



MODELLING MATTERS
The Newsletter of the
RSC Molecular Modelling Group
January 2006

In this Newsletter....

- A view from the Chair – making contact with our members and other groups
- Reports on the (many!) meetings held
- Upcoming meetings

Rather than bore you with another juvenile, adolescent and puerile rant about things one can not change, I thought I might instead bore you with an idea that the MMG committee has now discussed several times. It has recently become apparent that a number of groups within the **Royal Society of Chemistry (RSC)** have interests in some aspect of computational science, be that molecular modelling, theoretical chemistry, chemical information, or informatics. For example, the following RSC subject groups: Molecular Modelling Group, Chemical Information, Chemometrics, Computer Applications, Automation and Analytical Management, Statistical Mechanics and Thermodynamics, and Theoretical Chemistry. Not to mention most other groups including Biophysical Chemistry, the Biological and Medicinal Chemistry Sector, High Throughput Chemistry and New Technologies, *etc., etc.* It has also become apparent that there is a significant lack of coordination in this area, leading to a regrettable duplication of effort. This has manifested itself primarily in the proliferation of meetings on closely related subjects, but it is also evident that the importance of computer-assisted approaches is severely underestimated in chemical sciences. However, it is more and more clear that computational science is, on the contrary, crucial in the future development of chemistry and other chemical sciences. In time, it will come to be seen as just as important as experimental science in all areas of chemistry, biology, and physics. There is, then, a clearly perceived need for better coordination of resources with the RSC. It has been suggested that one way to achieve this would be to establish a **Computational Chemistry Forum**, or similar body, able to leverage these resources more appropriately. There exist opportunities for significant synergy between those different RSC groups interested in computational science within a chemical context. The establishment of a Forum would address both issues of coordination and profile, yet at the same time would guarantee that all groups could be involved without the risk of losing any of their independence, identity, or autonomy. Thinking further ahead, it would also be useful to establish much closer collaborations between all interested groups, whether inside or outside the RSC. Obvious groups would include, but are not limited to, the Molecular Graphics and Modelling Society, the UK QSAR and Chemoinformatics Group, the CCPs, and the British Computer Society. I am sure you could easily think of several more.

As a first step towards this unattainable goal, we have sought to establish e-mail communication with both members of this group and those outside it who might share our objectives, using Smargroups as our list server. Details are included overleaf. **Please join this group.** We intend to use it primarily for keeping people up-to-date with meetings we plan to hold and also of meetings from other groups (with the intention that this will ultimately bring groups closer together) and anything else relevant that comes along. Traffic should be very low and, hopefully, free of spam, but obviously we can not guarantee it.

- Darren Flower, MMG Chairman

ListServ name:
RSC Molecular Modelling Group.

The Group's home page is:
<http://www.smartgroups.com/groups/rscmmg>

From there you can find out about the latest Group information.

The Group's email address is:
rscmmg@smartgroups.com

If you send an email to the Group, it is distributed to all the Group members.

To Join the Group, e-mail:
rscmmg-subscribe@smartgroups.com

If you just want to send mail to the Group manager, the email address is:
rscmmg-owner@smartgroups.com

To leave the Group, either use the Group's home page, or send a blank email message to:
rscmmg-unsubscribe@smartgroups.com

Group Web Site – check out www.rscmodelling.org!

The Group now has its own web site, **www.rscmodelling.org**, as well as our 'old' space on the main RSC site. The original web site was developed by Helen McSparron, working at the Edward Jenner Institute. Helen has subsequently left the Institute, so the task of Webmaster has been taken over by Darren Flower, with backup from John Kendrick and Liz Colbourn.

The web site gives contact details for all of the Committee, as well as reports on past events and information on upcoming ones. There are additional resources (like some information about software).

If there are things you'd like to see on the site, let Darren Flower, Liz Colbourn or John Kendrick know. We aim to please...

Cutting Edge Approaches to Drug Design 2005

The latest, and probably the last, Cutting Edge Approaches to Drug Design one-day meeting was held on 19 October 2005 at the Scientific Society Lecture Theatre (SSLT). The address often given for the SSLT, which is, incidentally, due to close sometime this year having received a reprieve at Christmas, is 23 Savile Row, although the entrance is actually in New Burlington Place. Within this most anonymous of side streets, sandwiched between Regents Street and Savile Row, the SSLT sits cheek by jowl with a furriers and a building site!

