What we can do for you:

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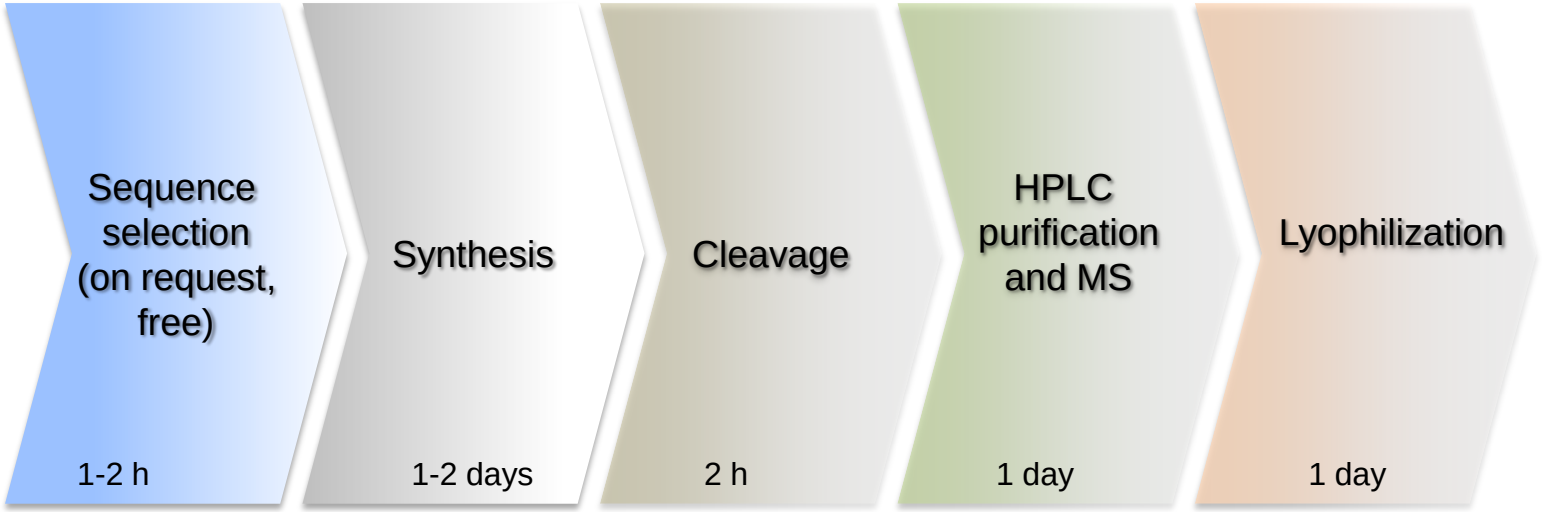
Peptide synthesis facility

- Peptides <30 aa routine; ~60-70 aa on request
- Amounts: typically <10 mg; higher amounts (<500 mg) feasible on request
- Solid phase Fmoc methodology
- HPLC purification if requested/required
- MS (ES, MALDI-TOF) validation of structure
- Conjugation to carrier protein, affinity columns, etc.

Typical workflow for an average peptide sequence



- 2009-2014: ~125 jobs/yr (of which ~60% PRBB; external users include Spanish and EU public labs + small pharma & biotech companies

End group options

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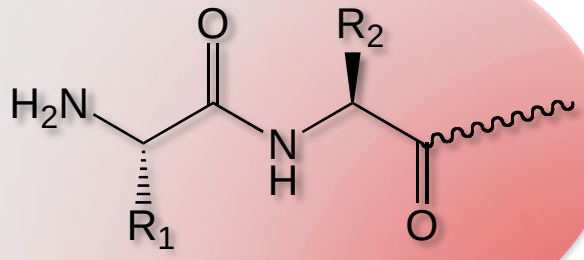
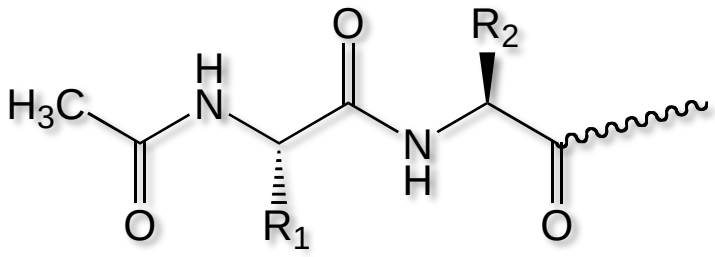
Peptide synthesis facility

