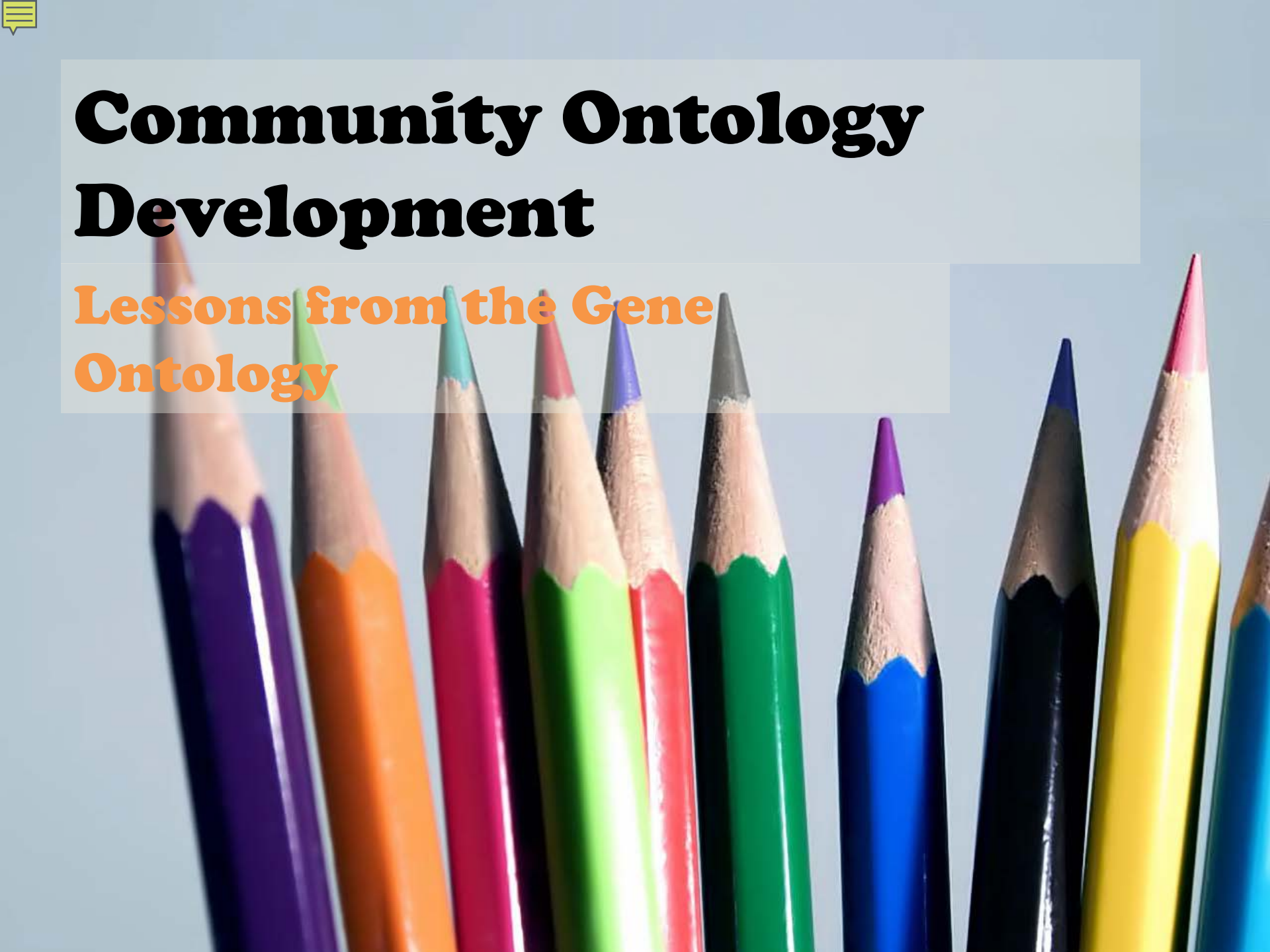
