Predicting outcome following psychological therapy in IAPT (PROMPT): a naturalistic project protocol. *BMC Psychiatry* 14, 170.
39. Griffiths KR, Jurigova BG, Leikauf JE, Palmer D, Clarke SD, Tsang TW, Teber ET, Kohn MR, Williams LM (2017) A Signature of Attention-Elicited Electro cortical Activity Distinguishes Response From Non-Response to the Non-Stimulant Atomoxetine in Children and Adolescents With ADHD. *J Atten Disord*. Oct 1
 40. Hepgul N, Cattaneo A, Agarwal K, Baraldi S, Borsini A, Bufalino C, Forton DM, Mondelli V, Nikkheslat N, Lopizzo N, Riva MA, Russell A, Hotopf M, Pariante CM (2016) Transcriptomics in Interferon-alpha-Treated Patients Identifies Inflammation-, Neuroplasticity- and Oxidative Stress-Related Signatures as Predictors and Correlates of Depression. *Neuropsychopharmacology* 41, 2502-2511.
 41. Herbert D, Neves-Pereira M, Baidya R, Cheema S, Groleau S, Shahmirian A, Tiwari AK, Zai CC, King N, Müller DJ, Kennedy JL. Genetic testing as a supporting tool in prescribing psychiatric medication: Design and protocol of the IMPACT study. *J Psychiatr Res*. 2018, 96:265-272
 42. Hu J, Chan LF, Souza RP, Tampakeras M, Kennedy JL, Zai C, De Luca V (2014) The role of tyrosine hydroxylase gene variants in suicide attempt in schizophrenia. *Neurosci Lett* 559, 39-43.
 43. Kalin NH (2017) Mechanisms underlying the early risk to develop anxiety and depression: A translational approach. *Eur Neuropsychopharmacol* 27, 543-553.
 44. Kennis M, van Rooij SJ, Tromp do PM, Fox AS, Rademaker AR, Kahn RS, Kalin NH, Geuze E (2015) Treatment Outcome-Related White Matter Differences in Veterans with Posttraumatic Stress Disorder. *Neuropsychopharmacology* 40, 2434-2442.
 45. Kiefe TM, Hurlmann R. Is Molecular Inflammatory Profiling a Useful Tool for Personalized Brain Stimulation in Psychiatric Disorders? *Neuromodulation*. 2018 Dec;21(8):826-827
 46. Knuts I, Esquivel G, Kenis G, Overbeek T, Leibold N, Goossens L, Schruers K (2014) Therapygenetics: 5-HTTLPR genotype predicts the response to exposure therapy for agoraphobia. *Eur Neuropsychopharmacol* 24, 1222-1228.
 47. Lally J, Ajnakina O, Di Forti M, Trotta A, Demjaha A, Kolliakou A, Mondelli V, Reis Marques T, Pariante C, Dazzan P, Shergil SS, Howes OD, David AS, MacCabe JH, Gaughran F, Murray RM (2016) Two distinct patterns of treatment resistance: clinical predictors of treatment resistance in first-episode schizophrenia spectrum psychoses. *Psychol Med* 46, 3231-3240.
 48. Lange I, Goossens L, Leibold N, Vervliet B, Sunaert S, Peeters R, van Amelsvoort T, Schruers K (2016) Brain and Behavior Changes following Exposure Therapy Predict Outcome at 8-Year Follow-Up. *Psychother Psychosom* 85, 238-240.
 49. Meyer T, Quaedflieg CW, Weijland K, Schruers K, Merckelbach H, Smeets T (2017) Frontal EEG asymmetry during symptom provocation predicts subjective responses to intrusions in survivors with and without PTSD. *Psychophysiology*.
 50. Mondelli V, Ciufolini S, Belvederi Murri M, Bonaccorso S, Di Forti M, Giordano A, Marques TR, Zunszain PA, Morgan C, Murray RM, Pariante CM, Dazzan P (2015) Cortisol and Inflammatory Biomarkers Predict Poor Treatment Response in First Episode Psychosis. *Schizophr Bull* 41, 1162-1170.
 51. Nascimento ER, Maia AC, Soares-Filho G, Nardi AE, Cardoso A (2015) Predictors of suicidal ideation in coronary artery disease. *Compr Psychiatry* 57, 16-20.
 52. Nemeroff CB (2014) Psychopharmacology and the future of personalized treatment. *Depress Anxiety* 31, 906-908
 53. Orsolini L, Sarchione F, Vellante F, Fornaro M, Matarazzo I, Martinotti G, Valchera A, Di Nicola M, Carano A, Di Giannantonio M, Perna G, Olivieri L, De Berardis D. Protein-C reactive as biomarker predictor of schizophrenia phases of illness? A systematic review. *Current Neuropharmacology*, 16(5):583-606, 2018

