

Materials List for:

Engineering 'Golden' Fluorescence by Selective Pressure Incorporation of Non-canonical Amino Acids and Protein Analysis by Mass Spectrometry and Fluorescence

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Materials

Name	Company	Catalog Number	Comments
Chemicals			
4-aminoinsole	Sigma-Aldrich	525022	
acetonitrile	VWR	HiPerSolv CHROMANORM ULTRA for LC-MS, 83642	LC-MS grade required
agar-agar	Carl Roth	5210	
ammonium molybdate ((NH ₄) ₂ MoO ₄)	Sigma-Aldrich	277908	
ammonium sulfate ((NH ₄) ₂ SO ₄)	Sigma-Aldrich	A4418	
ampicillin sodium salt	Carl Roth	K029	
biotin	Sigma-Aldrich	B4501	
bromophenol blue	Sigma-Aldrich	B0126	
calcium chloride (CaCl ₂)	Sigma-Aldrich	C5670	
colloidal silica	Sigma-Aldrich	Ludox HS-40, 420816	
Coomassie Brilliant Blue R 250	Carl Roth	3862	
copper sulfate (CuSO ₄)	Carl Roth	CP86.1	
D-glucose	Carl Roth	6780	
di-sodium hydrogen phosphate (Na ₂ HPO ₄)	Carl Roth	X987	
di-potassium hydrogen phosphate (K ₂ HPO ₄)	Carl Roth	P749.1	
1,4-dithiothreitol (DTT)	Carl Roth	6908	
DNase I	Sigma-Aldrich	D5025	
ethanol	Carl Roth	9065.1	
formic acid	VWR	HiPerSolv CHROMANORM for LC-MS, 84865	LC-MS grade required
glycerol	Carl Roth	3783	
imidazole	Carl Roth	X998	
indole	Sigma-Aldrich	I3408	
iron(II) chloride (FeCl ₂)	Sigma-Aldrich	380024	
isopropanol	Carl Roth	AE73.1	
isopropyl β-D-1-thiogalactopyranoside (IPTG)	Sigma-Aldrich	I6758	

lysozyme	Sigma-Aldrich	L6876	
magnesium chloride (MgCl ₂)	Carl Roth	KK36.1	
magnesium sulfate (MgSO ₄)	Carl Roth	8283.2	
manganese chloride (MnCl ₂)	Sigma-Aldrich	63535	
β-mercaptoethanol	Carl Roth	4227.3	
potassium chloride (KCl)	Carl Roth	6781.3	
potassium dihydrogen phosphate (KH ₂ PO ₄)	Sigma-Aldrich	P5655	
RNase A	Carl Roth	7156	
sodium chloride (NaCl)	Carl Roth	P029	
sodium dihydrogen phosphate (NaH ₂ PO ₄)	Carl Roth	T879	
sodium dodecyl sulphate (NaC ₁₂ H ₂₅ SO ₄)	Carl Roth	0183	
thiamine	Sigma-Aldrich	T4625	
Tris(hydroxymethyl)-aminomethane (Tris)	Carl Roth	5429	
Tris hydrochloride (Tris-HCl)	Sigma-Aldrich	857645	
tryptone	Carl Roth	8952	
yeast extract	Carl Roth	2363	
zinc chloride (ZnCl ₂)	Sigma-Aldrich	229997	
Name	Company	Catalog Number	Comments
amino acids			
L-alanine	Sigma-Aldrich	A7627	
L-arginine	Sigma-Aldrich	A5006	
L-asparagine	Sigma-Aldrich	A8381	
L-aspartic acid	Sigma-Aldrich	A0884	
L-cysteine	Sigma-Aldrich	C7352	
L-glutamic acid	Sigma-Aldrich	G2128	
L-glutamine	Sigma-Aldrich	G3126	
L-glycine	Sigma-Aldrich	G7126	
L-histidine	Sigma-Aldrich	H8000	
L-isoleucine	Sigma-Aldrich	I2752	
L-leucine	Sigma-Aldrich	L8000	
L-lysine	Sigma-Aldrich	L5501	
L-methionine	Sigma-Aldrich	M9625	
L-proline	Sigma-Aldrich	P0380	
L-phenylalanine	Sigma-Aldrich	P2126	
L-serine	Sigma-Aldrich	S4500	
L-threonine	Sigma-Aldrich	T8625	
L-tryptophan	Sigma-Aldrich	T0254	
L-tyrosine	Sigma-Aldrich	T3754	
L-valine	Sigma-Aldrich	V0500	
Name	Company	Catalog Number	Comments
Lab materials			
0.45 μm syringe filter with PVDF membrane	Carl Roth	CCY1.1	

