

# Subject Index

- ACE inhibitors 109, 110
- acetylcholine, coronary circulation 116, 117, 118
  - , dilator response 102
- actin 31
  - isoforms 31
- $\alpha$ -actinin 38, 39
  - isoforms 38, 39
- $\beta$ -actinin 39
- actomyosin ATPase *see* mATPase
- adenosine, coronary circulation 85, 86–89
  - deaminase 85, 88
  - , metabolism 87, 88
- adenylate cyclase 112
- ADH *see* AVP
- adrenaline, coronary tone 117 ff
- adrenergic mechanisms, myocardial ischemia 128, 129 ff, 134 ff
- $\alpha$ -adrenergic agonists 120
  - antagonists 120, 121, 123, 124, 127, 132
  - coronary constriction 125–128
  - – tone 108, 109
  - – vasomotion 120 ff
- $\beta$ -adrenergic blockers, coronary tone 108
  - coronary dilation 119
- $\alpha$ -adrenoceptor subtypes 120
- $\alpha$ -adrenoceptors, cardiac 118
  - , coronary vascular 122 ff
  - , endothelial 108, 121
  - , platelets 122
  - , presynaptic 120, 121
- $\beta$ -adrenoceptors, cardiac 118
- agonists, endothelial 94, 95, 100, 102
  - , vasoconstrictory, supersensitivity 101
- angina pectoris 136
- angiotensin converting enzyme 109
  - *see also* renin
- arachidonic acid 111
- atheromatosis 90, 99, 100, 102
- atherosclerosis 103, 104, 113, 122, 135
  - , endothelial receptors 101, 102
- ATP, cardiac 137
- autacoids, endothelial 90, 94
- autoregulation, coronary 82, 83 ff, 138
  - , EDRF 85
  - , metabolic regulation 85–90
- autoregulatory reserve, exhausted 138
- AVP, coronary circulation 107
  
- baroreceptor reflex 127
- biochemistry, single muscle fibers 10 ff
- blood flow, coronary 83 ff
  - , adrenergic regulation 119 ff
  - , autoregulation *see* autoregulation
  - , central regulation 127
  - , cholinergic effects 116, 117
  - , endothelium 90 ff
  - , exercise 127, 128, 129, 133
  - , humoral mediators 106 ff
  - , mechanical determinants 79–83
  - , metabolic requirements 82
  - , neuronal determinants 115 ff
  - , reflex regulation 127, 135
  - , regional myocardial 133
  - , subendocardial 125
- bradykinin antagonists 111
  - , coronary circulation 87, 106, 110, 111
  
- C-protein isoforms 40
- Ca<sup>2+</sup> antagonists 100, 122, 124
  - ATPase activity 30
  - , fast/slow muscles 42, 43
  - , coronary circulation 90
  - , intracellular and EDRF 94, 95, 96
  - , shear stress 96

