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# Refractive index adjusted imaging medium: Iodixanol (RI ~ 1.41 and 1.42) - Yeast

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Mathias Hammer<sup>1</sup>, Ammeret Rossouw<sup>1</sup>, Azra Lari<sup>2</sup>, Ben Montpetit<sup>3</sup>, David Grunwald<sup>1</sup>

<sup>1</sup>UMass Chan Medical School, RNA Therapeutics Institute, Worcester, MA, USA;

<sup>2</sup>University of Alberta, Department of Cell Biology, Edmonton, AB, Canada;

<sup>3</sup>University of California, Department of Viticulture and Enology, Davis, CA, USA



Mathias Hammer

UMASS Chan Medical School/RTI

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**Protocol status:** Working

**We use this protocol and it's working**

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## Abstract

This protocol describes the steps to prepare imaging medium for *Saccharomyces cerevisiae* with adjusted refractive index. This medium is optimized for fluorescence imaging by the reduction of auto-fluorescence through an abundance of Adenine [1] and the repression of of the Met-promoted pp7- CP expression [2].



## Materials

### **SC-Ura Powder**

Sunrise Science Products

Cat#: 1306-030

Lot#: 23K3083

Exp: 10/2027

### **Yeast Nitrogen Base Without Amino Acids**

Sigma Life Science

Cat#: Y0626-250G

Lot#: SLBG0555V

### **Glucose**

Sunrise Science Products

Cat#: 1907-1kg

Lot#: 3A0036

### **L-Adenine**

Sigma Life Science

Cat#: A-9795

Lot#: 33H12895

### **L-Methionine**

Sigma Life Science

Cat#: M-5308

Lot#: 129H0322

### **OptiPrep Density Gradient Medium**

Sigma Life Science

Cat#: D1556-250ML

Lot#: 120M1221

### **Deionized Water**

### **Equipment:**

50 ml laboratory bottle with screw cap

1ml pipette

25 ml pipette

5 ml pipette

stirring hot plate

magnetic stirring bar



micro scales

autoclave

thermometer

## Before start

Have the following solutions premixed:

**Glucose 20%** 500 ml solution:

Concentration: 200 g/l

mix 100 g Glucose in 500 ml deionized water (ddH<sub>2</sub>O)

**Adenine 100x** 100 ml solution:

Concentration 3 g/l

mix 0.3 g Adenine in 100 ml ddH<sub>2</sub>O

**Methionine 200x** 50 ml:

Concentration: 17.12 g/l

mix 856 mg into 50 ml ddH<sub>2</sub>O




# 1 Compound medium for autoclave

## STEP CASE

Refractive Index (RI) ~1.41 9 steps


The case of the protocol describes the preparation of a yeast imaging medium adjusted to an refractive index of 1.41.

- 1.1 Fill a 50 ml flask with  22.5 mL OptiPrep.  
Add a magnetic stirring bar and place the flask on a stirring hot plate.

- 1.2 Add  0.3 mL Adenine 100x solution.


### Note

The additional Adenine is supposed to repress the Adenine synthesize to reduce a possible accumulation of red pigment [1].

- 1.3 Add  0.3 mL Methionine 200x solution.

### Note

The additional Methionine represses the Met promoter, which drives PP7 syntheses [2].

- 1.4 Add  57.6 mg SC-XX powder.

### Note

In regard to cover all optional dropout media the amino acid base holds the notification - xx, where xx stand for the amino acid(s) that is as selection factor, missing in the medium.

- 1.5 Add  201.6 mg Yeast Nitrogen Base with Ammonium Sulfate without Amino Acids (YNB).

### Note

Warming the medium on the stirring plate helps to resolve the powders.





1.6 Add  3.9 mL ddH<sub>2</sub>O.

2 Autoclave for  00:15:00 at  121 °C .

#### Note

Remove the stirring bar before going to autoclave.

3 When the medium cooled down to around  80 °C add  3 mL sterile Glucose 20%.

4 The medium can be store at the bench for 2 to 3 months.

## Protocol references

[1] Kokina, Agnese et al. "Adenine auxotrophy—be aware: some effects of adenine auxotrophy in *Saccharomyces cerevisiae* strain W303-1A." *FEMS yeast research* 14.5 (2014): 697-707.  
doi:10.1111/1567-1364.12154

[2] Lari, Azra, et al. "Live-Cell Imaging of mRNP–NPC Interactions in Budding Yeast." *Imaging Gene Expression: Methods and Protocols* (2019): 131-150.  
doi.org/10.1007/978-1-4939-9674-2\_9