

CONCLUSIONS

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Although alcohol affects almost all tissues and organs in the body, the brain can be considered the most significant target of alcohol use and/or abuse. Thus, alcohol's effects on the brain are immediate and widespread, ranging from effects on normal physiology, metabolism, and gait to changes in emotions, cognition, and other functions. Moreover, alcohol's impact on brain functioning plays a central role in the additive and permanent adaptations, such as the development of alcohol dependence with its features of tolerance or withdrawal upon discontinuation of alcohol use. Therefore, it is crucial to explore alcohol's effects on the brain at many levels, from cellular and molecular biology studies or isolated cells or cell components to functional imaging studies investigating brain function in the living organism.

To achieve this, an ever-increasing spectrum of techniques and methods has become available in recent years throughout the field of neuroscience. This Special Section has provided a representative sampling of the latest strategies being used by scientists to understand the neural mechanisms of the alcoholic brain. The results obtained

using these strategies will not only elucidate the mechanisms through which alcohol acts on specific brain cells or signaling systems but also will allow researchers from a variety of areas to design novel diagnostic approaches as well as develop new intervention strategies (e.g., pharmacotherapies) to treat alcohol dependence and thus reduce the heavy burden the disease places on the individual drinker, his or her family, and society as a whole. ■

ACKNOWLEDGEMENTS

Support for this Special Section has been provided by grants AA008401, AA05524, and AA002686 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA), National Institutes of Health (NIH) (to M. Rangaswamy and B. Porjesz); grants R21AA018039 (to C.D. Kroenke) and K08NS52147 (to B.J. Nagel); grant U01AA016653 from the Integrative Neuroscience Initiative on Alcoholism (INIA) (to M.J. MacCoss and C.C. Wu); grants AA010760, DA05228, and AA011114 from NIAAA and the National Institute on Drug Abuse (NIDA) and a VA Merit Award (to N.A.R. Walter, S.K. McWeeney, S.T. Peters, J.K. Belknap, R. Hitzemann, and K.J. Buck); grants R01AA014425 (to L. Lu), U01AA13499, and U01AA17590 (to R.W. Williams) from NIAAA; and grant P20 DA021131 from NIH/NIDA/National Institute of Mental Health (to R.W. Williams).