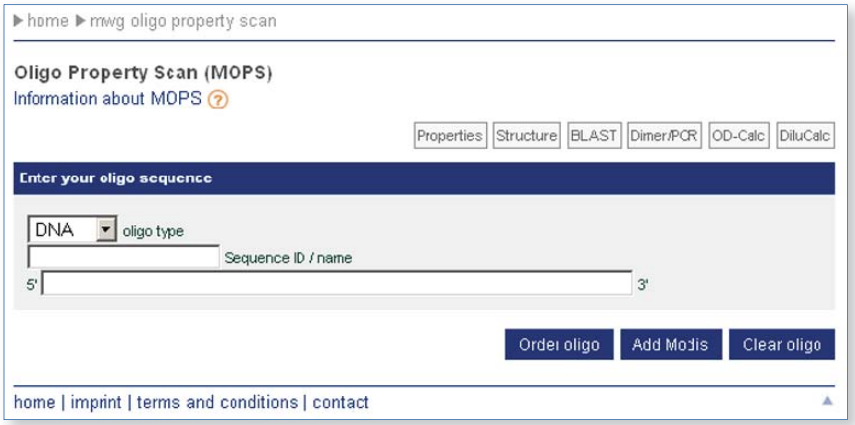
# OLIGO PROPERTY SCAN “MOPS” - TUTORIAL

## The one-stop solution for quick and easy oligo analysis and calculation

### MOPS

Our MOPS is a multifunctional oligo calculation tool, which gives you the option of checking your oligos before you order.
It also facilitates the set up of experiments by calculating the adequate amounts and dilution factors for your oligo solutions.

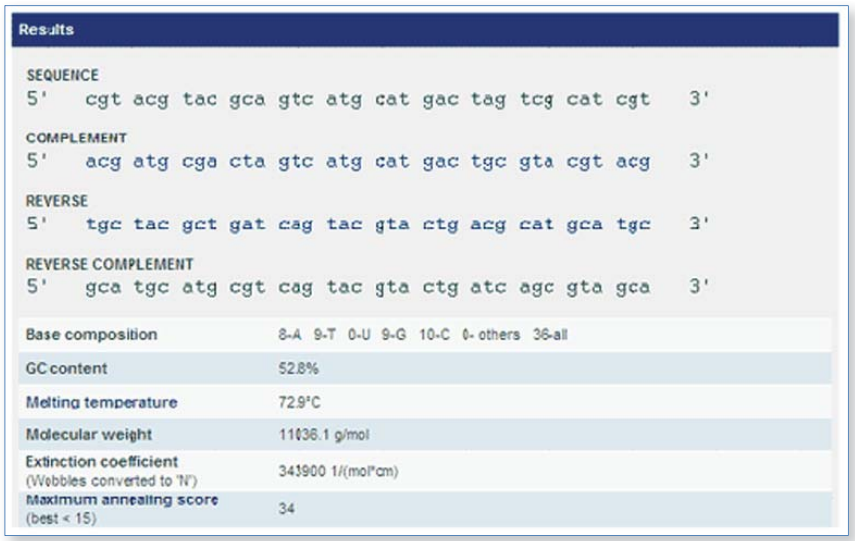
You can enter DNA as well as RNA sequences and you can attach or insert modifications to your oligos:




Editor and start page

### Physical property check

By using “Properties” you ask the system to specify all physical attributes such as GC content, melting temperature (Tm), molecular weight (MW), extinction coefficient and sequence complements of your oligo:




