

INDEX

A

- Acid extraction14, 15, 23, 36
 Acid lability 88, 99
 ADP
 conversion of ADP to ATP 124, 125, 128, 129
 Affinity chromatography 134
 Altech 24
 Alternative splicing..... 157
 Ammonium phosphate8, 25–27, 32,
 35, 40, 43, 49, 52, 53, 67, 146, 155
 Anion exchange chromatography 22, 31
 ATP
 conversion of ATP to AMP 125, 127
 detection of ATP 125–126, 128–129
 ATP/ADP ratio..... 123–130
 ATP sulfurylase 126–130

B

- Bis-diphosphoinositol tetrakisphosphate /
 bis- $PPInsP_4/(PP)_2-InsP_4/InsP_8$2, 73, 105,
 113, 116, 119

C

- Calcium/ Ca^{2+} 13, 133–136, 138, 224, 228–229, 232
 Ca^{2+} oscillation..... 133, 134
 Cells
 adherent..... 11, 28, 30, 148–149,
 166, 186–187, 189–192
 beta cells 5, 14, 15, 30, 36, 37, 39
 Cos7 49, 56–58
 HEK293T 49, 53–56
 Hela.....11, 49, 56, 57, 82, 135, 140, 175
 HIT-T15125–127, 129
 insulin-secreting cell35, 38, 224
 murine erythroleukemia..... 144
 Rat1 49, 56–58
 suspension..... 11, 28, 30, 94,
 148–150, 158, 166, 186, 187, 190–192, 226
 Chromatography 21–25, 31, 34,
 40, 62, 68, 75, 108, 110, 113, 115, 116, 118, 134,
 145, 153–156, 170, 172, 180, 184, 203–217, 219

- CK1.....88, 90, 95–98
 CK2..... 88, 90–92, 95–100
 Confocal microscopy 223, 224, 231
 Cyclic inositol polyphosphate(s)..... 23
 Cytoplasmic Ca^{2+} concentration 224, 228, 229, 232

D

- Dialysis4, 28, 63, 66, 75, 79, 80, 197
 Diphosphoinositol pentakisphosphate/
 $PP-InsP_5/InsP_7$ 27, 32, 38, 47,
 48, 56, 58, 62, 67, 70, 73–84, 87–101, 104, 105,
 109, 110, 113–120, 123, 126, 129
 $InsP_7$ -phosphorylated proteins91, 93, 97–100
 Diphosphoinositol phosphate..... 50, 103–120
 Diphosphoinositol phosphate phosphatase
 (DIPP).....50, 51, 58
 Diphosphoinositol polyphosphate 87
 D-*myo*-inositol 3-phosphate synthase/
 inositol synthase.....5, 10, 11

E

- Electrospray ionization205, 207, 211
 Enantiomer(s).....2, 40, 105
 Enantiomeric.....6, 8, 15, 22, 24, 35, 36, 104
 Enzymatic reaction..... 130
 Equilibrium labeling..... 8–12, 22, 23, 28, 62, 181
 ERp44..... 134, 136
 Extraction
 from tissue 209, 210
 from yeast 82, 89, 93, 96, 209–210

F

- Firefly luciferase 124
 Fluorescence microscopy 224–226
 Fura Red 224, 225, 228, 229, 232
 FYVE domain 220

G

- GFP-Akt_{PH} 222, 229
 Glucose..... 5, 10–13, 30, 62,
 63, 65, 67, 125, 180, 186, 224, 228