Cutting Edge Approaches to Drug Design 2005 was, as ever, organized by a comfortable and familiar quintumvirate: dour Dr Darren Flower (Jenner Institute, University of Oxford), lubricous Dr Mike Bodkin (Eli Lilly), affable Dr Terry Hart (Peakdale Molecular), ineluctable Dr Adrian Stevens (BioFocus), and tendentious Dr Colin Groom (CellTech). The meeting itself was organized with éclat and élan by Elaine Wellingham (Conference Secretariat, Field End House, Bude Close, Nailsea, Bristol BS48 2FQ. Tel and Fax: +44 (0)1275 853311. E-mail: confsec@blueyonder.co.uk) and sponsored by a number of software providers, including Tripos and CCG. As this may well be the last ever CEA2DD meeting, I should like to take this opportunity to extend my full and heartfelt thanks to everyone who has ever been involved in the meeting either as organizer, sponsor, speaker, delegate, or other participant.

As everyone who attended the meeting was keen to point out, the talks given in 2005 were of a uniform quality that has seldom, if ever, been bettered. They were sensational, gripping the attention of novice and expert alike from first to last. The impact was profound and none typified this as much as did our initial keynote lecture - Changing paradigms in drug discovery - delivered by the extraordinary Prof Hugo Kubinyi, now of Heidelberg University, formerly of BASF. Despite his scathing review of myself and the book which I edited that emerged from the first CEA2DD meeting, namely *Drug Design: Cutting Edge Approaches*, we were nonetheless delighted to invite Prof Kubinyi to be our first overseas speaker. An undoubted "big beast" of molecular modeling and QSAR, Prof Kubinyi dazzled and bewitched his audience with a scintillating display of rare erudition.

The array of amazing and astounding talks which followed on from Prof Kubinyi's bravura performance more than matched his benchmark. The second lecture of the day was given by Prof Peter Willett from the University of Sheffield. Delivered by, arguably, the world's greatest academic cheminformatician, Prof Willett's talk was all that one could have hoped it would be and dealt with the development of a variety of extraordinary state-of-the-art chemical structure searching techniques. The third lecture of the day was given by Dr Adrian Stevens (BioFocus) who was obliged to swap his lecture with that of Dr Christopher Woods, from Southampton University, who was a victim of railway delays. The fourth lecture of the day was given by Dr Alexander Alex (Pfizer), who addressed the arcane world of computational support for hit-to-lead medicinal chemistry.

After our phenomenal lunch, the first lecture was delivered by Dr Marina Tintelnot-Blomley, who described a variety of exquisite examples of computational and structure-based work undertaken within Novartis. This was followed by Dr Christopher woods, who kindly deputized for Dr Jon Essex, who, unfortunately, was not able to fulfil his obligation to present a lecture. Nonetheless, Dr Woods gave a first rate talk about how high end molecular simulation can add value to conventional, molecular modelling. After tea, Dr Terry Hart warmed the hearts of all dyed-in-the-wool medicinal chemists with an old-style lecture on the on-going quest for medically relevant cysteine protease inhibitors. The day drew to a close with a barnstorming performance from Prof Bobbie Glen from the Unilever Centre for Molecular Science Informatics, University of Cambridge. Focussing on his extraordinary collaboration with PhD Student Andreas Bender, Prof Glen highlighted the ground breaking performance of circular bit strings in all areas of cheminformatics.

While CEAtDD may have run its course, its mantle will, it is hoped, be picked up and carried enthusiastically into the next decade by the Virtual Discovery meeting series which will begin in but a few short weeks time. CEAtDD 2005, and all preceding meetings, are supported in full by a dedicated website, which is accessible via the MMG homepage, www.rscmodelling.org.

Young Materials Modellers Forum 2005

For the last two years, the RSC MMG has organized a "Young Materials Modellers' Forum" meeting, following the successful established format from the Young Modellers' Forum, but as the name suggests, with a different focus. The events in May of 2003 and 2004 had taken place at the Daresbury Laboratory, but for 2005, the venue was the Physical and Theoretical Chemistry Laboratory at the University of Oxford, and the date moved to September – to be precise, Wednesday September 28th.

So on that morning, I made my way through the usual nightmare traffic between Cambridge and Oxford, leaving my car at the Peachtree Park and Ride at the north end of the city and catching the bus into town. Oxford, particularly the university area, is terrible for parking and use of the Park and Ride schemes in the city is almost essential. I arrived in good time and the meeting commenced with coffee and biscuits in a side room. Neil Allan and his secretary had performed the administrative tasks for the event, with the estimable Peter Grout at Oxford providing the venue and the catering.

Attendance was disappointingly low, at 24, although there was an excellent program of talks and posters. I provided the compere's role and together with Peter Grout, we judged the talks and the posters. There were seven oral presentations given in the building's state-of-the-art lecture theatre, all of the highest quality, on topics ranging from dynamics simulations of crystallization to *ab initio* studies of compounds and their structures. The prizewinners were Jake Filik from Bristol, whose topic was "Raman Spectroscopy of Diamondoids", and Robert Hawtin from Warwick, "Gas Hydrates - Growth versus Inhibition".

