
INDEX

14-3-3, 79

A

activation of PLC γ , 44, 68
adenylate cyclase, 129
adrenal chromaffin cells, 39, 62, 99-106, 108, 109-112, 120, 188, 196
adrenal gland, 8, 100-102, 104-105, 107, 121-123, 125, 151
adrenal hyperplasia, 196
adrenal medullary hyperplasia, 122, 128, 186
anatomic variations, 122
annual incidence, 119

B

B-Raf, 75-76
bipotential precursor, 102, 107, 111, 112

C

C-cell lines, 137, 138, 139, 140, 144, 149, 155, 156
CA77, 139, 140-145, 147-149, 151, 155
TT, 40, 139, 141, 144, 149, 152, 154-155, 175-176
c-fos, 81, 81-88, 83, 84, 187
c-mos, 130, 139, 196
c-raf, 75-76, 176
c-src, 52
calcitonin, 2, 120, 126, 138, 140, 144, 145, 147, 149, 152, 153, 154, 167, 169, 172, 174
gene alternative RNA processing, 168
gene-related peptide, 6, 168
provocative testing, 5
catecholamine, 6, 7, 8, 9, 10, 99, 102-104, 106, 108, 120, 125, 127, 129
cell culture studies, 129
CGRP, 6, 138, 140, 144-147, 149, 152-156, 167-172, 175
chromaffin cell proliferation, 125, 128-129, 131-132
CRE, 81, 83
CREB, 83
cytological changes, 122
cytoplasmic tyrosine kinase, 28, 50

D

32D cells, 51
denervation, 129
development of neoplasia, 184
dexamethasone, 108-109, 139, 145, 147-152
diagnosis, 3, 6-7, 11
dietary calcium, 128
differentiation, 61-63, 66, 70, 73, 79, 84-87, 99-100, 107-110, 137-140
diffuse hyperplasia, 121-122, 128, 131

E

elongin, 53, 187
epidermal growth factor (EGF)
receptor (EGFR), 42
eps15, 52
eps8, 52
erb2, 51
erbB2, 44, 51-52, 184

F

fibroblast growth factor (FGF), 62, 85, 87, 110-112, 129, 175
FMTC, 2, 6, 7, 11-12, 15, 21, 23-26, 30, 32-33, 196

G

genetic screening, 5, 7, 11
glucocorticoids, 105, 107-109, 111-112, 137, 147, 152, 175
Grb2, 47, 70, 74

H

H-ras, 46, 185
Harvey murine sarcoma virus, 149
Helix-loop-helix (HLH), 152
Hirschsprung, 3, 25, 40, 53
Hirschsprung's disease, 139
human chromaffin cells, 130, 132
hyperplasia, 4, 10, 31, 122-123, 125-126, 128, 131, 139, 147, 164-167, 184, 186, 196

I

immunoreactive PNMT, 131
immunoreactivity, 105-106, 127, 140-141

J

JAK kinases, 83
JNKs, 77

K

K-ras, 46, 185
Ki-67, 125

L

loss of heterozygosity (LOH), 185-186, 190

M

malignancy, 2, 9, 10, 127, 163
mammalian achaete-scute homologue-1, 106
MAP kinase, 73-75, 76-79, 81, 85, 86-87
MAP kinase cascade, 77

