ACS Chemical Neuroscience

Editorial

pubs.acs.org/chemneuro

Celebrating Serotonin

In July, the silver anniversary of the Serotonin Club was celebrated at its biennial scientific meeting in Montpellier, France (Figure 1). Evolutionarily speaking, serotonin is an ancient signaling molecule found in diverse organisms ranging from invertebrates, such as sea slugs (*Aplysia*) and worms (*C. elegans*), to humans. Serotonin was discovered in 1937 by Vialli and Erspamer in enterochromaffin cells of the gut, where >90% of the body's serotonin is synthesized.[1] Rapport and Page crystallized and coined the term serotonin in 1948, confirming the smooth muscle contractile effects of "serum tonic".[2] Sadly, this was the first Serotonin Club Meeting without Dr. Rapport, who passed away earlier this year. Although it has key physiological functions throughout the body, serotonin is best known for its role as a central nervous system neurotransmitter and its involvement in the regulation of mood, anxiety, appetite, and sleep.[3]

Although studies have been ongoing for over 60 years, findings presented at the Serotonin Club Montpellier meeting provide striking evidence of how novel discoveries regarding serotonin and its mechanisms of intercellular signaling continue to be made. More broadly, these advances fuel a fundamentally new understanding of receptor function and avenues for drug discovery.

In January 2013, *ACS Chemical Neuroscience* will publish a special issue to commemorate the 25th anniversary of the Serotonin Club. This issue will be made available free of charge throughout 2013. Three papers have already been accepted for this issue, and two are available online.[4,5] Many more are in preparation and review. David Nichols and colleagues have published a research article for the special issue on the design and characterization of a rigid analogue series with 5-HT2A agonist activity that enabled identification of an optimized pharmacophore and >100× selectivity for activity at 5-HT2A vs 5-HT2C receptors.[4] Also on the topic of 5HT2A/5HT2C receptors and recently featured in *Chemical & Engineering News*,[6] Kathryn Cunningham, Gerald Moeller, and co-workers reported on the synergistic effects of subthreshold doses of a 5-HT2A agonist combined with a 5-HT2C antagonist to block

Figure 1. Serotonin Club Meeting participants enjoy a coffee break under the Mediterranean sun outside the Theatrum Anatomicum lecture hall at the Faculty of Medicine, University of Montpellier. Local organizers were Professors Joël Bockaert, Philippe Marin, and Michel Hamon. Photo credit: Stefanie C. Altieri.

Published: September 19, 2012

dx.doi.org/10.1021/cn300137q | *ACS Chem. Neurosci.* 2012, 3, 644–645

cocaine-associated impulsivity and cue reactivity in rats.[5] This paper was preceded by two others in *ACS Chemical Neuroscience* by Cunningham and coauthors on 5-HT2C allosteric modulators[7] and drugs designed to inhibit 5-HT2A receptor dimers.[8] The special issue will also feature a Viewpoint by Francesc Artigas on serotonin and the future of antidepressants.

In August, *ACS Chemical Neuroscience* celebrated its third anniversary for receiving manuscripts for peer-review. This summer also marks another milestone for *ACS Chemical Neuroscience* with an opening ISI Impact Factor of 3.676 arising from 2011 citations to papers published in 2010. We anticipate a significant rise when a full two years contribute to next year's impact factor. We are enthusiastic about this strong start for the journal, its authors, and readers. We also have high expectations for rapid growth in terms of the journal's impact on neuroscientists and chemists, as well as the scientific readership at large. It is in the spirit of celebrating anniversaries that we at *ACS Chemical Neuroscience* extend our warmest congratulations to the Serotonin Club for 25 years of bringing together scientists focused on all things serotonin!

Views expressed in this editorial are those of the author and not necessarily the views of the ACS.

Anne M. Andrews, Associate Editor

REFERENCES

(1) Vialli, M., and Erspamer, V. (1937) Ricerche sul secreto delle cellule enterocromaffini. IX Intorno alla natura chimica della sostanza specifica. *Boll. Soc. Med.-Chir. Pavia 51*, 1111−1116.

(2) Rapport, M. M., Green, A. A., and Page, I. H. (1948) Crystalline serotonin. *Science 108*, 329−330.

(3) Murphy, D. L., Fox, M. A., Timpano, K. R., Moya, P. R., Ren-Patterson, R., Andrews, A. M., Holmes, A., Lesch, K. P., and Wendland, J. R. (2008) How the serotonin story is being rewritten by new gene-based discoveries principally related to *SLC6A4*, the serotonin transporter gene, which functions to influence all cellular serotonin systems. *Neuropharmacology 55*, 932−960.

(4) Juncosa, J. I., Hansen, M., Bonner, L. A., Cueva, J. P., Maglathlin, R., McCorvy, J. D., Marona-Lewicka, D., Lill, M. A., and Nichols, D. E. (2013) Extensive rigid analogue design maps the binding conformation of potent *N*-benzylphenethylamine 5-HT2A serotonin receptor agonist ligands. *ACS Chem. Neurosci.*, DOI: 10.1021/cn3000668.

(5) Cunningham, K. A., Anastasio, N. C., Fox, R. G., Stutz, S. J., Bubar, M. J., Swinford, S. E., Watson, C. S., Gilbertson, S. R., Rice, K. C., Rosenzweig-Lipson, S., and Moeller, F. G. (2013) Synergism between a serotonin 5-HT2A receptor (5-HT2AR) antagonist and 5-HT2CR agonist suggests new pharmacotherapeutics for cocaine addiction. *ACS Chem. Neurosci.*, DOI: 10.1021/cn300072u.

(6) http://cen.acs.org/articles/90/web/2012/08/New-Strategy-Treating-Cocaine-Addiction.html.

(7) Ding, C., Bremer, N. M., Smith, T. D., Seitz, P. K., Anastasio, N. C., Cunningham, K. A., and Zhou, J. (2012) Exploration of synthetic approaches and pharmacological evaluation of PNU-69176E and its stereoisomer as 5-HT(2C) receptor allosteric modulators. *ACS Chem. Neurosci. 3*, 538−545.

(8) Shashack, M. J., Cunningham, K. A., Seitz, P. K., McGinnis, A., Smith, T., Watson, C. S., and Gilbertson, S. R. (2011) Synthesis and evaluation of dimeric derivatives of 5-HT(2A) receptor (5-HT(2A)R) antagonist M-100907. *ACS Chem. Neurosci. 2*, 640−644.