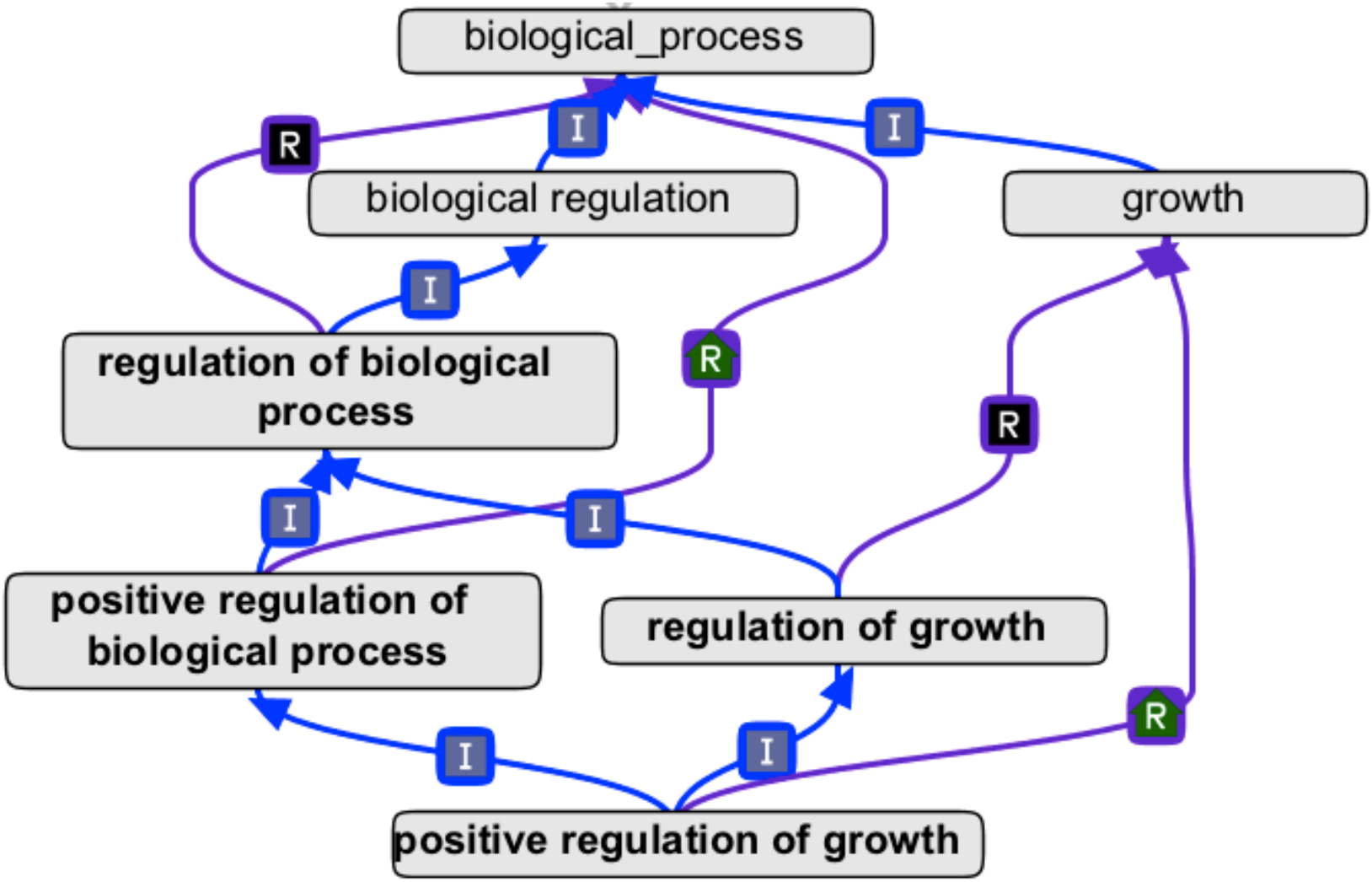
# Community Ontology Development

