



## JRA3: Deuteration



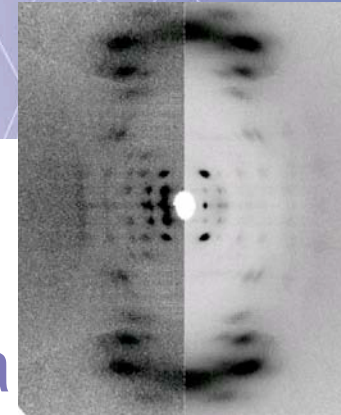
MPI MARTINSRIED

JRA presentation  
General Assembly  
Villigen, CH  
2009, March 31

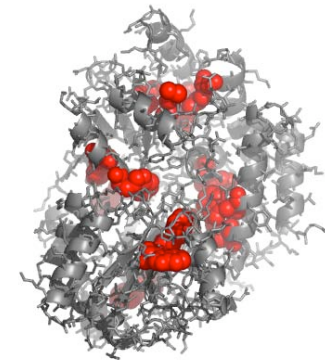


Technische Universität München

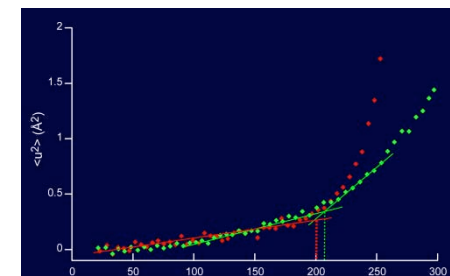
- Reduction of incoherent scattering – improved measurement of coherent data



- Selective labelling – highlighting specific parts of a complex structure



- Reverse labelling – hydrogen labelling for dynamics





- **Decisive impact** on European capability for biological neutron scattering
- **Widened accessibility** of neutron scattering for biology
- **Promoted better interactions between facilities** for biological effort
- Promoted **interdisciplinarity**
- Deuteration JRA deliverables have a **permanent, sustained impact** that will outlive the JRA itself.



- **JRA3 is concerned with method development for biological neutron scattering.**

Methods developed are **freely available** either on the internet or as public domain peer review publications. Deliverables are **reports and protocols** for labelling biological molecules.

Methods are developed that allow new types of deuteration strategies that ultimately feed into the user programmes of biological neutron science

Many of the approaches that are now used routinely for deuteration (eg perdeuteration, specific labelling, reverse labelling) were developed as part of NMI3/FP6.

