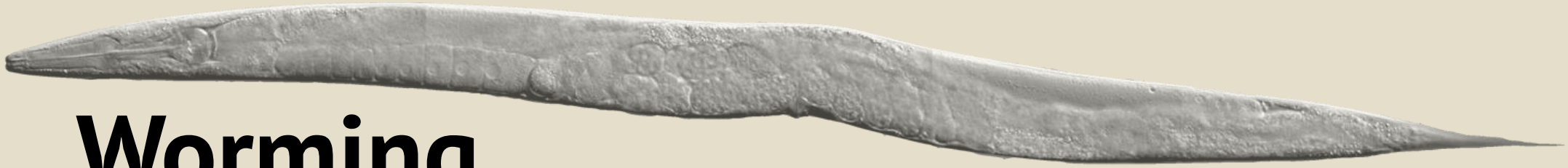

Worming

through

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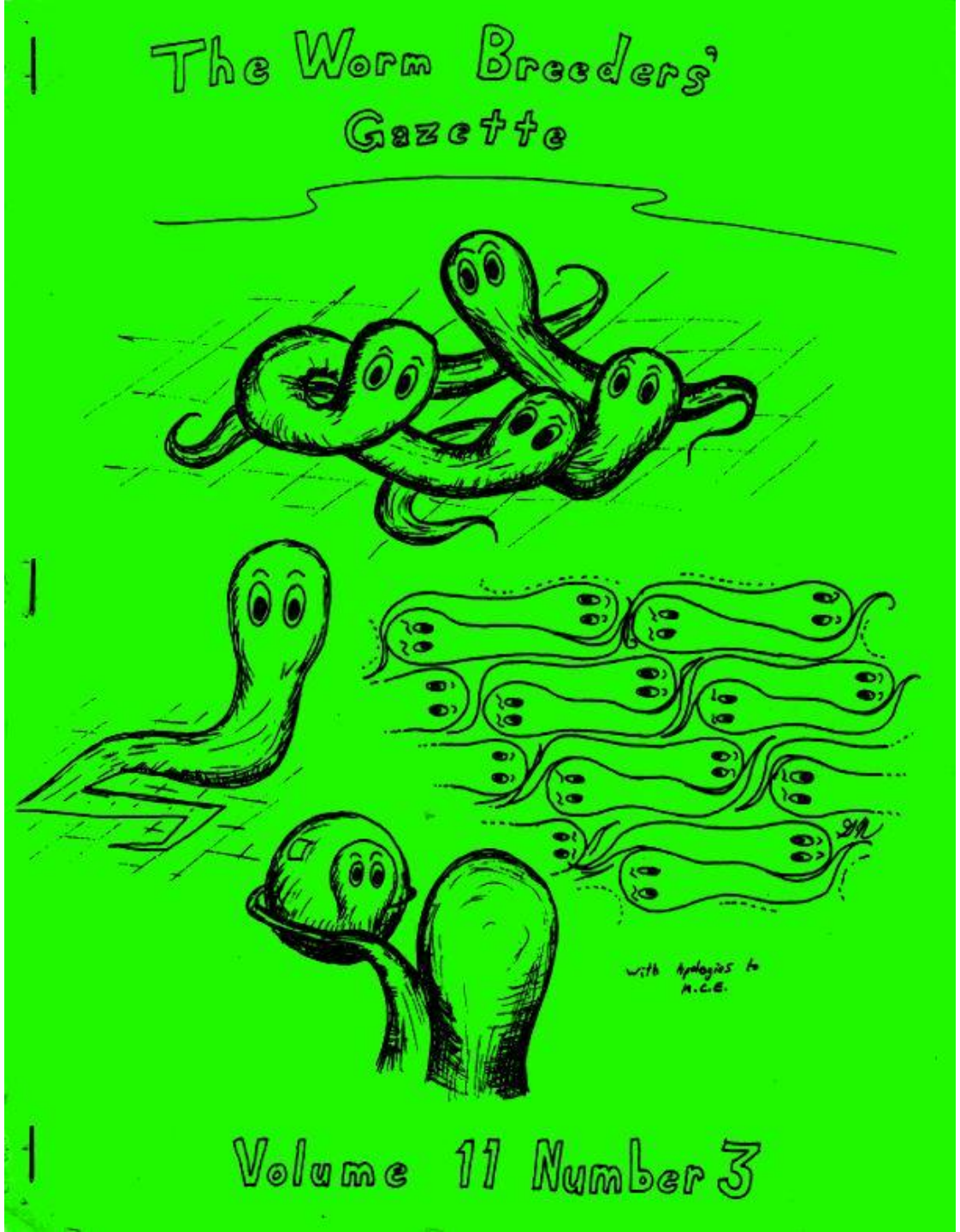
Foresterhill Open Research Meeting

29th November 2022



Worm Breeder's Gazette 11(3): 16

A Type IV Collage Gene in Ascaris suum

Jonathan Pettitt and Barry Kingston

We have begun an analysis of the organization, structure and expression of collagen genes in Ascaris suum. During the course of this work we have isolated a collagen containing clone (ucol-11) from a lambda genomic library of Ascaris DNA. Specific fragments obtained from this clone during sequence analysis were found to hybridize to a transcript of about 5.5 kb in several Northern blots of RNA derived from different Ascaris adult tissues and developmental stages. In order to further characterize the nature of the gene contained in the genomic clone, corresponding cDNA clones were isolated and sequence analysis of these revealed that the ucol-11 clone contained a type IV collagen gene. A comparison of the NC-1 domain amino acid sequence with that of type IV collagen genes in other organisms showed that the gene specifically encoded the alpha 2 chain of Ascaris type IV collagen.

