ACB News

The Association for Clinical Biochemistry & Laboratory Medicine | Issue 657 | February 2019

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ACB Administrative Office
Association for Clinical Biochemistry
& Laboratory Medicine
130-132 Tooley Street
London SE1 2TU
Tel: 0207-403-8001
Fax: 0207-403-8006
Email: admin@acb.org.uk

ACB President
Professor Ian Young
Tel: 028-9063-2743
Email: president@acb.org.uk
Twitter: @ACBPresident

ACB Home Page
http://www.acb.org.uk

Printed by Swan Print Ltd, Bedford
ISSN 1461 0337

Front cover: The Scottish Event Campus, Glasgow, venue for Focus 2019

ACB News

The bi-monthly magazine for clinical science

Issue 657 • February 2019

The Association for
Clinical Biochemistry & Laboratory Medicine

Better Science, Better Testing, Better Care

Nominations for Positions of Company Secretary and National Member of Council

In accordance with the provision of Articles 11 and 14 as outlined in the Association Bye-Laws subsections 6.2 and 6.3, nominations are called for the positions of Company Secretary and National Member of Council. Nominations for these positions, duly countersigned, should be made on the nomination form on page 34 in this issue of ACB News and sent to: ACB Administrative Office, 130-132 Tooley Street, London SE1 2TU before **12th March 2019**. ■

Cardiac Marker Dialogues

In 2010 UK NEQAS for Cardiac Markers identified a requirement to initiate a dedicated meeting to educate and involve Clinical Scientists, Biomedical Scientists, Clinicians and the diagnostics industry in the continuously evolving area of cardiac markers and their role in diagnosis and treatment. After three successful meetings in 2010, 2011 and 2014, a fourth Cardiac Marker Dialogues meeting is to be held on 5th April 2019 at the Hilton Glasgow Grosvenor Hotel, Glasgow.

Registration deadline: **Monday 11th March.** Full details are available on the website: **www.cmdmeeting.org.uk** ■

Condolences

It is with regret that we must inform you of the sad news of the following deaths: ACB Overseas Member Miss Jillian (Jill) Tate died on 3rd December 2018 aged 68. Miss Tate joined the Association in 1989 and worked in Brisbane, Australia. ACB Retired Member Mr R Aitkens died on 28th December 2018 aged 80. Mr Aitkens joined the Association in 1961 and lived in Northampton. ■

Endocrinology Guideline Summaries

The ACB Trainees' Committee have introduced new endocrine summary guidelines which can be accessed at: **http://www.acb.org.uk/whatwedo/trainees_home/endocrine-guideline-summaries**

They are intended to help summarise endocrine diagnoses, testing strategies and the strengths or pitfalls of particular assays. ■

Sudoku

This month's puzzle

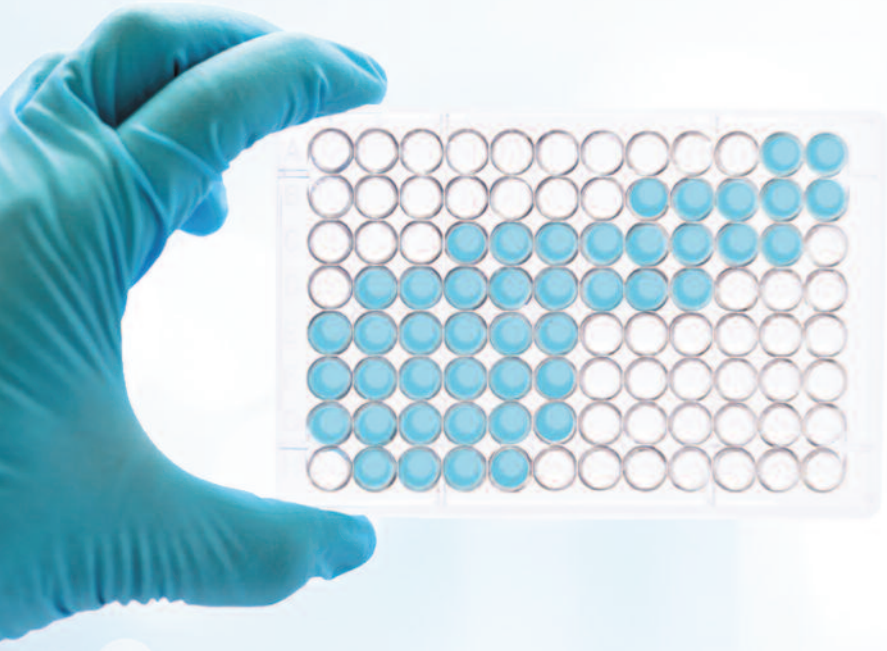
	Y						H	
		R	T		M	E		
			C	R	H			
			Y		C			
		C	E	T	S	Y		
	H						T	
	C		M		R		I	
	I	M				T	E	
				S				

Solution for December

H	S	Y	I	E	R	C	M	T
M	T	E	Y	C	S	H	I	R
I	C	R	M	T	H	E	S	Y
S	I	H	R	Y	M	T	C	E
E	M	C	S	H	T	R	Y	I
R	Y	T	C	I	E	M	H	S
C	H	S	T	R	I	Y	E	M
T	E	I	H	M	Y	S	R	C
Y	R	M	E	S	C	I	T	H

FAECAL PANCREATIC ELASTASE ELISA

new monoclonal test system for the quantitative determination of Pancreatic Elastase in stool



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AMALCs Editor-in-Chief – Call for Expressions of Interest

The Analyte Monographs Alongside the National Laboratory Medicine Catalogue (AMALCs) are a valued and valuable clinical, scientific and technical resource used by ACB members and non-members alike. The existing AMALCs can be found by following this link: **http://www.acb.org.uk/ whatwedo/ science/amalc.aspx**

Their preparation was commissioned by NHS England to complement the National Laboratory Medicine Catalogue, and Dr William Marshall is the current Editor-in-Chief. Dr Marshall will stand down from this position in May 2019 and the Scientific Committee would like to invite expressions of interest from suitably qualified colleagues.

The specific duties are to work with the Scientific Committee and AMALC authors to ensure appropriate new AMALCs are commissioned; to help authors write the new AMALC document in the appropriate style with good grammar and prose; to liaise with the ACB office to ensure final edited versions are uploaded to the ACB website; to liaise with authors to ensure existing AMALCs are reviewed regularly.

If you are interested and feel you fit the bill, then please prepare a single side of A4 detailing your relevant knowledge and experience, your qualifications for the role, and why you are interested and email to Chris Chaloner: **director.scientificaffairs@acb.org.uk** The closing date for full applications is 31st March 2019. The role attracts a small stipend based on duration of specific editing activity.