Physical property result

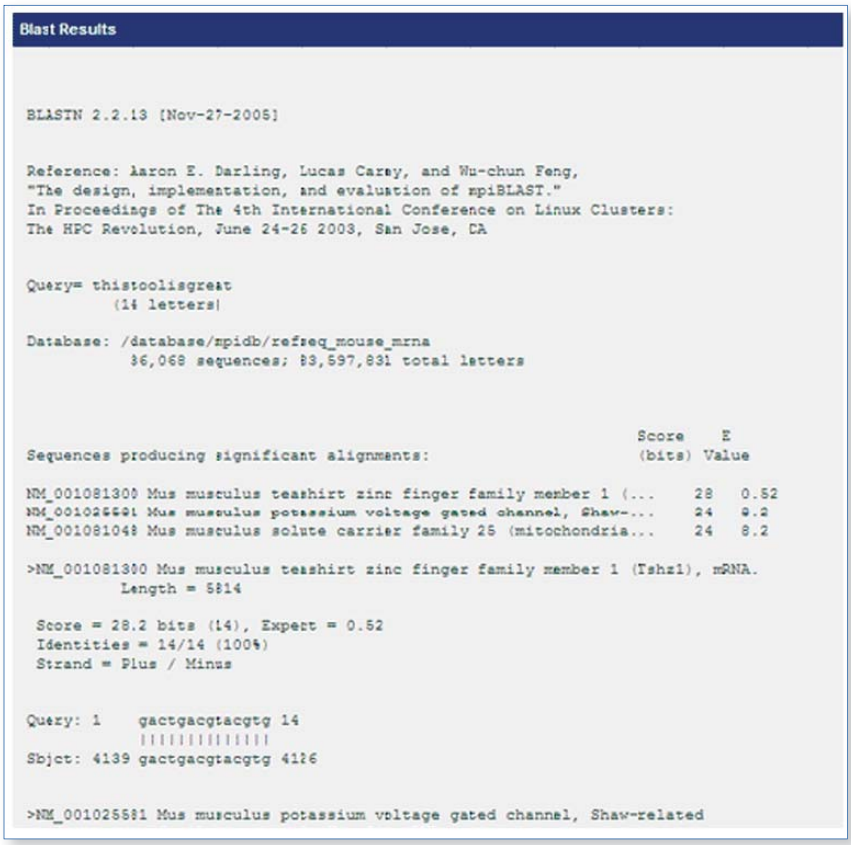
### Secondary structure prediction

**By pressing “Structure” the software** predicts the secondary structure of DNA oligos by using the mfold program. This program is an adaptation of the mfold package (version 2.3) by Zuker and Jaeger that has been modified to work with the Wisconsin Package.
The RNAfold program (Vienna RNA Package) is used to predict RNA secondary structures.


Visualisation of secondary structure

## BLASTn analysis

This functionality aligns your sequence against the human, mouse and rat Refseq mRNA database. A comprehensive BLASTn report is provided online:



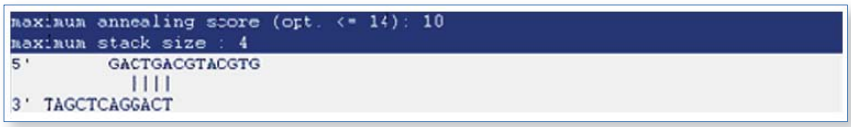
Blast Results

```
BLASTN 2.2.13 [Nov-27-2005]

Reference: Aaron E. Darling, Lucas Carey, and Wu-chun Feng,
"The design, implementation, and evaluation of mpiBLAST."
In Proceedings of The 4th International Conference on Linux Clusters:
The HPC Revolution, June 24-26 2003, San Jose, CA

Query= thistoolisgreat
         (14 letters)

Database: /database/mpidb/refseq_mouse_mrna
           36,068 sequences; 83,597,831 total letters

                                                                  Score    E
Sequences producing significant alignments:                       (bits) Value

NM_001081300 Mus musculus teashirt zinc finger family member 1 (...    28   0.52
NM_001025681 Mus musculus potassium voltage gated channel, Shaw-...    24   8.2
NM_001081048 Mus musculus solute carrier family 25 (mitochondria...    24   8.2

>NM_001081300 Mus musculus teashirt zinc finger family member 1 (Tshz1), mRNA.
          Length = 5814

 Score = 28.2 bits (14), Expect = 0.52
 Identities = 14/14 (100%)
 Strand = Plus / Minus


Query: 1    gactgacgtacgtg 14
            ||||||||||||||
Sbjct: 4139 gactgacgtacgtg 4126


>NM_001025681 Mus musculus potassium voltage gated channel, Shaw-related
```

BLASTn report

## Dimer formation

The dimer formation check tests your oligo against itself or another oligo for dimer formation.