54. O'Connell CP, Goldstein-Piekarski AN, Nemeroff CB, Schatzberg AF, Debattista C, Carrillo-Roa T, Binder EB, Dunlop BW, Craighead WE, Mayberg HS, Williams LM. Antidepressant Outcomes Predicted by Genetic Variation in Corticotropin-Releasing Hormone Binding Protein. *Am J Psychiatry*. 2018 Mar 1;175(3):251-261.
55. Perna G, Grassi M, Caldirola D, Nemeroff CB (2017) The revolution of personalized psychiatry: will technology make it happen sooner? *Psychol Med*. 2017 Oct 2:1-9
56. Perna G, Alciati A, Sangiorgio E, Caldirola D, Nemeroff CB. Personalized Clinical Approaches to Anxiety Disorders. *Advances in Experimental Medicine and Biology*, 1191: 489-521, 2020
57. Perna G, Alciati A, Daccò S, Grassi M, Caldirola D. Personalized psychiatry and depression: The role of sociodemographic and clinical variables. *Psychiatry Investigation*, in press
58. Perugi G, De Rossi P, Fagiolini A, Girardi P, Maina G, Sani G, Serretti A. Personalized and precision medicine as informants for treatment management of bipolar disorder. *Int Clin Psychopharmacol*. 2019 Jul;34(4):189-205.
59. Phillips ML, Chase HW, Sheline YI, Etkin A, Almeida JR, Deckersbach T, Trivedi MH (2015) Identifying predictors, moderators, and mediators of antidepressant response in major depressive disorder: neuroimaging approaches. *Am J Psychiatry* 172, 124-138.
60. Prendes-Alvarez S, Nemeroff CB. Personalized medicine: Prediction of disease vulnerability in mood disorders. *Neurosci Lett*. 2018 Mar 16;669:10-13
61. Ray A, Tennakoon L, Keller J, Sarginson JE, Ryan HS, Murphy GM, Lazzeroni LC, Trivedi MH, Kocsis JH, DeBattista C, Schatzberg AF (2015) ABCB1 (MDR1) predicts remission on P-gp substrates in chronic depression. *Pharmacogenomics J* 15, 332-339.
62. Reis Marques T, Taylor H, Chaddock C, Dell'acqua F, Handley R, Reinders AA, Mondelli V, Bonaccorso S, Diforti M, Simmons A, David AS, Murray RM, Pariante CM, Kapur S, Dazzan P (2014) White matter integrity as a predictor of response to treatment in first episode psychosis. *Brain* 137, 172-182.
63. Rocca P, Galderisi S, Rossi A, Bertolino A, Rucci P, Gibertoni D, Montemagni C, Sigaudò M, Mucci A, Bucci P, Acciavatti T, Aguglia E, Amore M, Bellomo A, De Ronchi D, Dell'Osso L, Di Fabio F, Girardi P, Goracci A, Marchesi C, Monteleone P, Niolu C, Pinna F, Roncone R, Sacchetti E, Santonastaso P, Zeppegno P, Maj M (2016) Social cognition in people with schizophrenia: a cluster-analytic approach. *Psychol Med* 46, 2717-2729.
64. Bogdan R, Salmeron BJ, Carey CE, Agrawal A, Calhoun VD, Garavan H, Hariri AR, Heinz A, Hill MN, Holmes A, Kalin NH, Goldman D. Imaging Genetics and Genomics in Psychiatry: A Critical Review of Progress and Potential (2017). *Biol Psychiatry*. Aug 1;82(3):165-175.
65. Sarginson JE, Killen JD, Lazzeroni LC, Fortmann SP, Ryan HS, Ameli N, Schatzberg AF, Murphy GM, Jr. (2015) Response to Transdermal Selegiline Smoking Cessation Therapy and Markers in the 15q24 Chromosomal Region. *Nicotine Tob Res* 17, 1126-1133.
66. Saveanu R, Etkin A, Duchemin AM, Goldstein-Piekarski A, Gyurak A, Debattista C, Schatzberg AF, Sood S, Day CV, Palmer DM, Rekshan WR, Gordon E, Rush AJ, Williams LM (2015) The international Study to Predict Optimized Treatment in Depression (iSPOT-D): outcomes from the acute phase of antidepressant treatment. *J Psychiatr Res* 61, 1-12.
67. Schumann G, Binder EB, Holte A, de Kloet ER, Oedegaard KJ, Robbins TW, Walker-Tilley TR, Bitter I, Brown VJ, Buitelaar J, Ciccocioppo R, Cools R, Escera C, Fleischhacker W, Flor H, Frith CD, Heinz A, Johnsen E, Kirschbaum C, Klingberg T, Lesch KP, Lewis S, Maier W, Mann K, Martinot JL, Meyer-Lindenberg A, Muller CP, Muller WE, Nutt DJ, Persico A, Perugi G, Pessiglione M,