- Glucose 6-phosphate 67
 Glycerolphosphoinositol 7
 G protein
 $G\alpha_q$ 19
 $G\alpha_{qL}$ 50, 52–57
 Green fluorescent protein (GFP) 6, 220–222,
 225, 228, 229, 232
 GroPInsP 78, 184
 GroPInsP₂ 7
 GST-fusion protein 89–90, 93–97, 99, 101, 139
- H**
- Higher inositol phosphate 28, 34, 39, 62
 High performance liquid chromatography (HPLC)
 HPLC analysis 23, 50, 53, 70, 78,
 107–108, 113–115, 117, 180, 187–188, 192–195
 HPLC columns 7, 8, 11, 24,
 25, 27, 29, 39, 67, 115, 206, 216
 HPLC gradients 31, 193
 HPLC pumps 193
- I**
- Inline/online detectors 25, 28, 33, 40, 52
 Inositol
 [¹⁴C] inositol 8
 de novo synthesis 5, 10
 [³H] inositol 7, 9, 11, 30, 34,
 35, 37, 38, 43, 77, 129, 181–186, 190, 191, 194
 myo-inositol 1, 2, 4–13, 15, 21,
 22, 42, 52, 62, 73, 103, 104, 221
 serum inositol 3, 4, 41
 transporter 10
 uptake 4
 Inositol diphosphate(s) 47
 Inositol hexakisphosphate 10, 22, 61–70,
 73–85, 105. *See also* Phytic acid/phytate
 Inositol hexakisphosphate kinase/
 InsP₆ kinase/IP6K 6, 10, 22, 23, 28,
 34, 36–39, 44, 48, 54–56, 58, 61–70, 74, 76, 77, 80,
 82, 104, 105, 109–113, 115, 119, 120, 129
 Giardia InsP₆ kinase 66
 GST-IP6K1 78
 His-IP6K1 78
 IP6K1 50, 54–56, 58, 73–85
 IP6K2 77
 IP6K3 77
 Inositol lipid 2, 3, 6, 8, 10,
 12–14, 21, 23, 25, 30, 31, 39, 41, 42, 62
 Inositol 1,3,4,5,6-pentakisphosphate/
 Ins(1,3,4,5,6)P₅ 25, 38, 48, 52
 Inositol 1,3,4,5,6-pentakisphosphate 2-kinase/
 Ins(1,3,4,5,6)P₅ 2-kinase/IPK1 48, 50,
 51, 54–58
 Inositol phosphate 1–3, 6–9, 11–15,
 21–41, 43, 47–58, 61, 62, 70, 103, 104, 108–109,
 112–114, 118, 124, 129, 212, 219
 Inositol phosphate kinase/InsP kinase/IPK 47, 51
 Inositol phosphate multikinase (IPMK/IPK2) 48
 Inositol polyphosphate 13, 21, 27
 Inositol pyrophosphate 43, 88
 Inositol 1,4,5,6-tetrakisphosphate/
 Ins(1,4,5,6)P₄ 48, 53
 Inositol 3,4,5,6-tetrakisphosphate/
 Ins(3,4,5,6)P₄ 7, 24, 37
 Inositol 1,4,5-trisphosphate 21, 47, 53, 133–140.
 See also IP₃
 Inositol 1,3,4-trisphosphate/
 Ins(1,3,4)P₃ 27, 36, 39, 48
 Inositol 1,4,5-trisphosphate 3-kinase/Ins(1,4,5)P₃
 3-kinase/IP3K 48
 Inositol 1,3,4-trisphosphate 5/6 kinase/
 Ins(1,3,4)P₃ 5/6 kinase/ITPK1 48
 Inositol 1,4,5-trisphosphate receptor (IP3R)
 IP₃R1 134–137, 140
 IP3R2 134, 136, 137, 140
 IP₃R3 134–136, 140
 IP₃R-accessory proteins 134–135
 IP₃R-affinity resins 134, 135, 137–138
 knockdown of IP₃Rs 134–136, 138–140
 IP₃. *See also* Inositol 1,4,5-trisphosphate
 binding protein assay 6
 IRBIT 134, 136, 140
 (Radio) Isotopic labelling 6, 180
- L**
- Labelled standards 184, 188–189, 195–196, 200
 Labelling protocols 2, 8, 186–187, 189–191
 LCMS 204, 205, 207
 Lipid
 deacylation 187–188, 192
 extraction 13, 14, 31, 190, 191, 207–210
 Lipidomics 204
 Luminescence 124, 125, 128–130
- M**
- Mass assay 6, 21, 44, 61–70, 168, 173–174
 Mass spectrometer/mass spectrometry 91, 180,
 203–217, 219
 Medium
 DMEM 49, 51, 108,
 118, 166, 168, 169, 171, 186, 224
 EMEM 4
 MEM 4, 136, 139
 RPMI 1640 4, 40
 Metal-dye detection/MDD-HPLC 22, 106–108,
 111, 113–116, 118

Monomethylamine 176, 182, 187, 192, 197, 200
 Myelodysplastic syndrome (MDS)..... 143, 144

N

NMR 6, 105, 106, 115, 118
 Non-enzymatic shotgun synthesis..... 105
 Normal-phase.....175, 176, 182
 Nuclei
 nuclear isolation.....144, 166–167, 169
 nuclear lipid signaling..... 165
 nuclear signaling 143
 in nuclei labeling.....166–170, 172–173
 nuclei preparation.....144–145, 148–150
 nuclei purification..... 144, 149, 150, 161