- Ca<sup>2+</sup> (cont.)
- , relation to tension 33, 37
  - sequestering proteins 41, 42
  - sequestration, contractility 30, 42
  - transport ATPase 41, 42, 43, 44
  - calmodulin 38
  - calsequestrin 44, 45
  - cAMP 112
  - captopril 110
  - carbonic anhydrase, isozymes 13
    - - III 40, 41
  - catecholamines, coronary circulation 108, 109
  - charybdotoxin 96
  - chemoreceptor reflex 127
  - cholinergic coronary response, species differences 117
  - clonidine 120
  - cold pressor test 135
  - connectin 41
  - coronary arteries, epicardial 123
    - artery disease, endothelium 100, 102, 104
    - circulation, capacitance 79, 80
    - -, EDRF-induced dilation 95
    - -, flow- and shear-induced dilation 96, 97
    - -, interaction of different control mechanisms 138
    - -, neuronal regulation 115 ff
    - -, perfusion pressure 79, 80
    - -, species differences 117, 119, 124
    - collateral vessels 125
    - compression, extravascular 80-82
    - constriction,  $\alpha$ -adrenergic 119, 125 ff
    - -, poststenotic 131, 132, 133
    - constrictor tone, resting 126
    - dilation, pharmacological 80, 81
    - dilator reserve, recruitment 134
    - receptors, hormones 107
    - reserve 84
    - resistive vessels 123
    - spasm, adrenergic 134
    - -, causes of 105
    - stenosis 79, 81, 82
    - -, dynamic 135
    - vasoconstriction, transmurally nonuniform 125, 128, 132
    - vasomotor tone, noncholinergic, nonadrenergic changes 136, 137
  - cyclooxygenase 111, 112
    - inhibitors 112, 113, 114, 137
  - dystrophin 38
  - EDRF 85, 86, 90, 91, 92, 93
    - , hemoglobin 95, 99
    - , hypertension 102, 103
    - mediated dilator effects 95
    - /NO production 96
    - , norepinephrine release 98
    - release 107, 110, 112, 121
    - -, basal 97, 98
    - -, flow-dependent 97, 98
  - effort angina 136
  - eicosanoids, coronary 111
  - endothelial denudation 103, 104
  - endothelin release 104
    - , vasomotor tone 104, 105, 106
  - endothelium, cholinergic response 116
    - , coronary circulation 90 ff, 122
    - , flow sensor 98
    - , hormone receptors 107
    - , pathophysiology 138
    - , shear stress 122
  - energy metabolism, enzymes 10 ff
  - enzyme activity ratios, muscle fiber 11-15
    - patterns, muscle fibers 3, 4
  - exercise, coronary circulation 127, 128, 129, 133
  - F-actin 31
  - Felderstruktur 2
  - fibrillation, ventricular 81
  - Fibrillenstruktur 2
  - Frank-Starling effect, local 82
  - fructosebiphosphatase 11, 12
  - G-actin 31
  - gardenhose hypothesis 82, 83
  - glycerolphosphate dehydrogenase 4
    - oxidase 4
  - Gregg phenomenon 82, 83
  - hemoglobin, EDRF effects 107
  - hexokinase 11, 12
  - histochemical fiber typing, methods 3 ff
  - hormones, coronary vasomotor tone 106 ff
  - 6-hydroxydopamine 126
  - hypercapnia, coronary circulation 86
  - hypercholesterolemia 92, 99, 100, 101
  - hyperemia, reactive 85
  - hypertension, EDRF 103
  - hypoxia, coronary circulation 86

- idazoxan 120, 121, 132, 133  
 inositolphosphate pathway 113  
 ischemia, clinical myocardial,  
    $\alpha$ -adrenergic constriction 134–136  
 –, myocardial 90, 110, 114, 115, 119,  
   122, 138  
 –,  $\alpha$ -adrenergic mechanisms 129 ff,  
   134 ff  
 –,  $\beta$ -adrenergic mechanisms 128,  
   129  
 –, endothelin 105  
 –, exercise-induced 136  
 –, regional blood flow 129  
 –, subendocardial 82, 84  
 –, blood flow 134  
 isomyosins 24–31  
 –, development 26, 27, 29  
 –, embryonic 26, 29  
 –, hybrid types 26  
 –, neonatal 26, 29  
 isotropomyosins 32
- $K^+$ -channels, ATP-sensitive 89  
 –,  $Ca^{2+}$ -dependent  
 –, shear stress 96  
 $K^+$  ions, coronary dilation 89
- lactate dehydrogenase 11, 12, 13  
 leukotrienes, coronary circulation 111,  
   114, 115  
 light chain, alkali 16  
 –, phosphorylatable 16  
 lipoproteins, low density 99, 100  
 lipoxigenase pathway 111, 113, 114
- M band proteins 39, 40  
 malate dehydrogenase 11, 12  
 mATPase activity 4  
 – based classifications 5, 6  
 –, formaldehyde sensitivities 5, 6  
 –, responsiveness 5, 6, 7  
 – system, incompatibility to metabolic  
   system 8  
 mitochondrial content, muscle fibers 3  
 motor unit, biochemistry 15  
 motor units, FF 4  
 –, FR 4  
 –, S 4  
 muscle contraction 45  
 –, diversity, reviews 2  
 – fiber, additional fast subtype 8  
 – classification, metabolic enzyme-  
   based 3, 4  
 –, contractile properties 30  
 –, diversity, historical background 2  
 –, enzyme pattern, exercise 8  
 –, fatigability 4  
 –, histochemical classification, com-  
   patibility 7–10  
 –, mATPase, species differences 6  
 –, based classifications 4–7  
 –, myosin expression 23  
 –, based properties 11  
 –, single, enzyme activity profiles 11  
 –, microbiochemical analysis 10  
 –, myofibrillar proteins 15  
 –, type 2X 8, 9  
 –, type I/type II 3–9, 13, 18, 19,  
   20, 22, 28, 30, 31, 33, 37, 40, 42, 43,  
   44, 45  
 – types, FG 4, 13  
 ––, FOG 4, 13  
 ––, SO 4, 13  
 – fibers, development, heavy  
   chains 19  
 ––, light chains 16, 17  
 ––, metabolic difference 13, 14  
 –, extraocular, troponin 36  
 –, fast, delineation 5, 6  
 –, fast/slow,  $Ca^{2+}$ -ATPase 42, 43,  
   44, 45  
 ––,  $Ca^{2+}$ -sensitivity 33  
 ––, enzymes 11–14  
 ––, myosin 18, 19, 20, 22, 25, 27,  
   30, 31  
 ––, parvalbumin 45  
 ––, tropomyosin 32  
 ––, troponin 34, 35, 36  
 –, intrafusal 30  
 –, oxidative metabolic enzymes 11,  
   13  
 – proteins, various 39–41  
 –, single fiber dissection 11  
 myofibrillar proteins, function 41  
 –, giant, endosarcomeric 41  
 –, various 39–41  
 myoglobin content, muscle fibers 13  
 myomesin 39  
 myosin 15 ff  
 – composition, contractile proper-  
   ties 30, 31  
 –, fast 24, 25, 26, 27, 30  
 –, fast/slow transition, electrical  
   stimulation 24