- Editor's note: We intend to start publishing the AMALCs in ACB News in the coming months. ■

Nominations for Awards: Focus 2020

Nominations are invited for the following Award to be presented at Focus 2020:

The ACB Foundation Award

This Award is to acknowledge an outstanding contribution to Clinical Biochemistry by an Association Member, who is normally resident in the UK. The recipient will deliver the Foundation Award, reflecting the 'state of the art' in an area of Clinical Biochemistry at the national meeting.

Written nominations for this Award are sought from a proposer and two seconders, who are Members of the Association (excluding elected Members of Council). Nominations must be accompanied by a supporting statement outlining the nature of the contribution made by the nominee and the reasons for consideration for the Award.

Nominations should be sent to: Mrs Sarah Robinson, Consultant Clinical Scientist, Biochemistry Department, Leighton Hospital, Middlewich Road, Crewe, Cheshire, CW1 4QJ. Email: sarah.robinson@mcht.nhs.uk

Closing date: 30th March 2019. ■

NHS
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Danielle Freedman honoured by her Trust

In recognition of her service to Luton and Dunstable University Hospital NHS Foundation Trust where she has worked for 33 years, and for her commitment to education and training throughout her career, the Trust has honoured Danielle by naming the Trust Library after her.

As well as her clinical commitments as Consultant Chemical Pathologist and Associate Physician in Clinical Endocrinology, Danielle holds important senior management roles. She is Clinical Director of Pathology, Radiology and Pharmacy and since 2015 has acted as Chief Medical Adviser to the Trust Board, having been Trust Medical Director prior to that appointment.

In the summer of this year, Danielle was awarded Honorary Membership of the ACB in recognition of her national and international contribution to Clinical Biochemistry and Laboratory Medicine.

Danielle with Simon Linnett, Chair of the Trust Board; David Carter, Chief Executive Officer; and Dr Nisha Nathwani, Director of Medical Education

Her contributions to training and continuing medical education are many; she has organised the 'Clinical Cases' sessions at Focus meetings for many years and taken part in numerous Training Days and courses.

She is frequently invited to speak internationally and has won the American Association of Clinical Chemistry (AACC) 'Outstanding Speaker' Award at both the 2009 and the 2015 AACC Annual Meetings.

Danielle has contributed professionally to the ACB, AACC and the Royal College of Pathologists (RCPath). She was a National Member on ACB Council from 2011 to 2015, served on the Organising Committees for the AACC Annual Meetings in 2011 and 2014, and sat on RCPath Executive and Council from 2005 to 2011 (as elected Vice President from 2008).

From a wider perspective, Danielle has a particular interest in aspects of the patient experience, including safety, outcomes and awareness. She is currently the Chair of the Lab Tests Online-UK Board, a patient-centred initiative. She also sits on the Advisory Group for UK NEQAS for Interpretative Comments.

In 2015, Danielle featured in the Top 100 International Power List of Influential Laboratory Medicine Professionals, published by the journal *The Pathologist.*

The naming of the Library at Luton and Dunstable was announced on the occasion of the official opening of the new Education Centre in the Trust, on 30th November. ■

ACB South-West & Wessex Regional Scientific Meeting

Genetics

29th March 2019

The Corner House Hotel, Taunton, TA1 4DQ

09:30-10:00	Tea/Coffee and signing in
10:00-10:30	SW&W Region AGM
10:30-11:05	Genetic Counselling *Andrea Rotchell, Peninsula Clinical Genetics Service*
11:05-11:40	Genetic Bioinformatics *Lucy Mallin, Peninsula Clinical Genetics Service*
11:40-12:15	MODY *Kevin Colclough, Peninsula Clinical Genetics Service*
12:15-13:15	Lunch and meeting our sponsors
13:15-13:50	Fabry Disease *Derralynn Hughes, Lysosomal Storage Disease Unit, Royal Free Hospital*
13:50-14:25	Gaucher Disease *Tim Reynolds, Clinical Chemistry, Queen's Hospital, Burton Upon Trent*
14:25-15:00	100,000 Genome Project *Charles Shaw-Smith, Peninsula Clinical Genetics Service*
15:00-15:15	Tea Break
15:15-15:50	Inherited Metabolic Disease Cases: The Interplay of Biochemistry and Genetics *Vicki Warburton, Clinical Biochemistry, Bristol Royal Infirmary*
15:50-16:25	AAT Deficiency and Phenotyping *Adrian Brown, Immunology, Southmead Hospital*
Close	16:25

Registration is open via the ACB Regional Meetings webpage:
http://www.acb.org.uk/whatwedo/events/regional_meetings.aspx

Closing date for registration is Friday 22nd March.
Please note registration on the day will not be available.

Lab Tests Online-UK Editors Needed

Lab Tests Online-UK invites interested healthcare scientists and doctors to join the voluntary team of editors for www.labtestsonline.org.uk

Lab Tests Online-UK (LTO-UK) is written by practising laboratory professionals to help the public understand the many clinical laboratory tests that are used in diagnosis, monitoring and treatment of disease. It is supported by the Association for Clinical Biochemistry and Laboratory Medicine (ACB), the Institute of Biomedical Science (IBMS) and The Royal College of Pathologists, and is entirely dependent on the efforts of unpaid volunteers. It is non-commercial and is consistently rated highly by patient associations and GPs as a trusted website.

Editing pages is interesting and plays an important role in helping patients understand the tests we perform.

Your role as an Editor would involve the review of new and existing pages on the website about specific tests and conditions and the contribution to the articles for news feed. Commitment is flexible and we normally ask for pages to be returned within 4 weeks.

All specialities are welcomed to apply and we have a particular shortage of editors with genetics, microbiology and virology expertise.

Please contact: **labtestsonlineuk@acb.org.uk** for more information.

ACB Membership Awards 2019

Nominations for this year's Awards are invited from Regional Committees, together with a citation of about 500 words, outlining the basis of the nomination.

The Award must be approved by Council at its meeting in March 2019, and it is important that the Regional representative is able to extol the virtues of the nominated individuals.

The three award categories are:

Emeritus Member

Persons who have been Ordinary Members of the Association for at least ten years and have retired from full-time employment and who have made an exceptional contribution to the objects of the Association may, on the recommendation of Council and by a majority of at least two-thirds of those voting at a General Meeting, be elected Emeritus Members of the Association.

Fellow of the Association

Persons who have been Ordinary or Affiliate Members of the Association for at least ten preceding consecutive years and have retired from full-time employment may, on the recommendation of Council and by a majority of at least two-thirds of those voting at a General Meeting, be elected to the category of Fellow of the Association.