1.5 mL microcentrifuge tubes	Eppendorf	30120086	
conical polystyrene (Falcon) tubes, 50 mL	Fisher Scientific	14-432-22	
Luer-Lock syringe 5 mL	Carl Roth	EP96.1	
dialysis membrane, Molecular Weight Cut-Off (MWCO) 5,000	Spectrum Medical Industries	Spectra/Por MWCO 5000 dialysis membrane, 133198	
Immobilized Metal ion Affinity Chromatography (IMAC) column 1 mL, Ni-NTA	Macherey Nagel	Protino series, 745410.5	
petri dishes (polystyrene, sterile)	Carl Roth	TA19	
pQE-80L plasmid vector	Qiagen	no longer available	replaced by N-terminus pQE Vector set Cat No./ID: 32915
protein extraction reagent BugBuster	EMB Millipore	70921-4	
round-bottom polystyrene tubes, 14 mL	Fisher Scientific	Corning Falcon, 14-959-1B	
Trp-auxotrophic <i>E. coli</i> strain	ATCC	ATCC 49980	Bridges BA et al., Chem Biol Interact., 1972, 5(2):77-84; see main text for alternatives
Name	Company	Catalog Number	Comments
Mass Spectrometry equipment			
mass spectrometer for LC-ESI-TOF-MS	Agilent	Agilent 6530 Accurate-Mass QTOF	coupled with Infinity LC system
mass spectrometry data analysis software	Agilent	MassHunter Qualitative Analysis software v. B.06.00	
High-Performance Liquid Chromatography (HPLC) column for LC-ESI-TOF-MS	Sigma-Aldrich	Supelco Discovery BIO Wide Pore C5 HPLC column, 3 µm particle size, 10 cm x 2.1 mm	
HPLC autosampler vials 1.5 mL	Sigma-Aldrich	Supelco 854165	with conical 0.1 mL glass inserts, screw caps and septa
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General equipment			
benchtop centrifuge for 1.5 mL Eppendorf tubes	Eppendorf	5427 R	
cooling centrifuge for 50 mL Falcon tubes	Eppendorf	5810 R	
high pressure microfluidizer for bacterial cell disruption	Microfluidics	LM series with "Z" type chamber	
peristaltic pump for LC	GE Healthcare	P-1	
Fast Protein Liquid Chromatography (FPLC) system	GE Healthcare	ÅKTA pure 25 L	
orbital shaker for bacterial cultivation	Infors HT	Minitron	
UV/Vis spectrophotometer	Biochrom	ULTROSPEC 2100	
ultrasonic homogenizer for bacterial cell disruption	Omnilab	Bandelin SONOPULS HD 3200, 5650182	with MS72 sonifier tip
Name	Company	Catalog Number	Comments
Fluorescence spectroscopy equipment			
ps-pulsed laser 470 nm	Picoquant GmbH	PDL-470	
time- and wavelength-correlated single photon counting (TWSPC) acquisition software	Picoquant GmbH	SymPhoTime 64	

time- and wavelength-correlated single photon counting (TWSPC) detector	Picoquant GmbH	PML-16C	16 spectral channels, to be selected by grating settings
single photon counting software	Picoquant GmbH	SPCM 9.75	
global fitting software	Picoquant GmbH	SPC2Glo(R)	
fluorescence decay data analysis software	Picoquant GmbH	FluoFit program	
data analysis software	OriginLab Inc.	Origin 9.2	
neutral density filter set	Schott	NG1 to NG11	(400 - 650 nm, transmission 50 %, 20%, 10 %, 5 %)
488 nm long-pass emission filter	AHF Analysentechnik	AHF-488	
quartz cuvette	Thorlabs GmbH	CV10Q1400	1 cm pathlength