**New approaches for method development are now being developed in FP7**



## Synergies with other facilities and techniques

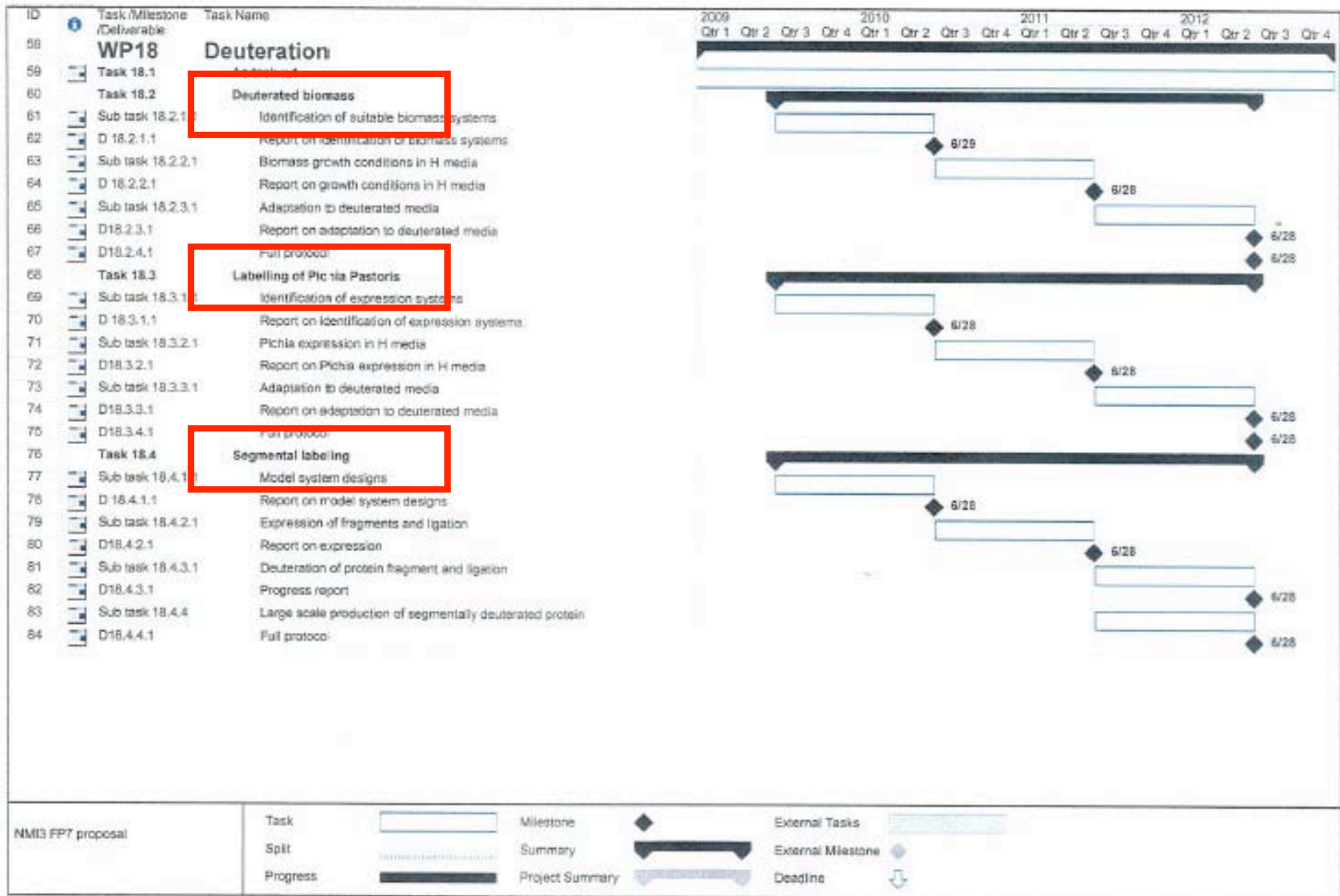
- Initiative for macromolecular deuteration at Grenoble have spurred efforts elsewhere in Europe and throughout world
- NMI3 has pushed development activities that help to :
  - avoid duplication of effort amongst facilities
  - develop complementarity between facilities
  - develop interdisciplinarity exploiting different facilities
  - Exchange expertise
- eg 1: TUM/FRM-II - NMR scientist, through NMI3, is now deeply involved in segmental labelling and as a result now uses neutron methods alongside NMR
- eg 2: STFC – development of small biomolecule deuteration, critically important, and complementing macromolecular capabilities.
- X-ray synergies