The recipients have made a significant contribution to the profession in one or more of the following areas:

- Continually led and instigated changes to meet the needs of Clinical Biochemistry and Laboratory Medicine services on behalf of a region or nationally.
- Developed exceptional educational and/or training facilities for the profession.
- Led in setting up and developing, over a considerable period of time, a well-respected and valued specialised service that had a major impact either within a region or nationally.
- Raised the profile of the profession over many years, within the lay or clinical community, either regionally or nationally.

Honorary Member

Persons who have made a distinguished contribution to Clinical Biochemistry and Laboratory Medicine at international level may, following the recommendation of Council and by a majority of at least two-thirds of those voting at a General Meeting, be elected Honorary Members of the Association.

If you would like to propose someone then contact your ACB Regional Secretary. Proposals must be supported by the Regional Committee and the nomination submitted through the Regional Committee at the Council meeting in March 2019.

The closing date for nominations received by Council is 12th March 2019. ■

UKNSLN Annual Scientific Meeting

Thursday 28th March 2019

Nowgen Centre, Meeting Room 1, 29 Grafton Street, Manchester M13 9WU

10:00-10.30	Registration/Tea and Coffee
10:30-11:10	Newborn Screening for SCID in the Netherlands: Preliminary Results of The SONNET-Study *Dr Maartje Blom, RIVM and Leiden University Medical Center, The Netherlands*
11:10-11:35	Innovations in Dutch Newborn Screening *Dr Peter Schielen, RIVM and Leiden University Medical Center, The Netherlands*
11:35-11:45	Update on PHE SCID Evaluation *Lesley Tetlow, Manchester*
11:45-12:30	Next Generation Sequencing for CF Screening *Dr Lynette Shakespeare & Dr Richard Kirk, Sheffield*
12:30-13:00	Newborn Bloodspot Screening for Duchenne Muscular Dystrophy – Past Experience and Future Challenges *Professor Stuart Moat, Cardiff*
13:00-14:00	Lunch
14:00-14:30	Newborn Screening for Mucopolysaccharidoses *Teresa Wu, Manchester*
14:30-15:00	The Grand Tour; Findings from Visiting 13 Newborn Screening Labs *Julie Wilcox, Public Health England*
15:00-15:30	Genetic Risk Profiling on Newborn Screening Bloods: A Platform for Enrolling into a Clinical Trial to Prevent Type 1 Diabetes (GPPAD) *Dr Matthew Snape, Oxford*
15:30-15:50	Programme Centre Update *Professor Jim Bonham, PHE/Sheffield*
15:50-16:00	Questions/Discussion

The meeting includes refreshments and lunch.

Cost of meeting £25.

Further details and registration form at:
www.newbornscreening.org or email **beverly.hird@mft.nhs.uk**

Statistical Computing with R and Stata

Rewley House, 1 Wellington Square, Oxford

1st April – 31st May 2019

Complement your Statistical Skills with Expert Methods in R and Stata

Learn to programme statistical packages in order to complement statistical skills with advanced techniques. In each of the two statistical packages, students begin with 20 essential commands and progress towards computer-intensive statistical methods such as simulation, advanced regression modelling techniques, multiple imputation, cross-validation and bootstrapping.

The overall aim of this module is to enable students:

- To gain confidence in two high-level professional statistics packages.
- To learn fundamental programming techniques such as loops, and apply them in contexts such as Monte-Carlo simulation power calculations.
- To have an introductory view of Bayesian statistical modelling.
- To gain an overview of statistical learning methods ("machine learning", or "algorithms" in the popular press).

Admissions Criteria

Students should have familiarity with basic statistical concepts (*p*-value; mean, standard deviation, standard error, confidence interval, normal distribution) and the essential methods used by medical statisticians such as linear, logistic regression and Cox regression.

This course is delivered and assessed wholly online over an intensive 8 weeks.

The course is coordinated by Dr Jason Oke, a Senior Statistician at the Department of Primary Care Health Sciences, Oxford. His research interests are in cancer diagnostics, evaluating monitoring and screening programmes.

Full details and information on how to apply can be found on the course web page: **https://www.conted.ox.ac.uk/courses/statistical-computing-for-r-and-stata**

The Diggle Microbiology Challenge

These multiple-choice questions, set by Dr Mathew Diggle, are designed with Trainees in mind and will help with preparation for the Microbiology Part 1 FRCPath exam.

Question 11 from December's ACB News

The action of probenecid is to?

A) Increase the spectrum of penicillin
B) Increase the renal transport of penicillin
C) Increase the blood level of penicillin
D) Increase the protein binding of penicillin
E) Decrease the action of penicillinase

Answer

C) Increase the blood level of penicillin. Probenecid is a renal tubular blocking agent that inhibits the tubular secretion of anions such as penicillin, thus increasing serum levels. Probenecid has no activity against the penicillin molecule and does not cause any modifications to its activity. The spectrum of penicillin can be increased via side chain modification.

Question 12

Which disease is associated with faecal monocytosis?

A) Infantile gastroenteritis due to E coli 0119

B) Salmonella typhimurium gastroenteritis

C) Shigellosis

D) Typhoid fever

E) Staphylococcal enterocolitis

The answer to Question 12 will appear in the next issue of ACB News – enjoy!

Deacon's Challenge

No 200 - Answer

Your laboratory performs a screening test on patients referred by their GPs with symptoms suggestive of a rare disease (prevalence 1 in 50 of patients referred). The cost is £20 per sample. Follow up of patients with a positive result includes extensive imaging studies and biopsy and your clinical colleagues estimate that the cost is approximately £2000 per patient. They have expressed concern at the high number of false positives (the sensitivity of the test is 99% but the specificity only 85%). The option of adjusting the decision level is unattractive since a significant number of patients with the disease will be missed and the cost of omitting the screening step is prohibitive. You have discovered that an alternative test has become available with a sensitivity of 99% and a specificity of 96% but its implementation involves the purchase of a dedicated analyser and increased reagent and labour costs. You have negotiated a leasing deal with the supplier and you calculate that the total cost of the new test will be £120 per sample. You have been asked to prepare a business case with an assumed annual workload of 2500 samples. Estimate the potential annual savings if the new test is introduced.

As the prevalence of the disease is 1 in 50, out of the 2500 patients tested each year 50 (i.e. 2500/50) will have the disease whereas the remainder, 2450 will not.

Both tests have the same sensitivity so the number of true positives will be 50 x 99/100 = 49.5 for each test.