N-terminus

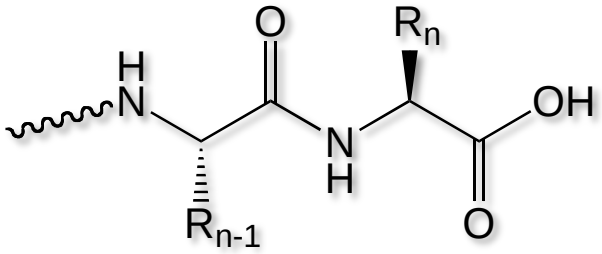


Free ($^{+}NH_3-$ in solution)
Usually good for solubility
Required if actually native N-terminus

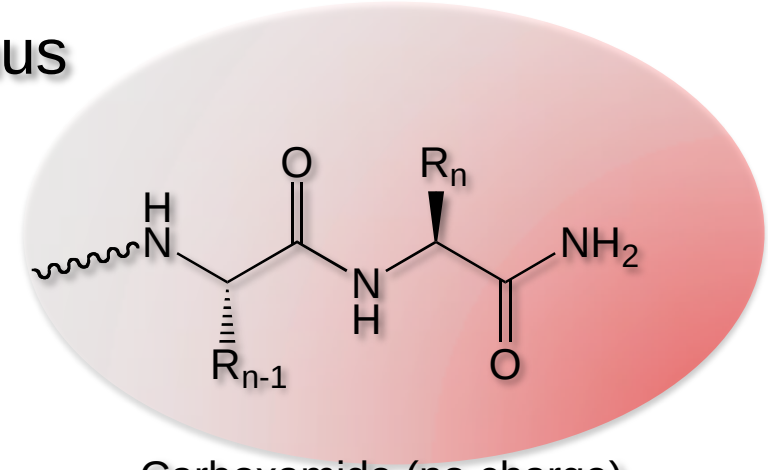


Acetylated (no charge)
Mimics better native situations

C-terminus



Free ($-COO^{-}$ in solution)
Required if actually native C-terminus



Carboxamide (no charge)
Mimics better native situation
Synthetically prefered

Site-specific modifications (1)

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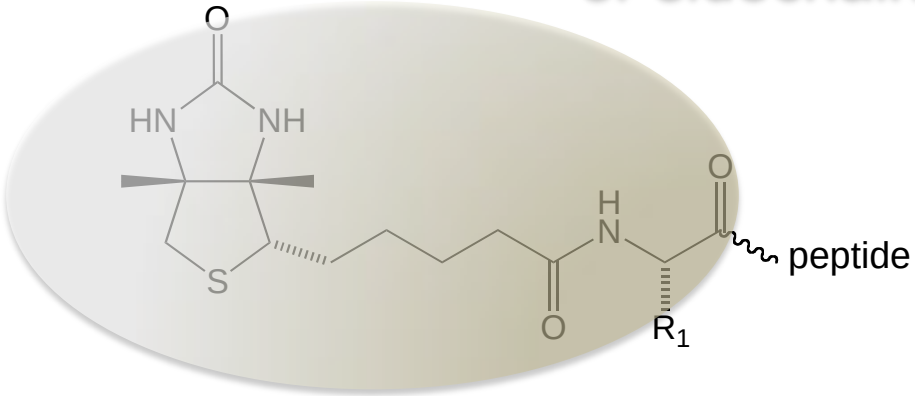
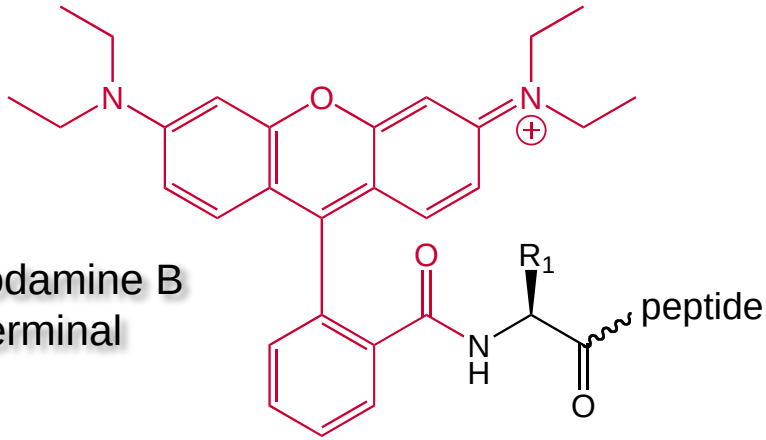
Peptide synthesis facility

