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Sommario/riassunto	This research topic aims to integrate scattered findings on sex differences in neuroscience into a broader theory of how the human brain is shaped by sex and sex hormones in order to cause the great variety of sex differences that are commonly observed. It can be assumed that these differences didn't occur arbitrarily, but that they rather determined and still determine evolutionary success of individuals and were shaped by the processes of natural and in particular sexual selection. Therefore, sex differences are not negligible and sex difference research cannot be discriminating against one sex or the other. In fact a better understanding of the underlying causes of sex differences has great advantages for both men and women and society as a whole, not only in terms of health care, but in every aspect of life. Gender equality can only work out if it is equally well understood for men and women what their individual resources and needs are. Therefore, it is of great importance to pave the way for identifying the underlying principles of structural and functional brain organization that cause men and women to act, think and feel differently. To this end it is of particular interest to identify possible similarities and interrelations between sex differences that did so far stand separately, in order to investigate whether they share a common source. To understand, where a specific sex difference comes from and whether or not it is caused by the same principle as other sex differences, it is necessary to explicitly link sex differences in behavior

to their neuronal correlates and vice versa link sex differences in brain structure and function to their behavioral outcomes. In particular a new understanding of male and female brain functioning may arise from findings on how sex hormones interact with various neurotransmitter systems. In the past few years several findings demonstrated that women's behavior is influenced by the sex hormone fluctuations they experience naturally during their menstrual cycle to the extent that sex differences may only be detectable in one cycle phase but not another. The study of menstrual cycle dependent effects gives important hints about which sex differences are activational and which are organizational. Additionally it only recently came to attention, that hormonal contraception may alter a women's mood, cognition and behavior as a consequence of changes in brain structure and function. The underlying mechanisms are so poorly understood that it is even hard to predict, whether hormonal contraception will mask or amplify sex differences in a given task. Since the oral hormonal contraceptive pill is meanwhile used by 100 million women worldwide and even by teenagers whose brains are not yet fully developed, the question of how the synthetic steroids contained in hormonal contraceptives act on the brain is to be studied hand in hand with naturally occurring sex differences. This topic summarizes the current state of the art in sex difference research and gives new perspectives in terms of hypothesis generation an methodology. Both are necessary to gain a complete picture of what it is that makes a brain male or female and move towards a neuroscience of sex differences.