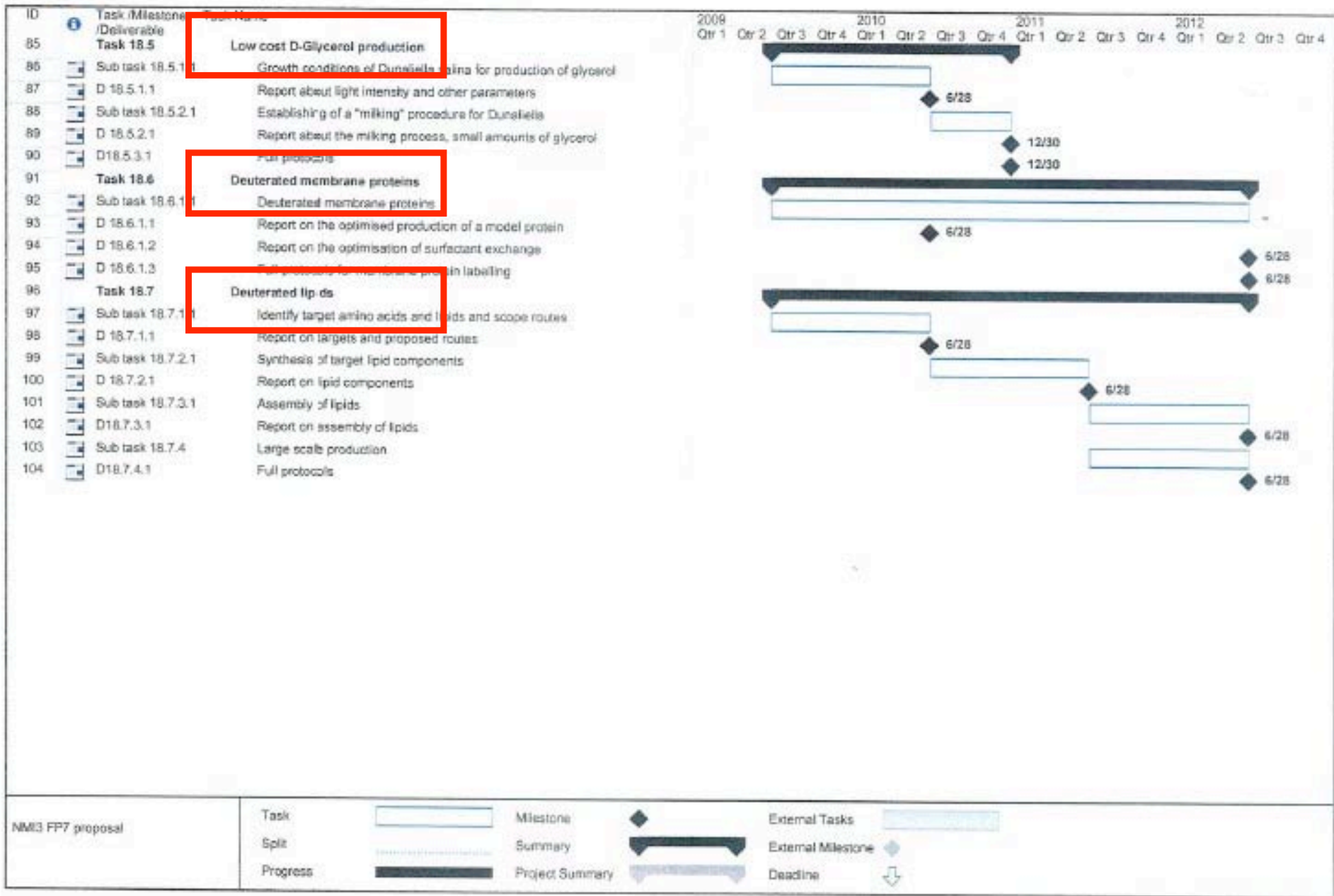


## Beyond FP7: Outlook towards the future &

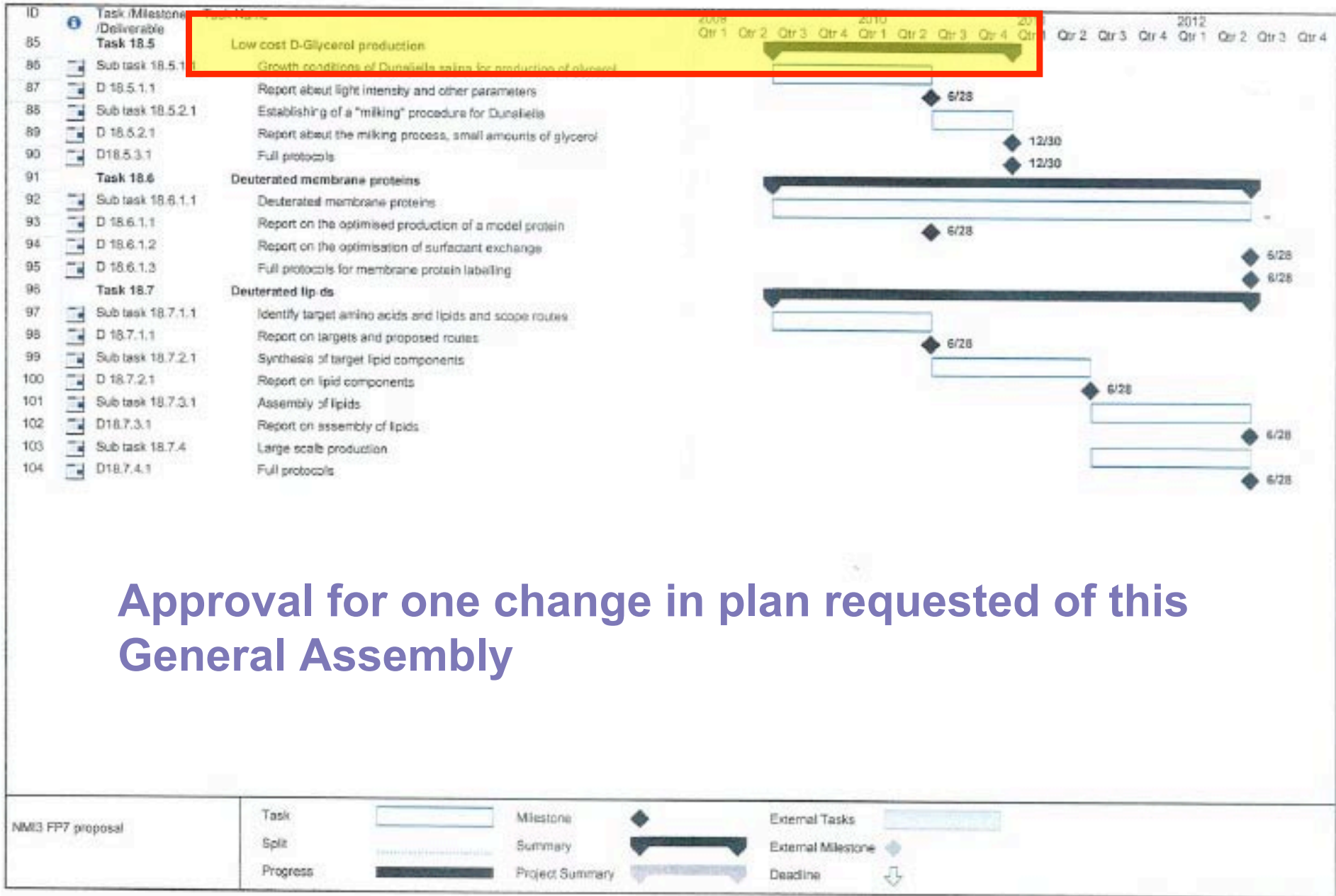
- Impetus for exploitation of labelling in neutron scattering will be sustained
- “Horizontal” connectivity with other techniques is currently improving, and will be extended
- Options for spinout activities