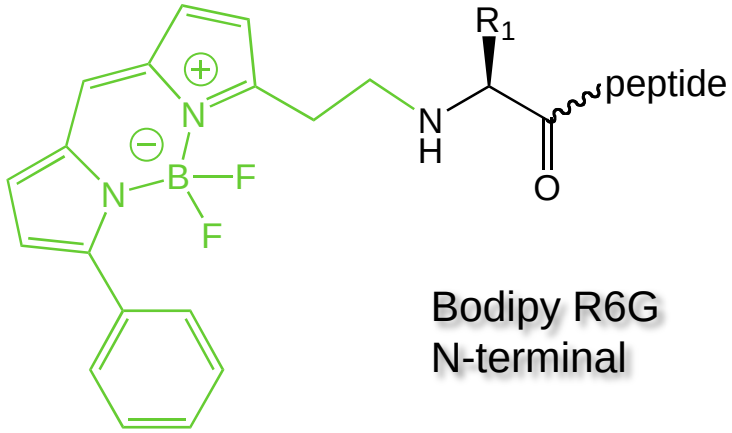
Biotinylation (N-terminal, C-terminal or sidechain (Lys))



Fluoro labeling (different dyes)



Rhodamine B
N-terminal



Bodipy R6G
N-terminal

Site-specific modifications (2)

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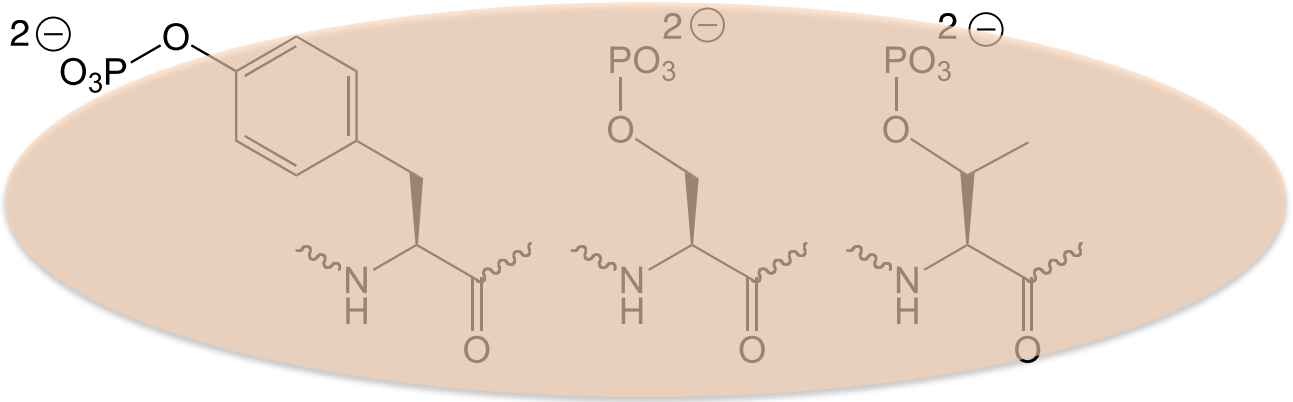
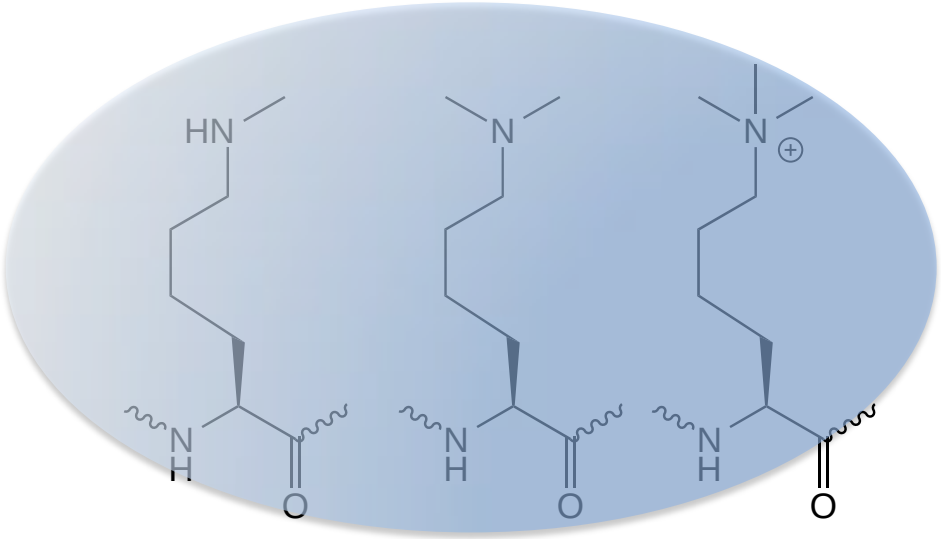
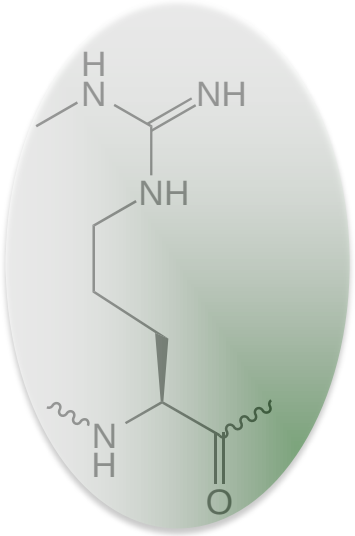
Peptide synthesis facility

