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**THE ORDER HADROMERIDA
(PORIFERA:DEMOSPONGIAE),
TAXONOMY AND RELATIONSHIPS OF THE
MAJOR FAMILIES**

by

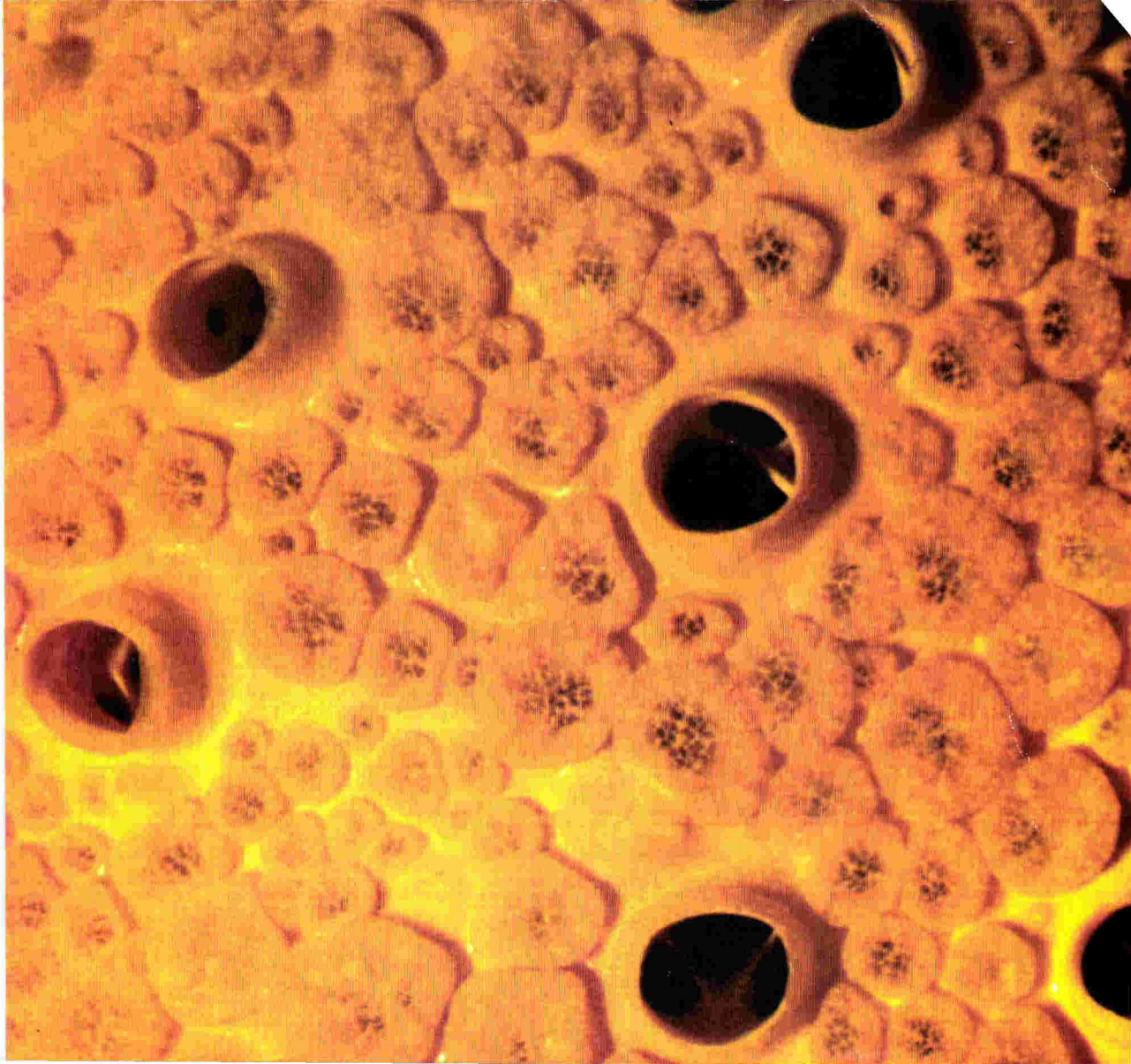
Michelle Kelly-Borges

**A thesis submitted in partial fulfilment of the
requirements for the Degree of
Doctor of Philosophy in Zoology
at the University of Auckland,
Auckland,
New Zealand**

University of Auckland, 1991

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THE ORDER HADROMERIDA (PORIFERA:DEMOSPONGIAE), TAXONOMY AND RELATIONSHIPS OF THE MAJOR FAMILIES

FRONTISPIECE: *CLIONA CELATA* (FAMILY CLIONIDAE)
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ABSTRACT

Despite advances of recent years no stable higher order classification of the Porifera has yet emerged. To address this problem, relationships at various taxonomic levels within the Order Hadromerida have been evaluated. Descriptions of new species of *Tethya*, *Aaptos* and *Polymastia* from northern New Zealand are given in conjunction with a review and redefinition of specific diagnostic characters for these genera. A range of species, genera and families within the Hadromerida have been subjected to 18S rRNA sequencing. Using morphological and molecular sequence data together in phylogenetic analysis, the existing familial groups of the Hadromerida are confirmed and some rearrangement of genera is indicated following sequence alignment and comparison. These data serve as a baseline for molecular approaches to resolving relationships between other sponge groups.

ABBREVIATIONS

B-MCE	B-mercaptoethanol
DEPC	diethylpyrocarbonate
DNase	deoxyribonuclease
DNA	deoxyribonucleic acid
A	adenosine
T	thymine
G	guanine
C	cytosine
cDNA	complementary DNA
CTAB	cetyltrimethylammoniumbromide
dA/T/G/C/TP	deoxy A/T/G/C/ triphosphate
ddA/T/G/C/TP	dideoxy A/T/G/C/ triphosphate
DTT	dithiothreitol
EDTA	ethylenediamine-tetra-acetic acid
MOPS	3-(<i>N</i> -morpholino)propane-sulphonic acid
PAUP	phylogenetic analysis using parsimony
rRNA	ribosomal ribonucleic acid
Sarkosyl	<i>N</i> -lauroylsarcosine
SDS	sodium dodecyl sulphate
<i>Taq</i>	<i>Thermus aquaticus</i> DNA (polymerase)
TBE	Tris/borate electrophoresis buffer
TE	Tris/EDTA (buffer)
TEMED	<i>N,N,N,N</i> '-tetramethylethylenediamine
Tris	tris(hydroxymethyl)aminomethane
UWGCG	University of Wisconsin Genetics Computer Group

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