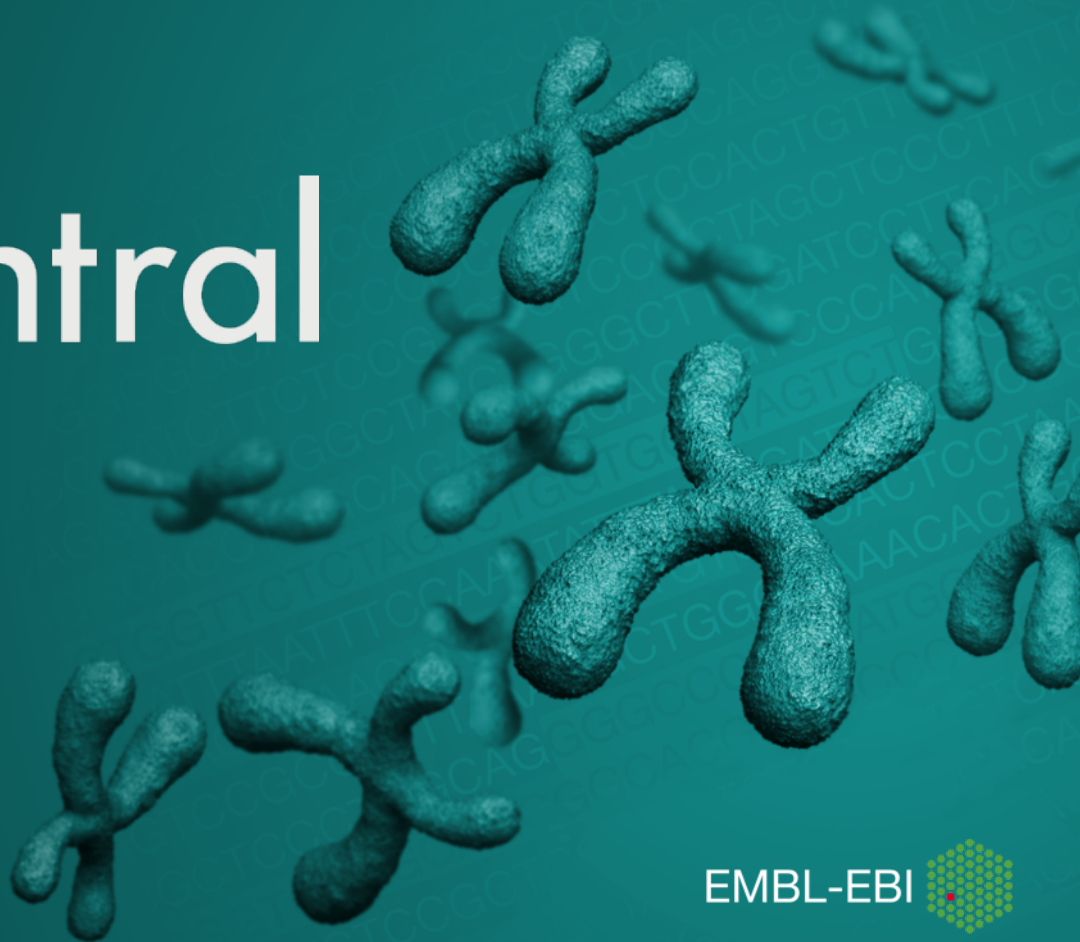


# Introduction to Django

Anton Petrov

[apetrov@ebi.ac.uk](mailto:apetrov@ebi.ac.uk)

 RNAcentral



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# Why Web Frameworks?

- no need to reinvent the wheel
- provide structure for the project
- new developers can find their way around faster

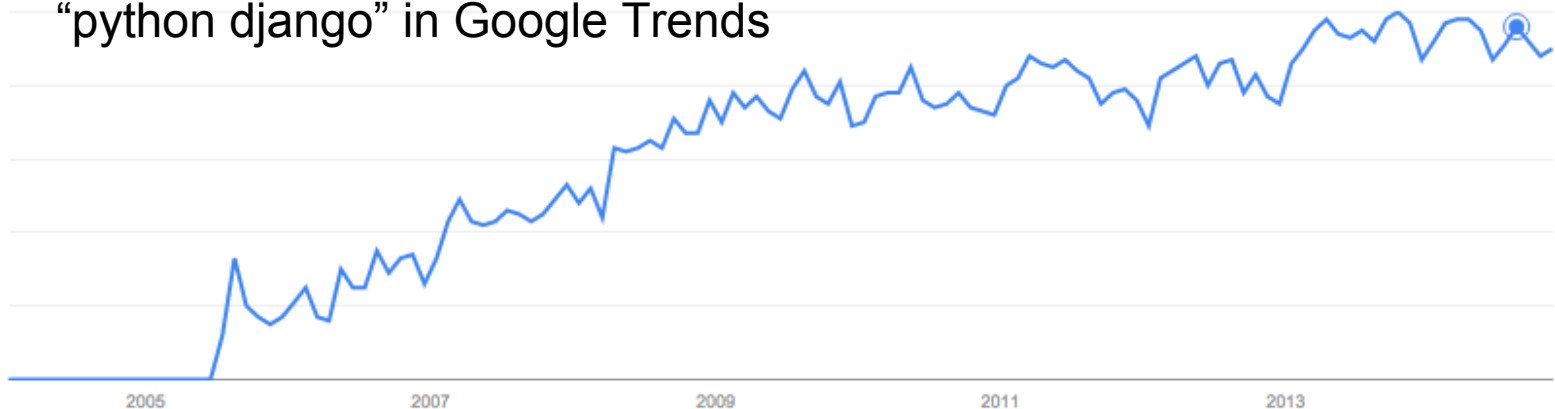


<https://americaexplained.files.wordpress.com/2010/12/reinventthe-wheel.png>

# Django Web Framework

- production-ready
  - used in many sites:
    - Disqus, Instagram, Pinterest, RNAcentral
- > 9 years old
- good documentation and community support
  - 85,000 Stack Overflow questions

“python django” in Google Trends



# Key Features

- Multiple database engines supported
- Convenient Object-Relational Mapping
- Built-in migrations (starting with Django 1.7)
- Model/View/Controller Architecture
- Nested templates
- Thriving ecosystem

# Model

```
1 class Rna(models.Model):
2     id = models.CharField(primary_key=True)
3     length = models.IntegerField(db_column='seq_length')
4     sequence = models.TextField()
5
6     def count_ns(self):
7         return self.sequence.lower().count('n')
8
9     class Meta:
10         db_table = 'rna'
```

## Gotchas:

- Each table must have a non-composite primary key
- Need to use django-compatible column types (e.g. **N**VARCHAR2 and not VARCHAR2 for Oracle)

# View (=Controller)

# urls.py

```
url(r'^rna/(?P<id>URS[0-9A-F]{10})/?$', 'portal.views.rna_view'),
```

#views.py

```
1 def rna_view(request, id):  
2     rna = Rna.objects.get(id=id)  
3     return render(request, 'rna-view.html', {'rna': rna})
```

# Template (=View)

```
1 {% load humanize %}
2
3 <h1>
4     RNA Sequence {{ rna.id }}
5 </h1>
6
7 <pre>
8     {{ rna.sequence }}
9 </pre>
10
11 Number of N's: {{ rna.count_ns|intcomma }}
```

# Useful Tools

Tried and tested:

- [Django REST Framework](#)
- [Django Compressor](#)
- [Django Debug Toolbar](#)

+ lots of packages for

- authentication
- caching
- integration with Celery, MongoDB, Neo4j etc