Using the current test
Number of true negatives = Number of disease free patients x specificity = 2450 x 86/100 = 2107

The remainder of disease free patients will constitute false positives i.e. 2450 - 2107 = 343

Therefore the total number of positive results is 49.5 + 343 = 392.5

The cost of further investigation is 392.5 x £2,000 = £785,000

The total number of tests is 2500 with a total cost of 2500 x £20 = £50,000

Therefore the total cost involved is £785,000 + £50,000 = £835,000

Using the proposed new test
Number of true negatives = Number of disease free patients x specificity = 2450 x 96/100 = 2352

The remainder will constitute false positives = 2450 - 2352 = 98

Therefore the total number of positive results is 49.5 + 98 = 147.5

The cost of further investigation is 147.5 x £2,000 = £295,000

The total number of tests is 2500 with a total cost of 2500 x £120 = £300,000

Therefore the total cost involved is £295,000 + £300,000 = £595,000

Projected annual saving = £835,000 - £595,000 = **£240,000**

A further consideration is that introducing the new test will spare 343 - 98 = 245 patients the inconvenience and anxiety of further investigation.

Comment
We are increasingly relying on statistical techniques in the modern laboratory. However, it is important to remember that the normal distribution is only a mathematical model, albeit a useful one, which we often apply to very limited data and should be used carefully. For example the reference range quoted for serum potassium is usually in the order of 3.6-5 mmol/L, which if normally distributed corresponds to a mean of 4.3 mmol/L with a standard deviation of 0.35 mmol/L. Using a *z*-score of ±5.7, which corresponds to a range of 2-6 mmol/L gives a probability of an individual lying outside these limits of approximately 1 in 1.7 million. With a UK population of 65 million there should be 40 completely healthy individuals with a serum potassium outside the range 2-6 mmol/L! ■

- In the last issue we reported that Allan Deacon was hanging up his pen, paper and calculator after 200 Challenges over 18 years. Many of our Members, especially those studying for FRCPath, will not have had the pleasure of earlier Challenges. We are therefore, with Allan's permission, revisiting some of the Challenges. These will be selected by Sophie Barnes, who has been involved with the Challenge throughout the 18 years.

Deacon's Challenge Revisited

Question 1

a) Calculate the hydrogen ion concentration of blood with a pH of 7.12.

b) Treatment with bicarbonate halves the hydrogen ion concentration, what is the new pH?

MRCPath November 2000

Lipid Clinics – A new role for Clinical Scientists

Rebecca Allcock and **Shonagh Haslam,** Lancashire Teaching Hospitals

Background

Familial Hypercholesterolaemia (FH) is one of the most commonly occurring genetic conditions with an incidence of 1 in 250. This means there are approximately 260,000 affected individuals in the UK, however less than 15% of these patients have been diagnosed. FH imparts a high risk of cardiovascular disease (CVD) so early diagnosis is pivotal in reducing morbidity and mortality. NICE CG71 published in November 2017 further highlights the need to identify FH individuals. The guidance states that FH patients should be seen by a specialist team, and has an emphasis on cascade screening of family members and case finding by searching primary care records.

In our region of Lancashire and South Cumbria we serve a population of 1.5 million, yet there are insufficient designated lipid clinics to cope with the significant number of patients that remain undiagnosed. This often results in lipid patients being seen by a variety of other clinical specialties such as cardiology, endocrinology and general medicine.

From left to right: Shonagh Haslam, Principal Biochemist; Rebecca Allcock, Consultant Biochemist; Alex Hecker, Specialist Lipid Nurse; and Lorelei Salazar, Consultant Endocrinologist

Developing a Different Kind of Lipid Service

To address the increased demand for lipid clinics due to NICE CG71 and to streamline patient services at Lancashire Teaching Hospitals we have established a designated lipid clinic for the central Lancashire region, with Clinical Biochemists at the core. The clinic was initially set up in 2014 with a Consultant Endocrinologist and Consultant Clinical Biochemist, but has since developed into a multi-disciplinary team with an additional Principal Biochemist and Specialist Lipid Nurse, all playing a direct role in patient care.

In clinic we review both primary and secondary CVD prevention patients. In addition to patients with suspected FH, we also review statin intolerant patients (potentially requiring PCSK9 inhibitors) and patients with mixed hyperlipidaemia. As Clinical Biochemists we review each patient and take family, clinical and treatment histories. During consultations we review medications and blood results, requesting further blood tests as required. We make a diagnosis on the basis of the information gathered during each consultation, using Simon Broome criteria and Dutch Lipid Clinic Network Scores as required. Genetic testing for FH is also undertaken, with genetic counselling and cascade testing of family members. The Consultant Endocrinologist is the primary prescriber but as a team both the Endocrinologist and Clinical Biochemist develop a treatment plan for each patient.

As Clinical Biochemists we form an integral part of the lipid clinic team, and it is likely that other Trusts could benefit from similar arrangements. Both Clinical Biochemists and Chemical Pathologists have the added advantage that we clinically authorise lipid results from primary and secondary care. This allows us to target abnormal lipid results and, once secondary causes have been excluded, initiate referrals to lipid clinic. This active promotion of referrals of possible FH patients from Primary Care supports the recommendations in NICE CG71.

One limitation is that Clinical Biochemists are currently unable to prescribe. However, a public consultation is due to be launched by NHS England that is aiming to give prescribing rights to Clinical Scientists. If successful, the application, which is supported by the HCPC, would allow Clinical Scientists to supply and administer medicines by means of Patient Group Directions (PGDs).

Despite being unable to prescribe, the contribution that Clinical Biochemists make to lipid clinics is considerable. As a multi-disciplinary team we are improving the patient pathway for patients in Lancashire; more patients are being diagnosed with FH and many more are being successfully treated. We hope that this model can be adopted across the UK with similar success. ■

Focus on Service and Science in Glasgow!

Kevin Deans, Chair, Focus 2019 Organising Committee

We're very much looking forward to returning to Glasgow for Focus 2019 from 1st to 3rd May. You can find out all the details about the meeting by visiting the Focus website at **http://www.acb.org.uk/whatwedo/events/national_meetings/focus-2019**, and by following us on Facebook and Twitter (@ACBFocus).

The programme is looking very enticing indeed. Our "Focus on Service" theme will explore challenging issues regarding provision of Laboratory Medicine services. We'll hear from experts speaking about issues regarding accreditation, external quality assessment, demand optimisation, laboratory informatics, direct patient access to results and reconfiguration. Meanwhile, the "Focus on Science" theme will address challenging issues such as adjustment of serum calcium, the requirement for acidification of urine for measurement of some analytes and the fast-moving field of novel psychoactive agents. A session on issues related to direct clinical care will provide updates on management of obesity, dyslipidaemia and parenteral nutrition. On top of that, favourites such as the ACB Medal Award and Clinical Cases will feature. More on these sessions will follow in April's ACB News. Meantime, read on to find out what to expect in this year's plenary sessions.