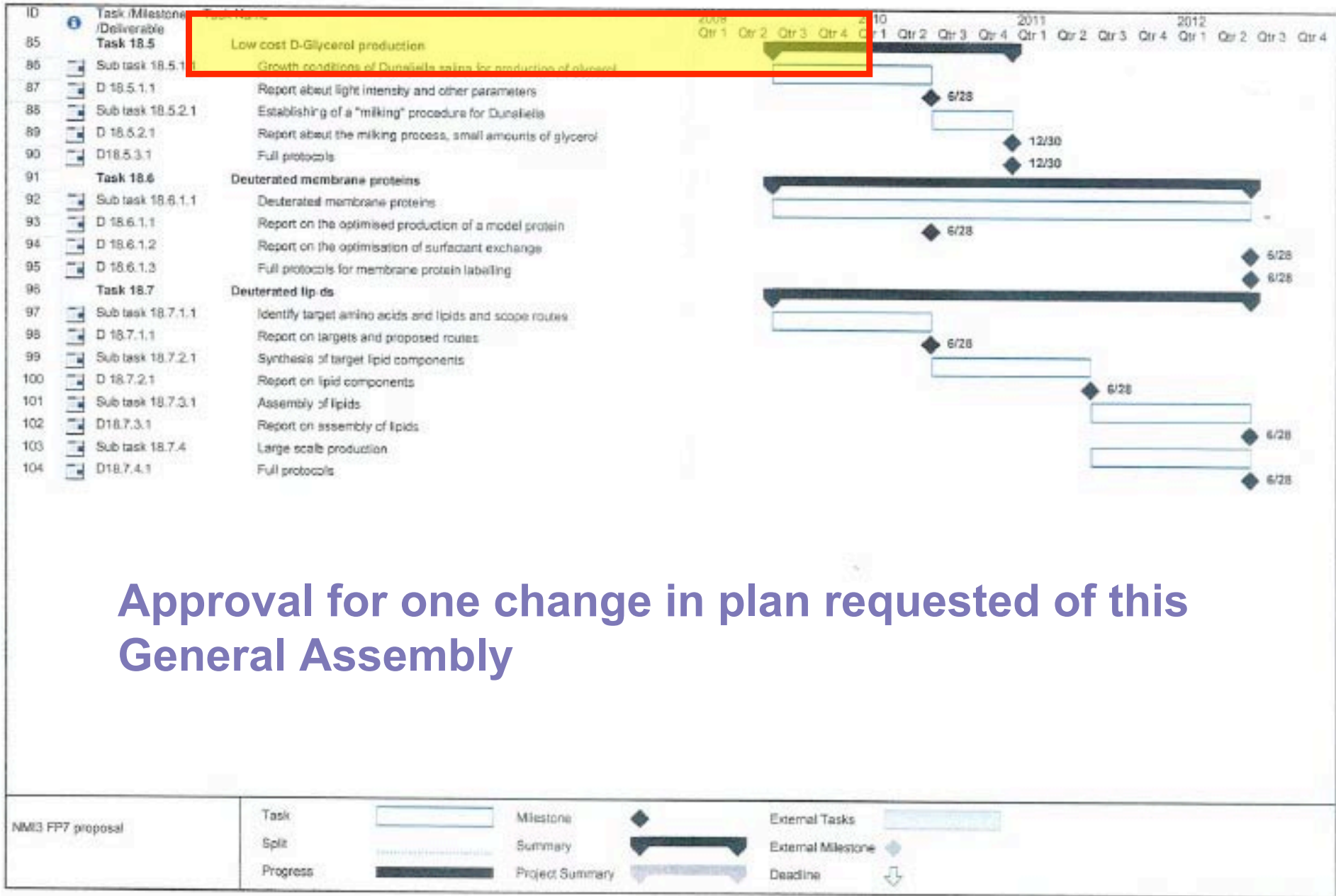








Approval for one change in plan requested of this General Assembly



Approval for one change in plan requested of this General Assembly

Beneficiary: Institut Laue Langevin  
 Project Number 226507  
 Project Acronym NMI3 FP7

Work Package Name Deuteration  
 Work Package Number WP18  
 Work Package Coordinator Trevor Forsyth (ILL)

Work Package Responsible at ILL Trevor Forsyth  
 Name of person carrying out the work  
 Permanent or temporary staff member