- myosin (cont.)  
 - heavy chain, gene expression 19  
 --- heterodimers 26  
 --- isoforms 19, 20, 21, 22, 23, 25 ff  
 ---, neonatal 19, 22  
 -- chains 18 ff  
 ---, coexpression 29  
 ---, embryonic 19, 22, 23  
 ---, fast/slow 18, 19, 22, 25  
 ---, unique 19, 22  
 - light chain, embryonic 17  
 ---, isoforms 25 ff  
 -- chains 16-18  
 ---, fast/slow 17, 18  
 ---, gene expression 16-17  
 -, nonuniform expression 29, 30  
 -, relation to troponin 36  
 -, slow 25, 26, 27, 30  
 - types, contractility relation 3
- NADH tetrazolium reductase 4  
 nebulin 41  
 neurotransmitters, endothelium 94, 95, 100  
 nitric oxide radical 90, 91, 92, 95  
 --- formation,  $Ca^{2+}$  independent 97  
 ---, production and functions 92-94, 96  
 L-NMMA 93, 95  
 norepinephrine, coronary resistance 130, 131  
 -, circulation 108, 109  
 - release, neuronal 121  
 NPY, cardiac 136
- osmolarity, coronary circulation 89  
 oxidative metabolism, enzymes, muscle fibers 3, 4  
 oxygen extraction and consumption, myocardial 81, 82, 118, 119
- parvalbumin 45  
 peptide hormones, coronary circulation 107, 108, 136, 137  
 pH, coronary vasodilation 90  
 phenylephrine 120, 123, 125  
 phosphatidylinositol pathway 94, 104, 106  
 phosphofructokinase 11, 12  
 phospholamban 44  
 phospholipase C 94, 104, 106  
 platelet activation 91, 93, 112  
 -, catecholamines 122  
 -, 5-hydroxytryptamine 138
- prazosin 120, 121, 123, 124, 127  
 pressure, coronary perfusion 79, 80  
 -, zero-flow 79, 80  
 Prinzmetal angina 114  
 prostacyclin 111  
 - release 91  
 prostaglandin release 97, 107  
 - thromboxane system, coronary 111-115  
 protein kinase C 113
- rauwolscine 120, 123, 124  
 renin-angiotensin system, coronary 106, 109, 110
- S-adenosylhomocysteine 87, 88  
 sarcoplasmic reticulum, muscle fiber types 41  
 scaffold proteins 41  
 serotonin 106  
 - receptors, endothelial 101  
 shear stress 95, 96, 97, 105  
 skeletal muscle, *see* muscle 2  
 spectrin 38  
 steal mechanism 129  
 succinate dehydrogenase 4, 11, 13, 14  
 -, quantity in various fiber types 7, 8, 9  
 sympathectomy, regional 126  
 sympathetic *see also* adrenergic  
 - nerve stimulation, coronary stenosis 131  
 - system, cardiac 117, 118
- T tubule system 41, 42  
 thrombin 104  
 thromboxane 102, 104, 105, 111 ff  
 - synthetase inhibitors 114  
 thyroid hormone 24  
 titin 41  
 tropomyosin 31-33  
 - subunits 32  
 troponin complex 33-38  
 -, fast/slow 33, 34, 35, 36, 37  
 - isoforms 32  
 -, expression 34-38, 39  
 -, functional significance 36, 37
- vasospasm, coronary 135  
 VIP, cardiac
- waterfall mechanism 79, 81  
 yohimbine 120, 121, 127  
 Z disc 38, 39, 42