Immediately after the Opening Ceremony on Thursday 2nd May, the scientific programme will get underway with the ACB-AACC Transatlantic Lecture, presented this year by Dr Carmen Wiley, 2019 President of the American Association for Clinical Chemistry (AACC).

Dr Carmen Wiley, AACC President

Dr Wiley is the Chief Clinical Officer of a start-up company, VERAVAS Inc. She has a Bachelor's degree in Chemistry from the University of Minnesota, a Master's degree in Organic Chemistry from the University of Washington, a Doctoral degree in Organic Chemistry from the University of Washington, and was a COMACC Accredited Fellow at the Mayo School of Medicine. She is Board Certified by the American Board of Clinical Chemistry (ABCC) and a Fellow of the Academy of the American Association of Clinical Chemistry (FAACC).

Dr Wiley's talk will address the issue of immunoassay interferences and their impact on patient care. Immunoassays are the workhorses of clinical laboratories. Using antibodies for diagnostic measurements provides high specificity

and sensitivity. Despite all the successful uses of immunoassays, there are still problems from interference. She will review how the common immunoassay formats work, before reviewing how the different types of interference mechanisms cause falsely elevated and suppressed results for each assay format (i.e. steric hindrance, bridging, etc). Finally, she will describe current strategies to troubleshoot interference.

Later that day, Dr Joanna Sheldon will present the ACB Foundation Lecture. Dr Sheldon is Director of the Supraregional Protein Reference Unit (PRU) which is part of South West London Pathology based at St George's Hospital in London. She started her training as a Biomedical Scientist in Chemical Pathology at the Westminster Hospital but became interested in proteins and immunology on rotation through the Protein Reference Unit. She completed a PhD on cytokines, acute phase proteins and immunological monitoring in the critically ill and became a Fellow of the Royal College of Pathologists. In 1996, the PRU moved to St George's Hospital in London and in 2002 she became the Consultant Immunologist and Director of the Protein Reference Unit. Dr Sheldon has been actively involved in standardisation and harmonisation initiatives for many years. Recently, she chaired the IFCC Working Group and Committee on Harmonisation of Autoantibody Testing that developed the first certified reference materials for the ANCA associated antibodies to proteinase 3 and myeloperoxidase. Dr Sheldon's lecture will explore the issues of harmonisation and standardisation in proteins and immunology.

After the close of the scientific programme on Thursday, the conference dinner on Thursday evening promises to be an enjoyable event, held in the unique venue of the Tall Ship, one of only five Clyde built ships still afloat in the world today, and the only one of her kind in the UK.

Professor Alison Avenell

On Friday morning, don't miss the RCPath Flynn Lecture, given this year by Professor Alison Avenell, who is a Consultant in Clinical Biochemistry in NHS Grampian with clinical practice in diabetes and clinical nutrition. She has held Medical Research Training Fellowships and Chief Scientist Office of Scotland's Clinical and Career Scientist Fellowships. She is based at the Health Services Research Unit at the University of Aberdeen.

Her research focuses on the rigorous, critical evaluation and development of the evidence base for and against nutritional interventions and weight management approaches relevant to health services. She has particular expertise in systematic reviews, e.g. on the benefits (or otherwise) of vitamin D supplementation, and conducting large pragmatic trials with older people, surgical and intensive care populations.

As a result of her systematic review work, she identified and initiated investigation of one of the largest cases of research misconduct ever found

(http://www.sciencemag.org/news/2018/08/researcher-center-epic-fraud-remains-enigma-those-who-exposed-him). Working with colleagues at the University of Auckland, New Zealand, she has become increasingly interested in reducing wasteful research, preventing and reducing the impact of research misconduct, and managing conflicts of interest. Her talk will discuss these three latter areas of research, and the role clinical biochemistry has played and can play in the future.

Focus 2019 is not to be missed. Head over to the website now, where you can find all the details and book your place for the meeting. We're looking forward to seeing you there. ■

Professor Freddie Flynn Bursary Prizes

Bernie Croal, Aberdeen

Professor Freddie Flynn (1924-2011) was responsible for major developments in UK Pathology in the latter half of the 20th Century. Although principally associated with developments in clinical computing, as Director of Continuing Professional Development (CPD) he laid the groundwork for the College's CPD programme. He held numerous positions at the College including Vice President and Treasurer, and was also President of the Association of Clinical Pathologists. He donated funds to the College to establish the RCPath Flynn Lecture.

This year's Flynn Lecture, 'Lies, damned lies and statistics in research – improving efficiency and reducing the impact of misconduct', will be given by Prof Alison Avenell, Aberdeen, at the ACB Focus meeting in Glasgow (1st – 3rd May 2019).

As the fund has grown, it has given opportunity to award four bursary prizes of up to £600 each for travel and accommodation to enable trainees to attend the ACB Focus meeting. Any remaining funds will go towards the registration fee. The ACB has agreed to provide the award holders with complimentary registration to Focus and the conference dinner in any case.

Following the event, recipients are required to submit a short report for consideration to be published in the College Bulletin.

Applications are accepted from Medical or Clinical Scientist Trainees on recognised UK training programmes in Clinical Biochemistry/Chemical Pathology.

Please see the Royal College of Pathologists website for full details.

Applications must be received by the College by **Monday 4th March 2019** and can be made via: **https://www.rcpath.org/about-the-college/awards-and-bursaries/professor-freddie-flynn-bursary-prizes.html**

The application form can be found at: **https://www.rcpath.org/resourceLibrary/professor-flynn-bursary-application-form-doc.html**

Successful applicants will be informed by the College Secretariat by the end of March 2019. ■

Focus 2019

Association for Clinical Biochemistry & Laboratory Medicine | National Meeting

SEC | Glasgow | 1-3 May

Focus on Service & Science

Programme highlights:

- Reconfiguration
- Accreditation
- Challenging science
- Clinical cases
- Demand optimisation
- IT & standardisation
- Metabolic nutrition
- ACB Medal Award

Photos: Iain Dalgleish

www.acb.org.uk/focus

ACB Focus @ACBFocus

The Association for Clinical Biochemistry & Laboratory Medicine

Better Science, Better Testing, Better Care

ACB Scotland Autumn Meeting

Dr Louisa Lee, Glasgow Royal Infirmary

The 2018 ACB Scotland Autumn meeting took place during November, at The Station Hotel, Perth. This meeting was centred on celebrating Dr Bill Bartlett's considerable achievements and wishing him well in his retirement from a full-time role in the NHS, based in Dundee.