Sequence analysis of the genomic clone revealed that although the gene constituted most of the insert, the clone did not contain the entire gene. We have found that the reason for this is in part a consequence of the presence of large introns in the gene. Such comparatively large introns have also been reported for two putative Ascaris cuticular collagen genes (Kingston et al), suggesting that Ascaris genes may generally have larger introns than those of C. elegans. However, the intron/exon borders of the Ascaris genes are very similar to the C. elegans consensus sequences for donor and acceptor splice sites.

So far we have determined the sequence of about 9 kb of the genomic clone and have identified 15 exons which range in size from approximately 150 to 450 bp. These are separated by introns whose sizes range from about 200 to 800 bp. Since the clone does not contain the entire sequence there are likely to be more exons in the complete gene. This organization is in contrast to the nine exons of the Drosophila alpha 1 chain gene, which are separated by relatively short introns, and the invertebrate genes, which although they have many exons, have much larger introns.

We are currently using a cDNA clone as a probe to study the expression of the type IV collagen gene during embryogenesis, using runoff transcription in nuclei isolated from specific cell stages in Ascaris embryos. There have been few studies of the synthesis of specific macromolecules in nematode embryos and we anticipate that because of the similarity between the embryonic lineages of different nematodes, the information gained from such studies on Ascaris embryos may also be applicable to C. elegans.

California Institute of Technology

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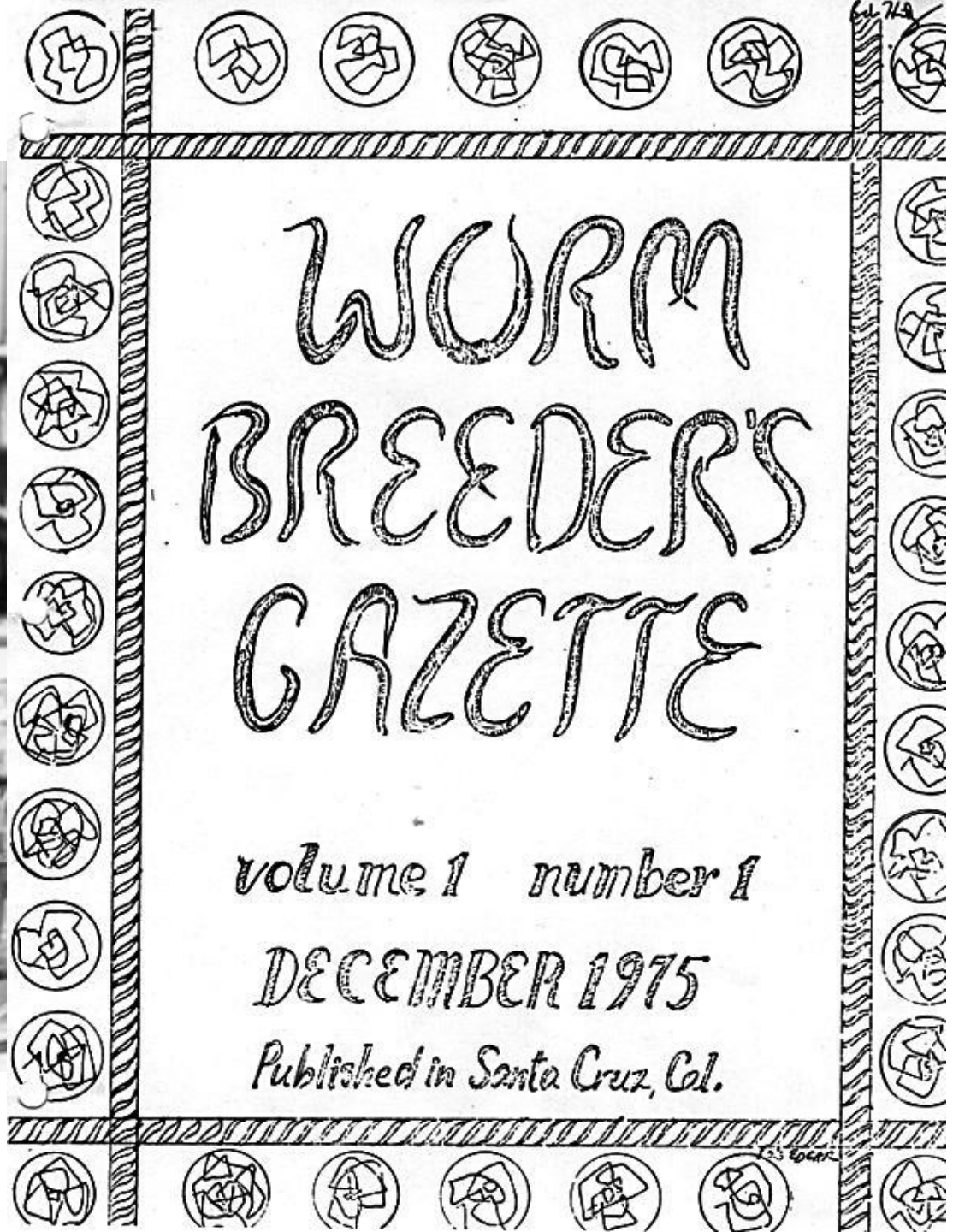

http://wbg.wormbook.org/about/archives/

Deep evolutionary origin of nematode SL2 *trans*-splicing revealed by genome-wide analysis of the *Trichinella spiralis* transcriptome

Marius Wenzel, Christopher Johnston, Berndt Müller, Jonathan Pettitt, Bernadette Connolly

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Aims and Scope

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