- Preuss UW, Roiser JP, Rossini PM, Rybakowski JK, Sandi C, Stephan KE, Undurraga J, Vieta E, van der Wee N, Wykes T, Haro JM, Wittchen HU (2014) Stratified medicine for mental disorders. *Eur Neuropsychopharmacol* 24, 5-50.
68. Shackman AJ, Fox AS, Oler JA, Shelton SE, Oakes TR, Davidson RJ, Kalin NH (2017) Heightened extended amygdala metabolism following threat characterizes the early phenotypic risk to develop anxiety-related psychopathology. *Mol Psychiatry* 22, 724-732.
69. Smoller JW (2017) The use of electronic health records for psychiatric phenotyping and genomics. *Am J Med Genet B Neuropsychiatr Genet*.
70. Stevens JS, Kim YJ, Galatzer-Levy IR, Reddy R, Ely TD, Nemeroff CB, Hudak LA, Jovanovic T, Rothbaum BO, Ressler KJ (2017) Amygdala Reactivity and Anterior Cingulate Habituation Predict Posttraumatic Stress Disorder Symptom Maintenance After Acute Civilian Trauma. *Biol Psychiatry* 81, 1023-1029.
71. Thompson DG, Kesler SR, Sudheimer K, Mehta KM, Thompson LW, Marquett RM, Holland JM, Reiser R, Rasgon N, Schatzberg A, O'Hara RM (2015) fMRI activation during executive function predicts response to cognitive behavioral therapy in older, depressed adults. *Am J Geriatr Psychiatry* 23, 13-22.
72. Vassos E, Di Forti M, Coleman J, Iyegbe C, Prata D, Euesden J, O'Reilly P, Curtis C, Kolliakou A, Patel H, Newhouse S, Traylor M, Ajnakina O, Mondelli V, Marques TR, Gardner-Sood P, Aitchison KJ, Powell J, Atakan Z, Greenwood KE, Smith S, Ismail K, Pariante C, Gaughran F, Dazzan P, Markus HS, David AS, Lewis CM, Murray RM, Breen G (2017) An Examination of Polygenic Score Risk Prediction in Individuals With First-Episode Psychosis. *Biol Psychiatry* 81, 470-477.
73. Veras AB, Peixoto C, Messinger JW, Getz M, Goetz R, Buckley P, Chao MV, Nardi AE, Malaspina D, Kranz TM. Early trauma and clinical features of schizophrenia cases influenced by the BDNF Val66Met allele. *Schizophr Res*. 2017 Jul 12
74. Walden LM, Brandl EJ, Changasi A, Sturgess JE, Soibel A, Notario JF, Cheema S, Braganza N, Marshe VS, Freeman N, Tiwari AK, Kennedy JL, Muller DJ (2015) Physicians' opinions following pharmacogenetic testing for psychotropic medication. *Psychiatry Res* 229, 913-918.
75. Williams LM, Debattista C, Duchemin AM, Schatzberg AF, Nemeroff CB (2016) Childhood trauma predicts antidepressant response in adults with major depression: data from the randomized international study to predict optimized treatment for depression. *Transl Psychiatry* 6, e799.
76. Williams LM (2017) Getting Personalized: Brain Scan Biomarkers for Guiding Depression Interventions. *Am J Psychiatry*. 2017 Jun 1;174(6):503-505.
77. Wu W, Zhang Y, Jiang J. *et al*. An electroencephalographic signature predicts antidepressant response in major depression. *Nat Biotechnol*. 2020. 38, 439-447.
78. Wu W, Zhang Y, Jiang J, Lucas MV, Fonzo GA, Rolle CE, Cooper C, Chin-Fatt C, Krepel N, Cornelissen CA, Wright R, Toll RT, Trivedi HM, Monuszko K, Caudle TL, Sarhadi K, Jha MK, Trombello JM, Deckersbach T, Adams P, McGrath PJ, Weissman MM, Fava M, Pizzagalli DA, Arns M, Trivedi MH, Etkin A. An electroencephalographic signature predicts antidepressant response in major depression. *Nat Biotechnol*. 2020 Apr;38(4):439-447.
79. Zai G, Brandl EJ, Muller DJ, Richter MA, Kennedy JL (2014) Pharmacogenetics of antidepressant treatment in obsessive-compulsive disorder: an update and implications for clinicians. *Pharmacogenomics* 15, 1147-1157.
80. Zugliani MM, Freire RC, Perna G, Crippa JA, Nardi AE (2015) Laboratory, clinical and therapeutic features of respiratory panic disorder subtype. *CNS Neurol Disord Drug Targets* 14, 627-635.