The morning session was dedicated to Members' Papers, including an opportunity for junior members to give presentations in contention for the John King Award. Dr Melissa McNaughton (Edinburgh) spoke about her LC-MS/MS assay development project for an extensive panel of anti-hypertensive drugs in urine. The requirement for a qualitative test was identified from a pilot audit conducted in Lothian; the findings indicated that many patients were not taking medications as directed. Multiple internal standards were needed due to the high number of drugs being measured, however, one of these was being suppressed in donor urine with the concentration of drug being unaffected. Overall, patient data did not reflect widespread non-adherence as expected, however, the small subgroup with resistant hypertension was comparable to the results of the initial audit.

Dr Melissa McNaughton

Miss Saliha Haji

The next speaker was Miss Saliha Haji (Aberdeen) who described her work in establishing a PCR method for the diagnosis of ferroportin disease (also known as haemochromatosis type 4), a hereditary iron loading disorder caused by mutations in the ferroportin iron exporter. The process included primer design, conventional PCR followed by Sanger sequencing and data analysis. Disease positive and negative samples were used to test the method and demonstrated 100% comparability to current testing offered by Addenbrooke's Hospital, Cambridge. The overall detection rate was low but could be explained by the rarity of the disease.

The final candidate for the Award was Dr Angela Ballantyne (Edinburgh) who presented on the topic of the stability of free β-human chorionic gonadotropin (hCG) in blood samples for first trimester Down's Syndrome screening in Scotland.

Dr Angela Ballantyne

Dr Paul Cawood

The concentration of the marker is dependent on gestation, therefore absolute values can be converted into relative values or marker of median (MoM) for standardisation. Evidence in the literature states that the concentration of β-hCG increases in whole blood stored at -20°C, however free β-hCG is stable at room temperature for a short time (72 hours is currently used as a limit for Newborn Screening). Dr Ballantyne posed the question of whether the 72 hour cut-off had any clinical impact on MoMs, by looking at transit time and seasonal variation. Results showed that there was an increase in the concentration in whole blood at room temperature, but there wasn't any statistical difference when comparing between seasons. Centrifugation could be considered in future, however it was recognised that this would introduce other issues related to storage, batching and the number of centrifuges required at clinics.

The morning session concluded with an informative talk by Dr Paul Cawood (Edinburgh) on tandem mass spectrometry drugs-of-abuse analysis in urine and oral fluid. Drugs such as 6-monoacetylmorphine and cocaine are detectable in oral fluid when a urine sample generates a negative result. Oral fluid has the additional benefits of longer detection times, less metabolite interference and universal collection, avoiding the possibility of spiking. A major challenge in drugs-of-abuse analysis is related to the changing trends in street drugs. Some of these are not detected by immunoassays and require confirmation by gas-chromatography mass spectrometry. The flexibility associated with mass spectrometry is therefore advantageous in the long-term detection of drugs-of-abuse.

The second half of the meeting began with a presentation by Professor Callum Fraser (Dundee) on biological variation. Professor Fraser interspersed fundamental basics with mentions of Dr Bartlett's contributions in enabling effective use of biological variation data across population groups and healthcare systems.

Professor Callum Fraser

Dr Bill Bartlett

Next was Dr Bartlett himself, who described his career from its early beginnings and some notable projects he has been involved in. These included smart requesting which aims to help users request the correct test at the correct time, and iLFTs which is a clinical information interface with laboratory systems; an algorithm for diagnosis of liver disease, and is an example of development of advanced automation and interface. The idea came about from a carpark conversation with a Hepatologist!

Professor Jonathan Kay (Oxford) finished the meeting on the topic of information, data and knowledge management, and areas where improved information management can lead to more efficient and safe processes in the NHS. Professor Kay also highlighted areas where biochemical data could be matched with other demographics (such as geographical data) to derive further useful information. Computer models are good predictors and could be powerful tools for decision support in a clinical setting if utilised properly. Professor Kay stated that this kind of decision support could be offered to General Practitioners rather than relying on the individual to make the right decision when they are bombarded with information.

The meeting closed with the presentation of the John King Award to Melissa McNaughton and retiral presentation to Dr Bill Bartlett. This local meeting was an opportunity for the biochemistry community in Scotland to share news and listen to some interesting talks throughout the day. Thank you to the organisers for their work in planning this meeting, and to the meeting sponsors for their valuable support. ■

Dr Melissa McNaughton, winner of the John King Award, presented by Dr Kevin Deans, Chair of ACB Scotland

ACB Northern Ireland Region Spring Meeting 2018

Kathryn Ryan, BHSCT, Mater Hospital

The Association for Clinical Biochemistry and Laboratory Medicince (Northern Ireland Region) held their annual scientific meeting on 27th April 2018. The meeting was in the Wellington Park Hotel, Belfast and we are grateful to our sponsors, Roche Diagnostics and Amgen for facilitating it. The morning started with a welcome from our regional chair, Dr Elinor Hanna (NHSCT, Antrim Area Hospital) and in the afternoon Professor Ian Young (ACB President) reiterated the welcome and updated us on the work of the ACB nationally.

Prof Ian Young, Dr Mike Badminton, Dr Brian Shine, Dr Elinor Hanna, and Dr Kathryn Ryan

Genes, Data and *#ACBNI*

Our first talks were from experts in social media and updates from our session were tweeted using *#ACBNI*. Dr Shane McKee (Consultant in Medical Genetics) discussed the expanding scope of genetics in clinical practice and then looked specifically at the 100,000 Genomes project. The interface and dialogue between laboratory scientists and clinicians is key to interpret the data obtained through molecular testing.
Dr Damian Fogarty, who is a Consultant Nephrologist with a keen interest in all aspects of information technology, described how social media can be used in healthcare. This is wide ranging and includes health promotion, lobbying, continuing professional development and public education, but is particularly effective for the rapid dissemination of guidelines and important clinical trials.
We had one further IT related talk and this was on "Big Data". Dr Brian Shine (Oxford University Hospital) highlighted how data are used in general and the associated benefits and risks.
We then focused on healthcare and the wealth of data to hand, particularly in the laboratory setting. Data patterns, either broadly in terms of population levels of a specific analyte, or correlations between analytes and clinical outcomes or events, will be of use in planning services and public health. He reminded us of legislation in relation to data and data use, which has been particularly pertinent over the last few months as we grapple with the implications of General Data Protection Regulation.