P

Partisil 24, 25, 64, 146, 155
 Partisphere..... 8, 24–26, 29, 32, 35, 37, 39, 40, 50, 52, 76, 81, 188, 193, 198
 Perchloric acid (PCA) 14, 76, 80, 81, 168, 173
 Phosphatase insensitivity..... 88
 Phosphatidylinositol 2, 10, 47, 143, 167, 168, 173, 180, 220, 221
 Phosphatidylinositol 4,5-bisphosphate/PtdIns(4,5)P₂..... 6, 13, 27, 34, 170, 172, 173, 176, 180, 184, 188, 189, 194–196, 199, 203, 204, 208–210, 216, 220–223, 232
 Phosphatidylinositol 3-kinase/PI3K/PI3-kinase 13, 144, 180, 181, 184, 188, 189, 196, 199, 201, 220, 222, 223, 228–230
 Phosphatidylinositol 3-phosphate/PtdIns3P 171–173, 175, 176, 181, 194, 203, 207, 210, 211, 213, 214, 220, 221
 Phosphatidylinositol 4-phosphate/PtdIns4P 8, 62, 167, 168, 170–174, 180, 185, 188, 189, 194, 195, 199, 203, 207–214, 221
 Phosphatidylinositol 5-phosphate/PtdIns5P 62, 167, 168, 171–174, 185, 188, 195, 199, 203, 207–211, 213, 214, 221
 Phosphatidylinositol 3,4,5-trisphosphate/
 PtdIns(3,4,5)P₃ 87, 180–183, 194, 195, 199, 208–210, 220, 222–224, 228–230
 Phosphoinositides.....165–176, 195, 204, 206–208, 210–212, 215, 219, 223
 Phospholipase C (PLC)
 phospholipase C β1 143–164
 phospholipase C δ1 144, 220–223, 228, 232
 PLC activity assay..... 146, 153–156, 162
 PLCβ1a and 1b alternative splicing..... 157
 Phospholipids..... 156, 182, 192, 196, 221
 Phosphorylation 2, 21, 68, 74, 77, 82–83, 90–101, 105, 109, 120, 123, 136, 139, 173, 181
 Phox homology (PX) domain..... 220
 PLCδ1_{PH}-GFP 222, 228
 Phytic acid/phytate..... 14, 28, 74, 76, 106.
 See also Inositol hexakisphosphate

[³²P] inorganic PO₄/ [³²P]-P_i..... 181
 PIP5K 171, 172, 175.
 See also VIP kinase
 Pleckstrin homology domain..... 87, 220
 Polyphosphoinositides180, 206–208
 PPIP5K. *See also* VIP kinase
 Protein purification 83, 89–90, 92–101, 134–140
 Pyrophosphate(s).....2, 14, 25, 26, 38, 40, 42, 43, 47–58, 73, 74, 78, 87, 88, 104, 105, 111, 117, 118, 120, 123
 Pyrophosphorylation 87–101, 105
 Pyrophosphorylation site..... 93
 Pyrophosphoserine 88, 97

R

Radiolysis products.....7, 8, 15, 43
 RNA
 mRNA export..... 47, 105
 RNAi/siRNA 134–136, 138–140, 144

S

Scintillant(s)25, 26, 34, 40, 42, 43, 50, 64, 67
 SDS-polyacrylamide gel electrophoresis
 (SDS-PAGE)145–146, 151
 Second messenger.....23, 27, 36, 39, 181
 Serum.....3, 4, 12, 13, 16, 28, 30, 40, 41, 49, 51, 63, 64, 68, 108, 118, 134, 135, 137, 145, 148, 149, 166, 186, 189, 195, 199, 200, 224, 230
 Serum inositol3, 4, 41, 200
 Signal transduction..... 13, 143–164
 Sodium phosphate.....25, 90, 147
 Strong anion exchange (SAX)8, 24–26, 29, 32, 35, 37, 39, 40, 50, 52, 64, 76, 81, 146, 155, 184, 188, 193, 198

T

Time-lapse imaging.....223, 227–228
 Total internal reflection fluorescence microscopy
 (TIRF) microscopy.....222–225, 228, 229, 231
 Transmission electron microscopy 147–148, 158–160, 163
 Trichloroacetic acid (TCA)12, 14, 15, 28, 30, 64, 68, 69, 117, 125–127, 130

U

Ultima Flo AP..... 26, 29, 43, 64, 67, 76

V

VIP kinase 48, 58.
 See also PIP5K

W

WAX 24, 25, 37, 39, 40
 Western blot77, 85, 90, 93, 97, 101, 135, 145–146, 152–153, 159, 161, 175