Phosphorylation (Tyr, Ser, Thr), sulfation (Tyr)



Modified Lys (methyl, acetyl) & Arg ➔ epigenetic studies





Other modifications, on request (3)

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Peptide synthesis facility

- D-Amino acids
- Non-coded amino acids
- Isotopically labeled (non-radioactive) amino acids (^{13}C, ^{2}H, etc.)
- Lipidation (fatty acids, farnesyl) at selected (Cys, Lys) positions
- Internal disulfides
- Complex, folded (multiple SS) peptides, protein mini-domains

Facility equipment

Universitat Pompeu Fabra Barcelona

Peptide synthesis facility

A. Synthesizers

PTI Prelude
Current workhorse

ABI 433A (2001-2013)
phased out

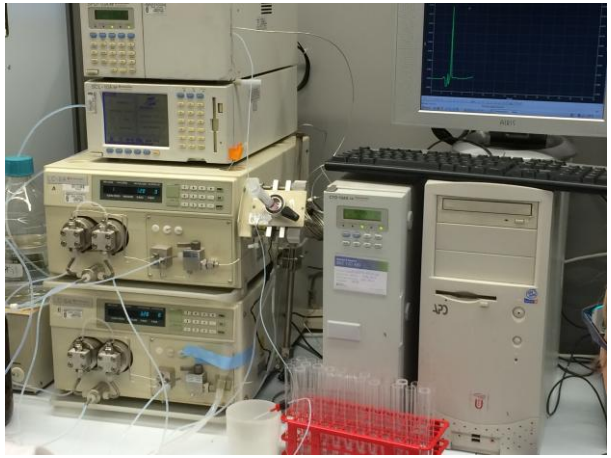
CEM Liberty Blue
In service, July 2015

Facility equipment (2)