Porphyria, Bones and Evolution in the Laboratory

Having been updated on developments in genetics, communicating with colleagues and service users, and aware of the potential information on our servers in the

laboratory, we moved on to think about some "real biochemistry". Dr Mike Badminton (National Acute Porphyria Service Cardiff) took us through an update on the classification, diagnosis and management of porphyria. This provided a useful summary of the clinical and laboratory features of these conditions, along with an outline of new treatments in development for acute porphyria.
Our next talk was looking at the evolution of mass spectrometry in the clinical biochemistry laboratory and Dr Craig Webster (Heartlands Hospital, Birmingham) described progress from the introduction of the "robot chemist" in 1959 to the level of automation we now employ with highly automated processes. This was illustrated by Vitamin D testing which, due to increased demand and a requirement to reduce costs, has moved from a test requiring manual extraction to one which can be processed on a discrete analyser which performs sample preparation, analysis and result transmission.

Dr Brona Roberts (BHSCT, Royal Victoria Hospital) talked to us about osteoporosis and discussed the risk factors for this condition. She outlined the parallels in assessment of risk factors between osteoporosis and cardiovascular risk. The role of the laboratory in osteoporosis management is largely in surveillance for causes of secondary osteoporosis, and bone markers are not recommended in routine practice at present.

Clinical Cases

This year we introduced a clinical cases session, and this was an enjoyable and informative way to close the meeting. Dr Mark Lynch (WHSCT, Altnagelvin Area Hospital) presented 3 cases which illustrated interference or erroneous results from point of care testing. This highlighted the potential pitfalls in point of care testing where the users of the analysers are not familiar with the concept of pre-analytical and analytical errors. Dr Alison Watt (BHSCT, Royal Victoria Hospital) used several cases to describe the clinical and laboratory aspects of Hepatitis E infection. This infection has a wide spectrum of presentations and severity but is particularly devastating for immunocompromised patients. Dr Sumana Gidwani (NHSCT, Causeway Hospital) and Dr Janet Chestnutt (NHSCT, Antrim Area Hospital) presented four cases of familial hypobetalipoproteinaemia. They discussed the presentation and diagnosis of this lipid disorder which is probably under-recognised. Non-alcoholic fatty liver disease is of particular clinical consequence in patients with this inherited condition.

Dr Peter Sharpe, Dr Sumana Gidwani, Dr Janet Chestnutt, Dr Brona Roberts, Dr Mark Lynch, Dr Alison Watt, and Dr Kathryn Ryan

Thank you to all our speakers for excellent presentations and to everyone who attended for contributing to the whole meeting through questions, comments and networking. Our 2019 meeting is planned for Friday 5th April, you would be very welcome!

ACB Retired Members' Meeting

Mrs Ruth Lapworth

The meeting for Retired Members held on Monday 12th November 2018 occurred in the same week that scientists at the General Conference on Weights and Measures in Versailles voted to redefine the global measurement of mass (kg) using Planck's constant. It was therefore most appropriate that the first presentation given by Dr Jonathan Middle, Chair of the Association for Quality Management in Laboratory Medicine (AQMLM), was "Uncertainty: what's all the fuss about?".

Dr Middle began his talk by giving us an historical perspective on the definition of certainty and the reasons why we crave it. Awareness of uncertainty and it's effect on the interpretation of results has become increasingly important in Laboratory Medicine.

He explained why confidence in results generated by laboratories is improved by knowledge of the traceability chain from the result all the way back to the original measurand. However, this is only valid for those measurable quantities that can have a value expressed in SI units. In Laboratory Medicine the majority of results are based on heterogeneous analytes where there is an incomplete traceability chain due to lack of an SI standard and/or an internationally agreed reference measurement procedure. Measurement of uncertainty now forms part of the quality specification for clinical laboratories as defined by ISO 15189.

Analytical uncertainty is only one component of uncertainty across the whole examination process. Dr Middle's view was that the pre-pre (has the clinician requested the right test?) and post-post (has the result been acted on appropriately to improve the outcome of the patient?) parts of the process are the greatest sources of uncertainty. He then described two approaches (bottom up and top down) for calculating uncertainty.

Dr Middle concluded his thought-provoking presentation with his view that uncertainty could be reduced and patient care improved by changing the way that clinical laboratory tests are requested and reported. The new system would restrict requests from service users to either rule-in or rule-out a diagnosis or for screening or monitoring disease. The appropriate tests would be selected within the laboratory and results reported as probabilities rather then numerical values.

The second presentation "Newborn screening: past, present and future" was given by Professor Jim Bonham, Clinical Director for Diagnostics at Sheffield Children's Hospital and the National Laboratory Lead for the Blood Spot Screening Programme.

Professor Bonham began by explaining the difference between testing samples as part of a screening programme compared to diagnostic testing. He described some of the key milestones in neonatal screening as well as influential individuals such as Asbjorn Folling, Horst Bickel and Robert Guthrie.

Currently there is a network of 16 screening laboratories in the UK carrying out approximately 7 million tests each year, screening for 9 conditions. They operate on a 'failsafe' system for reporting results using processes governed by agreed national standards and KPIs, are accredited by UKAS and collaborate through an agreement with Public Health England.

Professor Bonham then described the impact technologies such as MS/MS and genetic testing have had on neonatal screening practices. Traditionally one test has been used to screen for one disorder, but with the introduction of new ways of testing, patient samples can be screened for more than 1 condition or mutation. Although this has been beneficial overall it has led to a variety of problems: difficulty in interpreting results which may or may not be of clinical significance, not all the disorders identified have effective treatments. In addition, the cost of testing has increased and there has been increased uncertainty over screening for late onset conditions and dealing with the implication of positive results for the wider family of the index case.

In the future it is Professor Bonham's view that changes to the existing screening programmes will be required to deal with these issues. These include the use of clear case definitions by clinicians and much better support of parents at the first referral. The wider screening community also needs to agree terminology and definitions, harms and benefits of screening as well as providing useful pre-screening information. Reassurance about the security of data and the long term storage of DNA samples are also needed as well as longitudinal outcome studies to assess the clinical utility of screening tests.

- It is hoped to hold the next meeting for Retired Members in Glasgow during Focus 2019 (1st – 3rd May). If this is not possible, then the meeting will be held at the ACB Conference Suite on Monday 8th April 2019. ■

Industry Insights: Long Term Plan takes us back in time

Doris-Ann Williams, Chief Executive, BIVDA

The year has started with new additions to the BIVDA team at our office on Oxford Street, including Chief Operating Officer, Kaye Walton, who while new to BIVDA, will be known to many ACB members as she's a long established member of the IVD industry in the UK. Kaye has returned to the UK from Belgium, where she has been based for the last three years working for Fujirebio.

It is great to have Kaye join us as 2019 is going to be a busy year. There will be a new GP contract to look forward to and Brexit remains the gift which keeps on bringing up issues to deal with as well as the regulatory landscape. But of course the major piece of policy affecting us all and published on 7th January is the NHS Long Term Plan. For those of you who have not read this in all its 134 page glory then you can find it at: **www.longtermplan.nhs.uk** and of course it only covers the NHS in England.