- MAP kinases, 70, 74, 75, 76, 77, 79, 81, 85, 86, 87
 MAPKAP kinase-2, 79
 MASH-1, 106, 154, 155
 medullary thyroid carcinoma (MTC), 1, 126, 138
 medullary weight, 122
 MEK, 74, 75, 76, 77, 79
 MEKK, 49, 77, 79
 MEN 2A, 2-4, 6-13, 15, 21, 23-27, 29-34, 38, 49, 119-121, 139, 165, 184, 186, 190, 195-196
 MEN 2B, 2, 4, 8-11, 13, 15, 25-26, 28-32, 38, 49-50, 119, 190, 195
 metastasis, 4
 MIB-1, 125
 mitogen activated protein kinase, 48
 mitotic counts, 129
 MKK3, 49, 79
 morphometric evaluation, 122
- N**
- N-myc, 173, 174, 176, 184, 197
 N-ras, 46, 185
 nerve growth factor (NGF), 51, 53, 62-64, 66-71, 73, 75-77, 79-81, 83-85, 87, 107-108, 110-112, 129, 137, 139, 141, 144, 146-147, 155, 173-174, 185
 neural crest, 2, 39-40, 53-54, 62, 99-103, 107-112, 131, 138-139, 146-147, 173, 196
 neuroblastoma, 40, 173-175
 neurofibromatosis gene, 130
 neurofibromatosis type 1 (NF1), 9, 130-131, 187-188, 190, 197
 knockout, 130
 NIH 3T3 cells, 25, 28-29, 40, 42, 44-45, 49, 51-52, 121
 nodular hyperplasia, 121, 126
 nomenclature, 77, 120
- O**
- octamer (Oct) transcription factor motifs, 152
 oxidative mechanisms, 129
- P**
- p120GAP, 42, 43, 48-49, 68, 70, 72, 188, 189
 p125Fak, 52
 p21ras, 54, 67, 70-77, 79, 85
 p38HOG1, 49, 77
 p53 gene, 186
 p62TCF, 81, 83
 p75, 63-64, 66-67, 87, 185
 paraganglia, 120, 121
 paragangliomas, 8, 120
 paxillin, 51, 52
 PC12, 25, 31, 47, 51, 53, 54, 62, 63, 66, 67, 70, 73, 74, 75, 76, 77, 79, 80, 81, 84, 85, 86, 87, 147, 189
 phenotypic heterogeneity, 196
 Phenylethanolamine-N-methyl-transferase, 103
 pheochromocytes, 99, 102, 105, 107, 109-110, 112
 pheochromocytoma in MEN 2, 7, 10, 14
 pheochromocytomas, 2, 8-10, 30, 119-121, 125, 127-128, 130-132, 184, 186-190, 196
 phosphatidylinositol 3-kinase, 44-45
 PI3-kinase, 68, 69
 PLC, 42, 43, 52
 PLC γ , 44
 pp70S6K, 68
 pp90rsk, 74-75, 79, 84
 primary sympathetic chains, 99, 101-108, 111
 protein kinase C, 68, 129
 PtdIns-3K, 44-52, 45
- R**
- raf, 48, 49, 54, 74-76, 79, 176, 195
 ras, 41, 44, 46-49, 53-54, 130, 137-139, 147-149, 152, 175-176, 184, 188-189, 195
 ras gene family, 46
 ras/raf/MAPK pathway, 195
 rat pheochromocytoma, 53, 128
 ratio of epine, 125
 Rb knockout, 130, 131
 receptor tyrosine kinase, 21, 26, 28, 30, 46-47, 50-51, 53, 64, 146
 repertoire, 37
 reserpine, 128-129, 144
 Ret, 2-7, 10-13, 21-22, 24-29, 26, 29, 31-33, 37-42, 44-54, 121, 130-132, 137, 139, 146-147, 149, 155, 165-167, 175-176, 184, 1186, 189-190, 195-197
 retinoblastoma gene, 130
 retinoic acid, 40, 147, 152-154
 RNA Processing, 168
 rodent models, 127, 132
 RTK, 37, 39, 42, 44, 45, 53
- S**
- SAPKs, 77
 SEK, 49, 77
 SH2 domains, 28, 42-47, 52, 67-69, 83
 SH3 domains, 68
 Shc, 47, 69-70
 shortest region of overlap (SRO), 185-186
 SIE, 83
 Signaling Pathways, 77
 signaling pathways, 21, 31, 32, 45, 46, 52, 63, 67, 85, 129, 130, 131, 147, 149, 173
 SNT, 87
 son of sevenless (Sos), 47, 70, 72, 74
 sporadic pheochromocytoma, 9, 10, 13, 30, 121
 src homology region 2 (SH2) domains, 42
 Src homology region 3 (SH3), 42
 SRF, 81, 83
 STATs, 83
 sympathoadrenal lineage, 62, 99, 107, 112, 197
 sympathoblasts, 101-106

T

transgenic mouse model system, 169
trk family, 167, 173-175, 197
trkA, 64, 66, 67, 68, 69, 70, 73, 84, 88, 141, 173,
174, 175
tumor progression, 144, 163, 164, 166, 167, 173, 175,
184
tyrosine hydroxylase, 103, 111
tyrosine kinase, 21, 26, 28-31, 37, 40-41, 43, 45-47,
49-53, 64, 66-68, 70, 83, 146-147, 149

V

v-src, 49, 70, 73
vgf, 53
VHL, 8-9, 10, 13, 187, 190, 197
vhl, 187
von Hippel-Lindau, 187