Maurizio Gilioli **A. A. 2019/2020**

Tesi di laurea in Biotecnologie: Abstract

INVESTIGATING THE CONTRIBUTION OF (EIGHT) ACTOMYOSIN REGULATORS TO THE SOMATIC *VERSUS* THE GERMLINE IN *C. ELEGANS*

Actomyosin activation results in cell contraction, and it is regulated in its turn by several actomyosin-related proteins. An RNAi screen for 135 *Caenorhabditis elegans* genes performed in my host laboratory highlighted gene depletions resulting in a specific phenotype, *i.e.*, the Emo-phenotype. This phenotype is a consequence of defective ovulation or fertilization and it is associated with DNA endoreplication into oocytes and diffuse DNA inside the gonads.

The somatic and germ components of *C. elegans* gonads are well-characterized. Starting from the observation of an Emo phenotype, the scope of my project was to investigate the relevance of 8 actomyosin-related genes (*ani-1*, *lev-11, let-502, mlc-4, mlc-5, par-6, rho-1, unc-45*) in the somatic and germ components of the gonad. More in detail, my main focus was to establish if the observed Emo-phenotype derived from the dominant involvement of either the somatic or the germline component, since all the actomyosin genes under investigation are expressed in both the tissues in wild-type worms. This discrimination was possible thanks to *C. elegans* strains specifically sensitive to RNAi in the somatic (NL3511) or germline (DCL569) tissues. The relevance of each gene was assessed through brood size evaluation, performed by manual counting of laid eggs and L1 larvae under a dissection microscope and after application of the culture bleaching protocol. The results showed that RNAi of *ani-1*, *lev-11, mlc-4, mlc-5, par-6, rho-1, unc-45* significantly affected mostly the somatic part of the gonad, and only one, *let-502(RNAi)*, the germline. Interestingly, I found that the silencing of *ani-1*, acknowledged in the literature as fundamental for the germline, affected more deeply the somatic component of the gonad in my experiments. Further investigations on actomyosin will be able to get more insights into the details of its regulation and function mechanisms.

Keywords: *C. elegans*; Actomyosin; Emo-phenotype; RNAi; Gonads