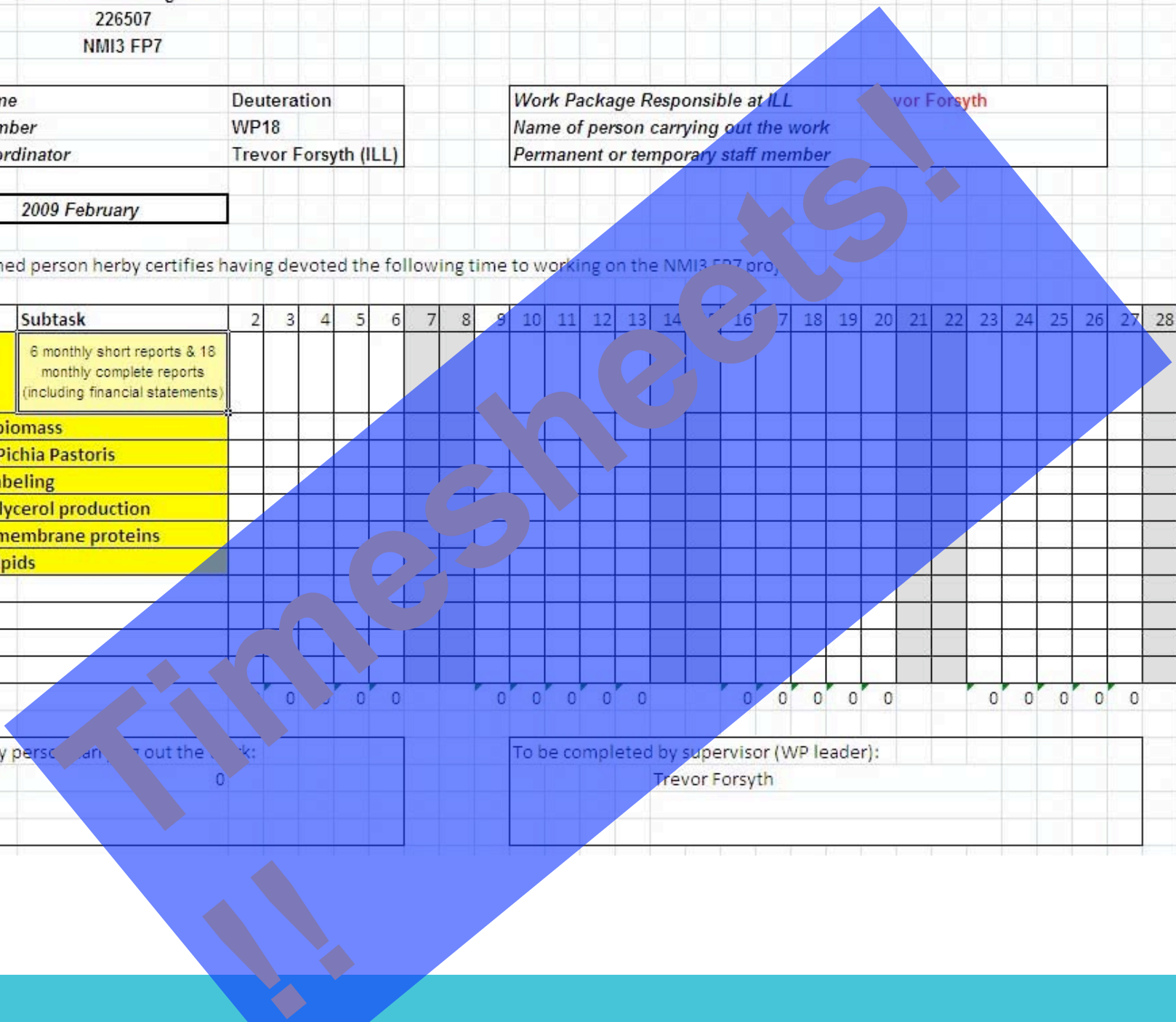
Period 2009 February

The above mentioned person hereby certifies having devoted the following time to working on the NMI3 FP7 project

Task	Subtask	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	total
T 18.1 Reporting	6 monthly short reports & 18 monthly complete reports (including financial statements)																											0	
T 18.2 Deuterated biomass																													0
T 18.3 Labelling of Pichia Pastoris																													0
T 18.4 Segmental labeling																													0
T 18.5 Low cost D-glycerol production																													0
T 18.6 Deuterated membrane proteins																													0
T18.7 Deuterated lipids																													0
Other activities																													0
Absences																													0
leave																													0
public holidays																													0
<b>Total</b>		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

To be completed by person carrying out the work:  
 Name  
 Date  
 Signature

To be completed by supervisor (WP leader):  
 Trevor Forsyth





nmi3



## Deuteration JRA Management meeting

0900 Tuesday 24<sup>th</sup> February 2009

Partnership for Structural Biology (PSB) Seminar Room  
Institut Laue Langevin, Grenoble

### Agenda

1. Welcome
2. Review of previous JRA7 under NMI3/FP6 (T. Forsyth)
3. Summaries from partners on plans for project work under NMI3/FP7
  - ILL-EMBL Deuteration Laboratory (M. Haertlein)  
*Deuterated biomass*  
*Labelling of Pichia Pastoris*
  - TUM/FRM-II, Munich (M. Sattler)  
*Segmental labelling*
  - MPI Martinsreid (H. Heumann)  
*Low cost D-glycerol production*
  - IBS (C. Ebel)  
*Deuterated membrane proteins*
  - STFC/ISIS (C. Neylon)  
*Deuterated lipids*
4. Perspectives from NMR observers
  - ssNMR (A. Watts, Oxford)
  - solution NMR (M. Blackledge, IBS)
5. Reporting under FP7 (T. Forsyth)
6. Beyond FP7
7. Next meeting(s)
8. AOB

# Deuteration JRA startup meeting