## 6.1 Abbreviations

°C	Celcius
А	Ampere
ATP	Adenosine 5'-triphosphate
BSA	Bovine serume albumine
bp	base pairs
cDNA	complementary DNA
DEPC	Diethylene pyrocarbonate
DNA	Deoxyribonucleic acid
DNase	Deoxyribonuclease
DTT	Dithiothreitol
dNTP	Deoxy-nucleoside triphosphate
EDTA	Ethylendiamine-N,N,N',N'-tetraacetate
EGTA	Ethylene glycol-bis(beta-aminoethyl ether)-N,N,N',N'-tetraacetic acid
FADH	Reduced form of Flavin Adenine Dinucleotide
e.g.	exempli gratia
g	Gram
GTP	Guanosine 5'-triphosphate
HEPES	4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid
h	hour
i.e.	id est
kb	kilo bases
1	Litre
LB	Luria Bertani
LMP	low-melting point
М	Molar
m	Milli
μ	Micro
Min	Minute
NaCl	Sodium chloride
NADH	Reduced form of fNicotinamide Adenine Dinucleotide
No.	Number
PCR	Polymerase chain reaction
pН	Logarithm of the reciprocal of the hydrogen ion concentration
PMSF	Phenyl-methyl-sulphonyl-fluoride
RNA	Ribonucleic acid
RNase	Ribonuclease
rpm	revolutions per minute
RT	Reverse transcriptase
sec	second
SDS	Sodium dodecyl sulfate
Taq	Thermophilus aquaticus
Tris	Tris-(hydroxymethyl)-aminomethane
U	Unit
V	Volt

## 6.2 List of Figures

Figure 1. Proteins needed for mechanosensation in C.elegans		
Figure 2. MEC-4 /MEC-10 and other DEG/ENaC family proteins		
Figure 3. Different sensory fibers innervating skin and their functional characteristics		
Figure 4. Neurotrophic factors and their receptors		
Figure 5. Schematic diagram showing what is reported and the expected results		
Figure 6. Out line of all the experiments done		
Figure 7. The skin nerve preparation – Overview		
Figure 8. Scheme of the subtraction method		
Figure 9. Synthesis of probe Affymetrix® site	29	
Figure 10. Over view of Microarray experiments.		
Figure 11. Tactile acuitiy test set up grid based.		
Figure 12. Directional cloning of sythesized cDNA using random primers		
Figure 13. Overview of high-throughput whole-mount in situ hybridization		
Figure 14. Examples of transcripts with a restricted expression in WT DRGs	42	
Figure 15. In situ hybridization on WT and BDNF+/- DRG sections.	43	
Figure16. Percentage change of expression level of different transcripts (DRG)		
Figure17. Percentage change of the expression of different transcripts (Primary culture)	46	
Figure 18. Over view of experiments performed with NT34 mutants		
Figure 19. Stimulus response of slowly adapting (SA) neurons of NT34 mutant		
Figure 20. Stimulus response of NT34 mutant SAM neurons (phasic response)		
Figure 21. Sensitivity of rapidly adapting mechanoreceptors of NT34 mutant		
Figure 22. Sensitivity of D-hairs of NT34 mutant and controls		
Figure 23. Sensitivity of AM fibers of NT34 mutant and controls	51	
Figure 24. Electron microscopy analysis	53	
Figure 25. Selection of clones for enriched regulated transcripts	55	
Figure 26. Some of the clones isolated from the enriched library	56	
Figure 27. Examples of down regulated genes with restricted expression pattern	60	
Figure 28. Examples of up regulated genes with restricted expression pattern	61	
Figure 29. Percentage change of expression level of different transcripts from subtracted		
library	62	
Figure30. Percentage change of expression level of down regulated transcripts in	gene	
chipexperiments		
Figure 31. Behavior of control animal and NT34 mutant	63	

Figure 32. An overview of experiments performed using SPP1 mutants			
Figure 33. SPP1 expressing sub-poulation of cells after whole mount DRG insitu			
hybridization	67		
Figure 34 Stimulus response of AM fibers of SPP1 mutants are increased in comparison with			
SPP1 controls	68		
Figure 35. Stimulus response of SA fibers of SPP1 mutants shows an increasing trend in			
comparison with control mice and the reference control data	69		
Figure 36. Mechanical withdrawal threshold in SPP1 mutants and in control animals	70		
Figure 37. Thermal latency measured in SPP1 mutants and in control animals using a radiant			
heat source	70		
Figure 38. Distance traveled on the area with the surface cue normalized to the control area			
for SPP1 mutant and control animals	71		
Figure 39. Principle and methodology used for the amplification of phages that bind to			
ASIC3	72		
Figure 40. Insert size of clones in phages enriched by oocytes expressing ASIC3 and normal			
oocytes	73		
Figure 41. Scheme showing the overlap of different genes between different experiments 78			
Figure 42.Picture depicting the association of intracellular osteopontin with the CD44-ER	٨M		
complex to the cytoskeleton and extracellular osteopontin association with ECM	[ 80		
Figure 43.Expression of CD44 in DRG neurons cells	81		
Figure 44. Conserved domain structure of DEG/ENaC family			
Figure 45. Structure and function relationship of different regions in human SPARC			
Figure 46. Exon structure of CLIC5 gene			

## 6.3 List of tables

Table 1: Bacterial homologues (known crystal structure) of mammalian ion specific	
channels	2
Table 2: Mechanosensitive ion channel in bacteria their ion selectivity and distribution	2
Table 3: Interesting transcripts with a restricted expression pattern obtained after screening	ng the
library.	44
Table 4 Numbers and properties of of sensory afferents recorded	47
Table 5 Annotation of repeated clones with a restricted expression pattern.	
Table 6 List of genes that are found to be down regulated in NT34 mutant DRG in Affyr	netrix
experiment	59
Table 7 Genes found to be up regulated in the DRGs of NT34 mutant mice compared	to the
control animal DRGs.	61
Table 8. Numbers and properties of of sensory afferents recorded	
Table 9 Genes that were identified to be present only in the population of enriched phage	es that
were adsorbed by ASIC3 expressing oocytes	74
Table 10 Confirmed protein-protein interactions mediated by ankyrin repeats.	