List of lectures/ educational programmes done by members of the Section

Expo 2015 congress "The future of mental health: feeding, empowering, treating". 19/20 June 2015, Milan, Italy. The congress was endorsed by the WPA and chaired by the Section chair Giampaolo Perna. The members Charles Nemeroff, Koen Schruers, and Daniela Caldirola made personalized psychiatry related presentations at the congress.

Section chair, Giampaolo Perna, delivered academic lessons on personalized medicine in psychiatry for the faculty of psychology at Vita Salute San Raffaele University, Master in Neuropsychology and Clinical Neurosciences for Rome LUMSA University, School of Psychotherapy ASIPSE.

Section co-chair, Charles Nemeroff, gave several lectures and grand rounds. He organized the 46th Annual ISPNE conference (2016) fully focused on personalized medicine in psychiatry.

Alan Schatzberg, Elisabeth Binder, Carmine Pariante gave several lectures and grand rounds on personalized psychiatry. They all were speakers for the 29th CINP World Congress of Neuropsychopharmacology for the symposium "Personalized Medicine in mood and anxiety disorders" (2014).

Amit Etkin was recently recipient of the Chairman's Award for Advancing Science, Stanford University and gave several lectures in international congress, on personalized medicine in psychiatry. Amit Etkin and Alan Schatzberg were speakers for the congress "Personalized Medicine World Conference Mountain View – The Arrival of Actionable Personalized Medicine: The age of Guided Disease Management" (2014).

Elisabeth Binder has given over 70 invited presentations at various universities and scientific conference. She is the co-president of the WASAD congress of the World Association for Stress Related and Anxiety Disorders. She was, recently, speakers for the symposium "Epigenetics prevention and early risk detection" for International Conference of families with parental mental health challenges. In December 2016 he won the Eva King-Killam Research Award for her contribution to neuropsychopharmacology.

Bernard Lerer was recipient of the 2014 inaugural Werner Kalow Responsible Innovation Prize in Global Omics and Personalized Medicine (Pacific Rim Association for Clinical Pharmacogenetics). The prize goes to cultivate transgenerational capacity and recognize of the practice of responsible innovation as an important criterion of 21st century omics science and personalized medicine.

Carmine Pariante gave several lectures on personalized psychiatry. He has given the oral presentation "Using inflammatory biomarkers in the personalized antidepressant treatment" for the 5th Biennial Cambridge and Bedford International Conference of Mental Health (2015). He was awarded during a special plenary lecture of the Anna-Monika Prize (2015). This prize is awarded biannually to clinical scientists who have made outstanding contributions to the understanding of neurobiology of depression and its personalized treatment.

Paolo Girardi is a co-founder of the Italian Association "Lotta allo Stigma" (A.I.L.A.S.). He is member of several international scientific associations, including SIP, SIPS and AEP. His clinical and research activity is addressed to the investigation of personalized treatments in patients

with resistant depression. He is chief of the Personalized Mental Health Service of Sant'Andrea Hospital (Rome).

Ned Kalin was awarded during a special plenary lecture of the Anna-Monika Prize (2015). This prize is awarded biannually to clinical scientists who have made outstanding contributions to the understanding of the neurobiological underpinnings of depression and its personalized treatment. From 2019 he is the Editor in Chief of the American Journal of Psychiatry.

Philip Harvey won several prizes, in particular the Alexander Gralnick Schizophrenia Research award of the American Psychiatric Foundation (2014), and the John Blair Barnwell award (2014), the prize for clinic research in all scientific disciplines at the US Department of Veterans affairs.

Manuel Martin Carrasco gave several lectures at international congresses on the topic of personalized medicine and psychiatry. He is president of the Spanish Society of Psychogeriatrics, secretary of Spanish Society of Psychiatry and coordinator of Guida Esencial de Psicogeriatria. He is member of European Psychiatric Association Council of NPAs from 2015.

Rafael C. Freire is involved in a seminal research project about personalized pharmacological treatment for panic disorder.

Antonio Egidio Nardi addresses his research activity to understand the impact of some variables (tobacco and caffeine consumption) in panic disorders and some predictive variables of treatment outcomes in generalized anxiety disorders, in order to improve and personalize the efficacy of treatment in anxiety disorders. He is the Co-Editor in Chief of the Brazilian Journal of Psychiatry.

Rene Hurlmann addresses his research to investigate if the oxytocin system could be involved in pathophysiology, prevention and personalized treatment approaches of social anxiety disorder.

Keith Kendrick, helped by technology support, addresses his research to understand how different brain systems are organized to control a variety of social and emotional behaviours, as basis of personalized treatment.

Joseph Zohar addresses his research to understand the efficacy of pharmacological treatment in psychosis and obsessive-compulsive disorders in order to personalize treatment.