## Lessons from the Gene Ontology



# Ontology:

**Sets of classes (terms) with relationships between them that describe a given domain**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# Annotation

**Associating some object (e.g. protein, gene, experiment) with ontology terms with some evidence**

# Gene Ontology Consortium

# OBO Foundry

http://www.obofoundry.org/

**"a suite of orthogonal interoperable reference ontologies in the biomedical domain"**

# Overview

1. Scope
2. Users
3. Development mechanism
4. Standards
5. Community input
6. Publicize
7. Feedback cycle
8. Document

# 1. Define your scope

- Related efforts
- Make contact
- Know what's out there

# 2. Have a user community

# 3. Decide on a mechanism for development

# Editors

- **Who can edit the ontology?**

# How

- **Versioning system or database**
- **Critical that you know what others are working on**

- **Remember – no system is a replacement for communication between developers!**

# Meet regularly

# Developing GO

- Core editors
  - 5-10 editors
  - Communicate extensively
  - Distributed globally
  - Only these people are direct editors

# Developing GO

- Per term requests
- Major overhauls
- Systematic changes

# 4. Define and use standards

# Naming conventions

ournal List > BMC Bioinformatics > v.10; 2009

BMC Bioinformatics. 2009; 10: 125.
Published online 2009 April 27. doi: 10.1186/1471-2105-10-125

PMCID: PMC2684543



**Survey-based naming conventions for use in OBO Foundry ontology development**

Daniel Schober,[1,2] Barry Smith,[3] Suzanna E Lewis,[4] Waclaw Kusnierczyk,[5] Jane Lomax,[1] Chris Mungall,[4] Chris F Taylor,[1,6] Philippe Rocca-Serra,[1] and Susanna-Assunta Sansone[1]

BMC Biocher

# Relationships

- **Use standard where possible**
- **Define where not**

# Good ontology design

- **rubbish in = rubbish out**
- **modularity**
- **pragmatism v/s perfectionism**

# 5. Use your community

# Community input to GO

- **Public tracker, email discussion lists**
- **Involvement in specific development projects**
- **Direct term submission**
- **Community annotation tools**

# 6. Publicize

- **Make sure people know you're there**
- **OBO Foundry, Ontology Lookup Service, BioPortal**
- **Publish**
- **Advertise**

# 7. Development cycle

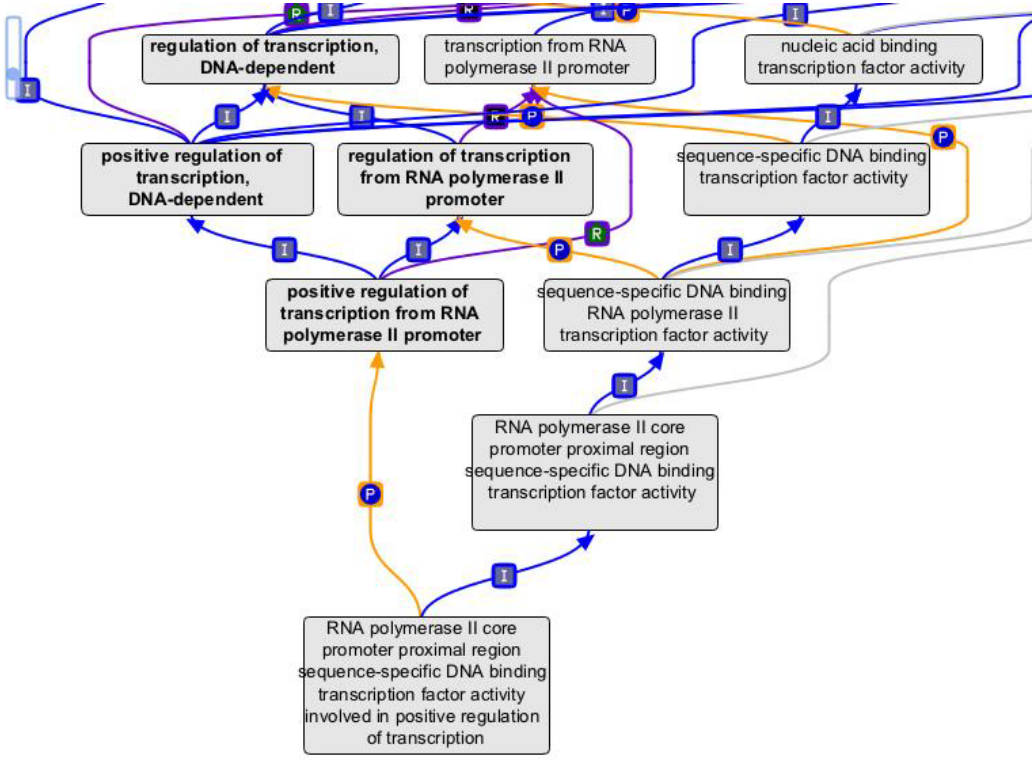
- **Ontologies should be developed interatively**
  - **need mechanism to communicate changes to users**
  - **Static ontologies are not useful**
  - **Don’t wait until it’s finished before you start using it**

# 8. Document

- **It’s boring, but you’ll thank yourself in the long run**
- **Document how and why you made decisions, how you think terms should be used**

# 9. Other considerations

## post- v/s pre-composition



# Adding logical constraints to terms

- Adds valuable reasoning power
- Automatic term placement, definition generation etc.
- Requires more thought per term