

THE GRADUATE COLLEGE OF THE
UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER

ANNOUNCES THE FINAL EXAMINATION OF

Jared Evatt

FOR THE DEFENSE OF THE DOCTOR OF PHILOSOPHY DEGREE
GRADUATE COLLEGE
Department of Cell Biology

Monday, October 26, 2020 | 1:00 pm
Zoom Meeting ID: 658 261 8635 | Passcode: 06512381



A Secondary Connection: How Achiasmate Chromosomes Can Faithfully Segregate in Meiosis

COMMITTEE IN CHARGE: Dean Dawson, PhD; Gary J. Gorbsky, PhD; Christopher L. Sansam, PhD; Eric W. Howard, PhD; William H. Hildebrand, PhD.

ABSTRACT: Proper chromosome segregation in meiosis I relies on the formation of connections between homologous chromosomes. Crossing over, in conjunction with distal arm cohesion, creates linkages between homologs which allow the partner chromosomes to attach to the meiosis I spindle as a single unit, satisfy the tension-dependent spindle checkpoint, and properly disjoin in anaphase I. Homologous chromosomes also briefly pair at their centromeres during meiotic prophase. This pairing of centromeres is mediated by components of the synaptonemal complex and is dissolved before prometaphase but is known to promote the subsequent proper segregation in anaphase of partners that fail to form crossovers. Therefore, centromere pairing could be an early step in a process that enables partner chromosomes to biorient on the meiosis I spindle even if they are lacking a crossover that provide this function. Here, we tested this hypothesis and found that pairing of homologous centromeres in meiotic prophase allows the formation of inter-homolog connections that ensure disjunction of the partners at anaphase I.