The range of posters was even wider, with 10 being presented. The winning presentations came from Halim Kusumaatmaja of Oxford, "Drop Dynamics on Chemically Patterned Substrates", and Andrew Cheesman from Bristol, "Computational Studies of Elementary Steps in the Growth of CVD Diamond".

So, this was a meeting of a high standard, with many enthusiastic presenters - it is a pity that their work was not enjoyed by a larger audience. Many thanks are due to Neil Allan and Peter Grout, and their colleagues, for organizing and hosting such an enjoyable meeting.

As can be seen from the number of attendees and the number of presentations, the audience consisted of presenters, one or two colleagues, and organizers. The MMG is considering organizing the next YMMF event in early 2007, and we are very open to suggestions about how to increase the audience. Perhaps there is not the size of community that there is for life sciences modelling, and certainly there is not the commercial and industrial investment from which that sector benefits, but there is certainly a substantial base in terms of quality to put this event in the same league as the original life sciences YMF meeting. This meeting, although small, proved that.

- Steve Maginn, MMG Committee Member

Young Bioinformaticians Forum 2005

The third annual Young Bioinformaticians' Forum (YBF 2005) was held in the modern and comfortable surroundings of the Institute of Physics on Friday October 21st of last year, which after a grey start turned into a wonderfully mild and sunny autumn day. After a keynote lecture by Dr Thomas Sorensen (Diamond Sychrotron – incidentally the largest UK-funded scientific institute to be built in the last 30 years), the student presentations began with sessions on Structural Biology and Genome Analysis/Annotation, broken by a coffee break poster session. After lunch, sessions followed on Systems Biology and Computational Biology. Two major themes that emerged over the day were the increasing predictive power of bioinformatical algorithms, and the increasing integration of data-driven bioinformatics with the previously theory-dominated domain of systems biology. Scientists constructing models of cellular or metabolic processes now have access to carefully curated sets of solid empirical data. Also, our capability to data mine these resources is increasing as new machine learning techniques are developed specifically to address biological data.

These trends were reflected in the prizes awarded at the end of the day. The judges had a difficult task to pick winners from so many superb presentations, but nevertheless decisions had to be made. James Wasmuth (University of Edinburgh) was named Young Bioinformatician of the Year 2005 for his work in constructing a compendium of transcribed genes in 36 species of nematode worm. Data mining of this set enabled James to identify kinds of protein structure unique to certain lineages of worms, and thereby to make some interesting deductions about the different evolutionary pressures faced by parasitic as opposed to free-living nematodes. The runner-up was Michael Barton (University of Newcastle upon Tyne) for his work on reconstructing metabolic pathways from large-scale environmental shotgun sequencing projects.

The poster sessions were no less interesting. Among the many superb entries, which were judged on both scientific excellence and quality of communication in the poster medium, the winner was Hazael Maldonado Torres (Anthony Nolan Research Institute) for his development of the Cactus population genetics analysis and display software. The runner-up was Amy Tang (Medical Research Council Clinical Sciences Centre) for her development of the Genome Environment Browser (GEB) software.

After the usual votes of thanks to the organizers and hosts, the meeting ended with Grace Baynes, the marketing manager of co-sponsors Biomed Central, describing the latest developments in open access publishing. There was still time for a quick diet lemonade in the local hostelry before people had to rush off to catch planes, trains etc. at the end of this superb day.

- *Derek Gatherer, MMG Committee Member*

Young Modellers' Forum 2005

The Young Modellers' Forum (YMF) event has established itself firmly on the calendar over the last ten years. Organised jointly by the Molecular Graphics and Modelling Society (MGMS) and the RSC-MMG, and taking place early in December in London, it provides PhD students in Life Sciences modelling groups with the opportunity to present their work to their peers, and in front of an audience of practising modellers from the pharmaceutical and biotech industries. There's a competitive element too, as there are prizes for the best of the oral and poster presentations.

The 2005 YMF took place on Friday 2nd December at the English Heritage Lecture Theatre, on Savile Row in the West End of London. Registration (and lunch!) was free, courtesy of 13 industrial sponsor organisations. Organised jointly by myself and Stuart Firth-Clark from De Novo Pharmaceuticals, there were 115 attendees from industry and academia around the UK, and indeed beyond, as two presenters came from Germany, having won the German MGMS chapter's equivalent event and having passed a pre-selection procedure (YMF events are always over-subscribed). 12 oral presentations on a wide variety of topics, although arranged into as logical an order as possible, were given through the day. There were only 20 minutes given for each, so as to allow for a substantial lunch break in which a hot buffet was served, and the 12 poster presenters were grilled about their work. The morning oral session was chaired by myself, the afternoon by Adrian Stevens.