The essence of the plan is to modernise the NHS and bring more focus on supporting health in the population to address the growing costs of ageing with multiple co-morbidities. Unsurprisingly there is a strong focus on the three priorities which the Secretary of State outlined last summer when he took up post, the workforce, the use of digital technologies and prevention.

The plan will reverse NHS policy in England to remove the internal market and reinforcing the move to Integrated Care Systems (although these may require primary legislation to remove some barriers). It abolishes CCGs, fuses Foundation Trusts into formal groups and enables Integrated Care Providers to exist as NHS bodies, including Primary Care staff.

Significantly, pathology is mentioned relating to the drive to the Networks alongside similar centres for diagnostic imaging.

For the IVD industry, this will change the customer world so we will need to learn the new structures (and accompanying acronyms). With the push to use Primary Care Networks and community teams to transform out of hospital care, increased use of innovations in near-patient testing are essential to the plan's success.
The emphasis on digital technology is very strong and commercial focus will need to include using digital solutions and exploiting the digital health scope wherever possible. There is major commitment to increased uptake of technology through the Academic Health Science Networks (AHSN), Test Beds, accelerated access, links to Getting It Right First Time (GIRFT) and Rightcare as well as genomics but no surprises in the clinical priorities which include both early years (maternity and infants) and frailty as the beginning and end of life are established as highest users of health resource.

Three key elements are still awaited, the new performance standards (KPIs), the workforce plan and the Social Care green paper. There will also be a new GP contract in 2019 which may affect the landscape.

The NHS Long Term plan is clearly the most significant document since 2011/12 and will re-establish a similar structure to the 1980s Health Authorities. ■

Bill Cunningham: An appreciation (1948-2019)

The New Year brought sad news to the BIVDA office as we learned of the sudden death of Bill Cunningham on 5th January. Bill had been in the IVD industry from the late 1970s and started the Boldon, Tyne & Wear company IDS. Bill was well liked by colleagues throughout the world and was a larger than life character – I am sure many ACB members will have their own memories and stories about him.

In 1992, Bill, together with George Zajicek, founded BIVDA as a single voice for the UK IVD industry. It was Bill who encouraged me to apply for the role I have had at BIVDA since 2001. He generously supported me as I learned all the ins and outs of running a small business as well as operating the industry support side of BIVDA. In the same way, he would always take time to help anyone by sharing his knowledge and experience, asking no more than a casual 'buy me a beer sometime'.

Bill was especially admired in Japan, where for several years he was invited as the VIP to open the JACRI Conference and Tradeshow.

Bill had been unwell for several years but would still put in occasional appearances at industry events.

He will be much missed by his many friends and colleagues and is survived by his wife Sue, children Jon, Nicola, Amy and Beth, and four young grandsons. ■

Doris-Ann Williams

ACB News Crossword

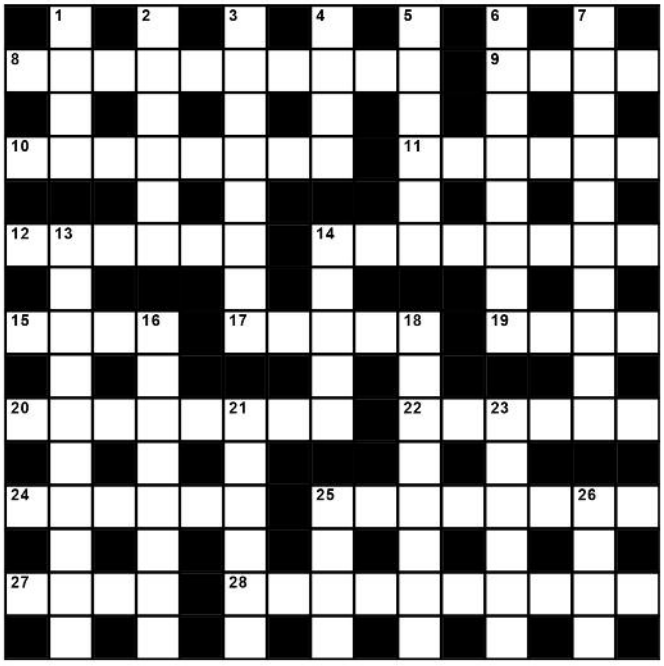
Set by Rugosa

Across

8 Add to complete manganese compound (10)
9 Dislike warning of danger (4)
10 Element in French muesli preparation (8)
11 Apathetic about photography accessory (6)
12 Ill temper when penalised badly with aid withdrawal (6)
14 Social gathering: offend with insincere flattery (8)
15 Organize class (4)
17 Doctor hated curtains (5)
19 Present a biased view of revolution (4)
20 Acid meant to be neutralized in premedication preparation (8)
22 Stumped by sapper's singular accent (6)
24 Commission me to return with stratagem (6)
25 Failed at reorganising related records (4,4)
27 Cachectic patient admits discomfort (4)
28 Mistakenly incinerate as waste material (10)

Down

1 Record currency (4)
2 Province of upset helpers left out (6)
3 Patient gave up (8)
4 Time held in computer memory (4)
5 Mistreatment taints medicine (6)
6 Retired professional's title: petition raised about worthiness (8)
7 Their defence against infection is obtained after re-synthesis (10)
13 It comes about following support for study of genome-coded proteins (10)
14 One heard that obsolete currency was not reserved (5)
16 Tried about all tested for performance (8)
18 Deliberate doctor hates tie (8)
21 Unusual state of gas in odd dirty kitchen (3, 3)
23 Clarify about financial penalty (6)
25 A morsel of Saudi ethnic food (4)
26 Sustained wish (4)



Solution for December Crossword

Association for Clinical Biochemistry & Laboratory Medicine Council Nomination Form

Election of Officers / Council Member 2019

We, the undersigned, being Members of the Association nominate

Name .....

Address .....

.....

.....

For election as Company Secretary*
National Member of Council*
*(*delete as appropriate)*

Name 1. ....
Capitals Signature

Name 2. ....
Capitals Signature

Name 3. ....
Capitals Signature

I am willing to undertake the duties and responsibilities of this office if elected.

....
Signature Date

*Please note only Ordinary and Honorary Members of the ACB may be nominated for the positions of Company Secretary, and National Member of Council.

If there is more than one nominee for any of these positions, a ballot will be held with all voting members. (see Bye-Laws of the ACB items 2 & 3 and 8).

This form, duly countersigned, to be returned to:
The Administrative Office
Association for Clinical Biochemistry & Laboratory Medicine
130-132 Tooley Street, London SE1 2TU
before 12th March 2019

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