&KDUDFWHUL]DWLRQ RI F\VWDWKLRQLQH O\DVH IURP T. gondii $ W

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Toxoplasma gondii is a protozoan parasite of medical and veterinary relevance responsible for toxoplasmosis in humans. As ther is currently no vaccine available for human, the identi cation of good target candidates for future drug development is urgently required. A recent proteomic analysis of partially sporulated oocysts of T. gondii showed that oocyctes have a greater capability of de novo amino acid biosynthesis, shedding light on a stage-speci c subset of proteins whose functional pro le is consistent with the oocyst need to resist various environmental stresses. Among these putative oocyst/sporozoite-speci c proteins, three enzyme involved in cysteine metabolism, i.e., cystathionine -synthase, cystathionine -lyase (CGL) and cysteine synthase, were found. However, despite the central metabolic roles of these enzymes, the functionality of none of them has so far been investigated. Herei CGL from T. gondii (TgCGL) has been cloned, expressed and physiochemically and enzymatically characterized. e puri ed TgCGL is a functional enzyme which splits L-cystathionine almost exclusively at the C S bond to yield L-cysteine. is nding likely implies that the reverse transsulfuration pathway is operative in the parasite. e enzyme displays only marginal reactivity toward L-cysteine, which is also a mixed-type inhibitor of TgCGL activity, therefore indicating a tight regulation of cysteine intracellular levels in the parasite. Structure-guided homology modelling revealed two striking amino acid di erences between human and parasite CGL active 1.

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