At the end of the oral presentations and as is traditional in YMF events, a light relief item filled in the gap between the presentations and judging. This year, "Compound Countdown", a version of the popular TV show with molecular fragments instead of letters, proved a huge hit, with several attendees asking for copies of the material so that they could present it at their corporate Christmas parties!

And finally, the winners were announced. There were three oral prizewinners, with no distinction between them:

- Paul Czodrowski, University of Marburg; "Where do the protons go? Protonation states in proteins and their complexes"
- Jolanta Zurek, University of Bristol; "Modelling drug metabolism in cytochrome P450 enzymes"
- Sally Mardikian, University of Sheffield; "Using multiobjective optimisation to study the strengths of different interaction energies in protein-ligand complexes"

And two poster prizewinners;

- Nick Burgoyne, University of Leeds; "Can Clefs Aid the Prediction of Protein-Protein Interfaces?"

- Christoph Gerlach, University of Marburg; "Docking and direct design in the binding pocket – libraries for serine protease inhibitors"

And, following tradition, everyone repaired to a local hostelry for "networking" afterwards! Many thanks to all concerned, and roll on the 2006 event, already booked for Friday 1st December at the Brunei Gallery, SOAS, University of London.

- Steve Maginn, MMG Committee member

Upcoming Meetings

Meetings that are currently being organised by the Group are:

- **Virtual Discovery**, Institute of Physics, 21 March 2006. This meeting is being organised jointly with the BMCS. Invited speakers include David Leahy (Cyprotex), Andy Vinter (Cressett), Nikolaus Heinrich (Schering) and Mike Hann (GSK). For more details please contact the Conference Secretariat (Elaine Wellingham) at esw@confsec.co.uk.
- **Cutting Edge Approaches to Drug Development II**, University of Bradford, 24-25 April 2006 This is a follow-up from the first meeting held in 2004. Discounted registration is available for academic registrants. For more details, see the website <http://www.ipi.ac.uk/resources/events/event/cutting-edge-approaches-to-drug-development-ii> or contact Anne Chanet (A.Chanet@Bradford.ac.uk), Liz Colbourn (colbourn@intelligensys.co.uk), John Kendrick (J.Kendrick@bradford.ac.uk) or Frank Leusen (F.J.J.Leusen@bradford.ac.uk).
- The next **Young Modellers Forum** will be held on December 1st, 2006 in London, in conjunction with the main organisers the Molecular Graphics and Modelling Society.
- The next **Young Materials Modeller Forum**, as mentioned above, will be held in Spring 2007. More details will be sent nearer the time.
- The **Young Bioinformaticians Forum** will henceforth be run by the UK Bioinformatics Forum. See their web site for further details.

If you have suggestions for other topics, or if you would like to volunteer to help organise a meeting, please contact the Group's secretary Liz Colbourn, colbourn@intelligensys.co.uk.

Other meetings of interest to Group members include:

Docking and Scoring in Structure Guided Drug Design, University of Southampton, 5-7 April 2006. This meeting is being organised by the Molecular Graphics and Modelling Society and plenary speakers include Ruben Abagyan (Scripps Research Institute), Chris Chipot (Universite Henri Poincare), Andrew Good (Bristol-Myers Squibb), William Jorgensen (Yale University), Andrew Leach (GlaxoSmithKline), Hans Matter (Sanofi-Aventis), Didier Rognan (Universite Louis Pasteur) and Marcel Verdonk (Astex Therapeutics). Registration closes on 5th March 2006. Please see the conference website for more information (www.soton.ac.uk/~jwe1/main.html) or contact Dr Christine Richardson (c.richardson@vernalis.com) or Dr Jonathan Essex (jwe1@soton.ac.uk).

12th International Workshop on QSAR in Environmental Toxicology, Lyon, France, 8-12 May 2006. For more details see <http://www.ctis.fr/QSAR2006>. This meeting is organised by CTIS, Lyon.

Molecular Modelling 4 Chemists, Cardiff University, 18-20 September 2006. This is jointly organised by the RSC and Cardiff University.

Euro-QSAR 2006, September 10-17 2006. This is being held as a Mediterranean cruise, so will undoubtedly be popular! For more details see <http://www.euro-qsar2006.org/index.php>.

Computational Life Sciences 2006, Cambridge University, 27-29 September 2006. This is jointly organised by the Unilever Centre of Cambridge University and Konstanz University in Germany. For more details see <http://www.complife.org>.

Comments or Contributions?

Please send any feedback on the Newsletter, including ideas for upcoming editions, to Liz Colbourn, colbourn@intelligensys.co.uk. If you are interested in taking an active role within the Group, please contact either Liz, or Darren Flower. Contact details for the Committee are on our web site, www.rscmodelling.org.