

Materials List for:

# Synthesis and Characterization of 1,2-Dithiolane Modified Self-Assembling Peptides

Ruben Neves<sup>1</sup>, Kailyn Stephens<sup>1</sup>, Jillian E. Smith-Carpenter<sup>1</sup>

<sup>1</sup>Department of Chemistry and Biochemistry, Fairfield University

Correspondence to: Jillian E. Smith-Carpenter at [jsmith-carpenter@fairfield.edu](mailto:jsmith-carpenter@fairfield.edu)

URL: <https://www.jove.com/video/58135>

DOI: [doi:10.3791/58135](https://doi.org/10.3791/58135)

## Materials

Name	Company	Catalog Number	Comments
Rink amide MBHA resin, high load	Gyros Protein Technologies	RAM-5-HL	Avoid contact with skin and eyes; do not inhale
N,N-Dimethylformamide	Fisher Scientific	D119-4	Flammable liquid and vapor; irritating to eyes and skin; Use personal protective equipment; keep away from open flame
Fmoc-L-Val-OH	Gyros Protein Technologies	FLA-25-V	Wear personal protective equipment; do not inhale
Fmoc-L-Leu-OH	Gyros Protein Technologies	FLA-25-L	Wear personal protective equipment; do not inhale
Fmoc-L-Lys(Boc)-OH	Gyros Protein Technologies	FLA-25-KBC	Wear personal protective equipment; do not inhale
Fmoc-L-Phe-OH	Gyros Protein Technologies	FLA-25-F	Wear personal protective equipment; do not inhale
Fmoc-L-Ala-OH	Gyros Protein Technologies	FLA-25-A	Wear personal protective equipment; do not inhale
Fmoc-L-Gln(Trt)-OH	Gyros Protein Technologies	FLA-25-QT	Wear personal protective equipment; do not inhale
N,N,N',N'-Tetramethyl-O-(1H-benzotriazol-1-yl)uronium hexafluorophosphate	Gyros Protein Technologies	26432	Causes skin, eye and respiratory irritation; do not inhale; use under hood or in well ventilated area
0.4 M N-methylmorpholine in DMF	Gyros Protein Technologies	PS3-MM-L	highly flammable; wear personal protective equipment; keep away from heat and keep container tightly closed; do not inhale or swallow; wash skin thoroughly after handling
20% piperidine in DMF	Gyros Protein Technologies	PS3-PPR-L	Causes severe eye and skin burns; Flammable Liquid and vapor; Do not inhale
dichloromethane	Fisher Scientific	D37-4	May cause cancer; Do not inhale; Wear personal protective equipment; use under hood only; if contacted rise with water for at least 15 minutes and obtain medical attention
acetonitrile	Fisher Scientific	A998-4	Flammable; irritating to eyes; Use personal protective equipment; Use only under a fume hood; keep away from open flame or hot surface; if contacted rinse with water for at least 15 minutes and obtain medical attention
trifluoroacetic acid	Fisher Scientific	A116-50	Causes severe burns; do not inhale; harmful to aquatic life; use

			personal protective equipment; use only under fume hood; if contacted rinse with water for at least 15 minutes and obtain immediate medical attention
4% uranyl acetate	Electron Microscopy Sciences	22400-4	Do not inhale; harmful to aquatic life
4-(2-Hydroxyethyl)piperazine-1-ethanesulfonic acid	Acros Organics	AC172571000	Do not inhale; use outdoors or in well-ventilated area
nitrogen Gas	TechAir		Contents under pressure, may explode if heated
3-bromo-2-(bromomethyl)propionic acid	Alfa Aesar	AAA1963014	Do not inhale; causes irritation to skin and eyes; corrosive
sodium hydroxide	Fisher Scientific	S318-100	Use personal protective equipment; use only under fume hood; if contact rinse area for at least 15 minutes and obtain medical attention
potassium thioacetate	Acros Organics	AC221300250	Causes skin and eye irritation; do not inhale; use personal protective equipment
sulfuric acid	Fisher Scientific	SA213	Causes burns; keep away from water; keep away from combustible material; do not inhale; use personal protective equipment; if contact rinse area for at least 15 minutes and obtain medical attention
chloroform-d	Acros Organics	AC320690075	Possible cancer hazard; irritating to skin and eyes; do not inhale; Use personal protective equipment; use only under fume hood; If contact rinse area for at least 15 minutes and obtain medical attention
chloroform	Fisher Scientific	C298-4	Possible cancer hazard; irritating to skin and eyes; do not inhale; Use personal protective equipment; use only under fume hood; If contact rinse area for at least 15 minutes and obtain medical attention
N,N-diisopropylethylamine	Acros Organics	AC367841000	Highly flammable; harmful to aquatic life; wear personal protective equipment; do not swallow
ammonium hydroxide	Fisher Scientific	A669S-500	Corrosive; do not inhale
methanol	Fisher Scientific	A452-4	Flammable liquid and vapor; use personal protective equipment; do not inhale; If contact rinse area for at least 15 minutes and obtain medical attention
triisopropylsilane	Sigma Aldrich	233781	Flammable; use personal protective safety equipment; keep container tightly closed
diethyl ether	Fisher Scientific	E138-1	Extremely flammable; Irritating to skin and eyes; Use personal protective equipment
2,5-dihydroxybenzoic acid	Sigma Aldrich	39319-10x10MG-F	do not inhale; irritating to skin and eyes
alpha-cyano-4-hydroxycinnamic acid	Alfa Aesar	AAJ67635EXK	

c18 zip-tip	Millipore	ZTC18S096	
tris(2-carboxyethyl) phosphine hydrochloride	Thermo Scientific	PI20490	
silica gel 60 F254 coated aluminum-backed TLC sheets	EMD Millipore	1.05549.0001	
Thin walled Precision NMR tubes	Bel-Art	663000585	5mm O.D.
All-plastic Norm-Ject syringes	Air Tite	AL10	
single-use needle	BD PrecisionGlide	BD 305185	used needles get disposed on in sharps waste container
disposable fritted syringe	Torviq	SF1000LL	10mL fritted syringes were used in the report, but larger syringes are available if needed for larger scale synthesis.
carbon grid	Ted Pella, Inc.	CF200-CU	Make sure to prepare samples and staining on the carbon grid side, not the shiny copper side of grid
self-closing tweezers	Electron Microscopy Sciences	78318-3X	very sharp tips, length: 120 mm
0.1 mm short path length cell	Starna Cells, Inc.	20/C-Q-0.1	Fragile
10mL Vessel Caps	CEM	909210	
10mL Pressure Vessels	CEM	908035	
Aeris Semi-Prep HPLC column	Phenomenex	00F-4632-N0	150 x 10mm
cell holder	Starna Cells, Inc.	CH-2049	Needed when using short pathlength cells
PS3 peptide synthesizer	Gyros Protein Technologies		
DiscoverSP Microwave Reactor	CEM		
centrifuge	HERMLE	Z 206 A	used a fixed 6x50 mL rotor
HPLC	Shimadzu		UV Detector
nuclear magnetic resonance spectrometer	Avance, Bruker		300 MHz
MALDI-TOF mass spectrometer	Axima Confidence, Shimadzu		
lyophilizer	Millrock Technology	BT85A	
Fourier-Transform Infrared Spectrometer	Alpha Tensor, Bruker		
Transmission Electron Microscope	Tecnai Spirit, FEI		Used with Gatan Orius Fiberoptic CCD digital camera. Accessed at CSCU Center for Nanotechnology
Circular Dichroism Spectropolarimeter	J-810, JASCO		Used with a six-cell Peltier temperature controller. Accessed at Wesleyan University.