Universitat Pompeu Fabra Barcelona

Peptide synthesis facility

B. HPLC*



preparative purification

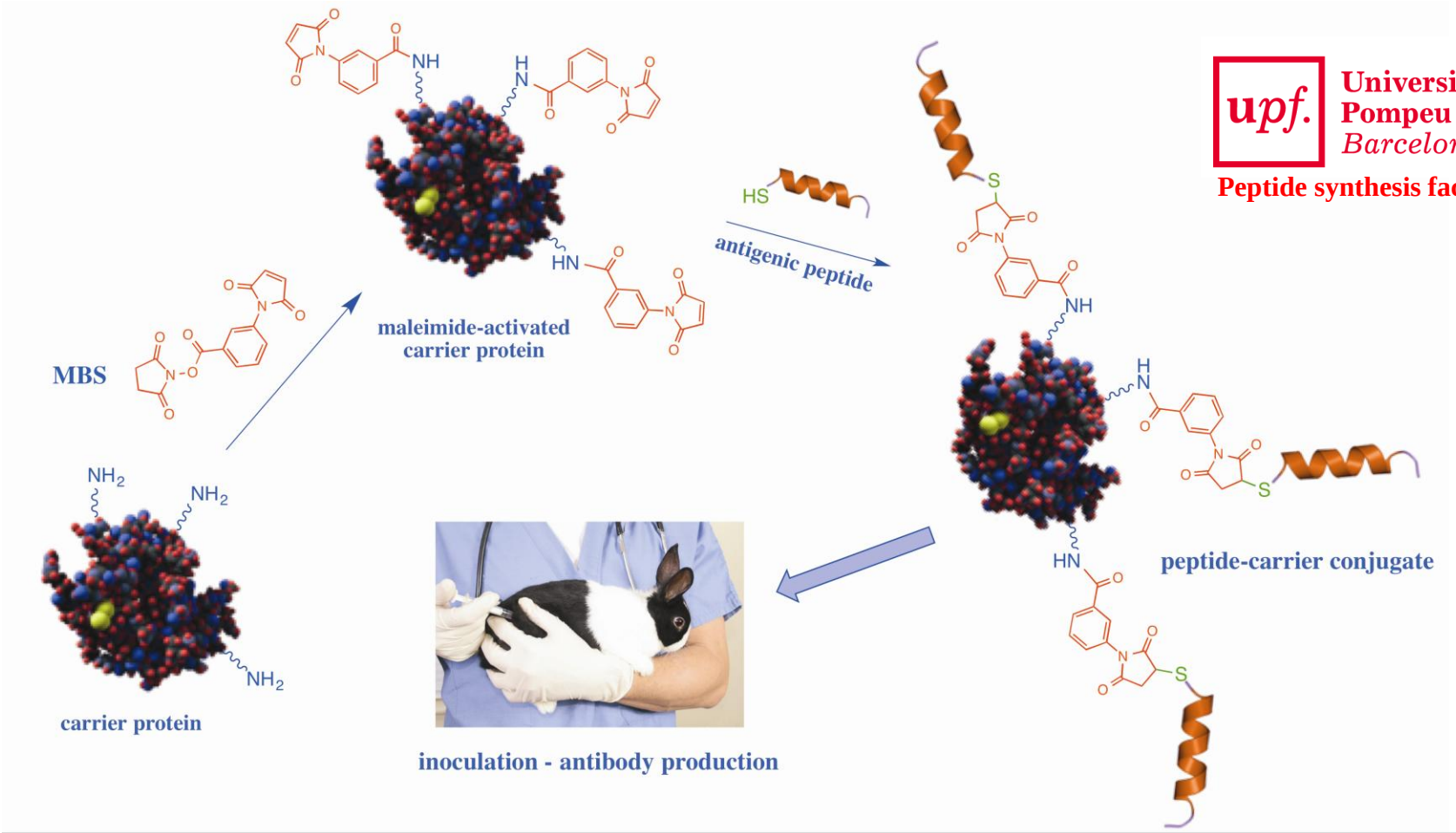
analytical QC (3 systems)

C. HPLC-MS*

structural validation

*equipment available from the UPF proteomics and protein chemistry laboratory

Conjugation to carrier proteins or affinity supports



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Peptide synthesis facility

- An additional Cys residue added N-terminal or C-terminal to enable conjugation
- KLH as typical carrier (also BSA, OVA, TT)
- Heterobifunctional (maleimide-based) coupling chemistries ensures efficiency/selectivity
- AAA of conjugate to determine peptide/carrier molar ratio
- Similar chemistry for peptide-displaying affinity columns