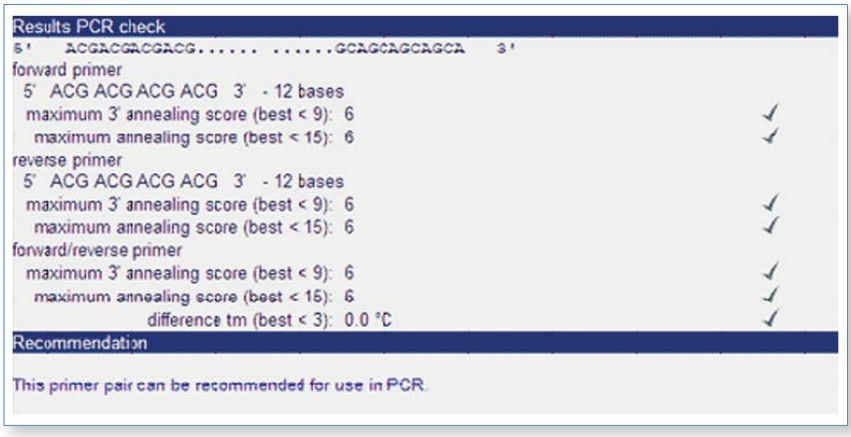


```
maximum annealing score (opt. <= 14): 10
maximum stack size : 4
5'        GACTGACGTACGTG
              ||||
3' TAGCTCAGGACT
```

Result of a dimer formation check

## PCR viability check

The PCR check performs a PCR viability check for a primer pair.



Results PCR check

```
5'   ACGACGACGACG..... .....GCAGCAGCAGCA   3'
forward primer
 5' ACG ACG ACG ACG  3'  - 12 bases
  maximum 3' annealing score (best < 9): 6
   maximum annealing score (best < 15): 6
reverse primer
 5' ACG ACG ACG ACG  3'  - 12 bases
  maximum 3' annealing score (best < 9): 6
   maximum annealing score (best < 15): 6
forward/reverse primer
  maximum 3' annealing score (best < 9): 6
   maximum annealing score (best < 15): 6
              difference tm (best < 3): 0.0 °C
```

Recommendation

This primer pair can be recommended for use in PCR.

Result of a PCR viability check

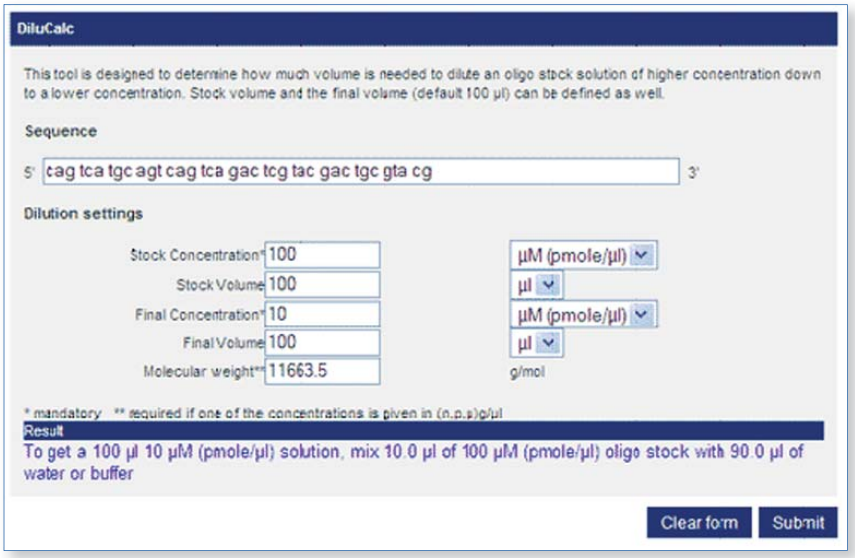
### OD Calculation

With "OD-Calc" you can calculate the optical density (OD), mass, amount and molecular weight (MW) of your oligo for specific experimental conditions.
Additionally you can decipher the appropriate oligo synthesis scale you need for your experiments.


Result of yield calculation

### Dilution Calculation

With "Dilu-Calc" you are able to determine how much volume you need to dilute an oligo stock solution of higher concentration down to a specific lower concentration.
This application also supports different units for concentration and volume.




Result of dilution calculation

## Feel Free to Contact Us

We invite you to send us your request using our online request form at www.eurofinsdna.com, by email or contact us directly by phone.

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