

## IN THIS ISSUE

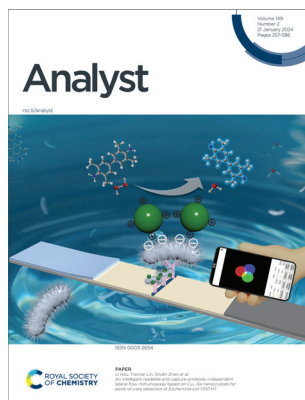
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### Cover

See Jan Halámek *et al.*, pp. 350–356.

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### Inside cover

See Li Hou, Tianran Lin, Shulin Zhao *et al.*, pp. 357–365.

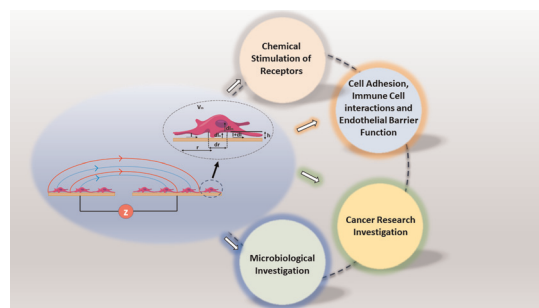
Image reproduced by permission of Li Hou from *Analyst*, 2024, **149**, 357.

## CRITICAL REVIEWS

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### A review of electrochemical impedance as a tool for examining cell biology and subcellular mechanisms: merits, limits, and future prospects

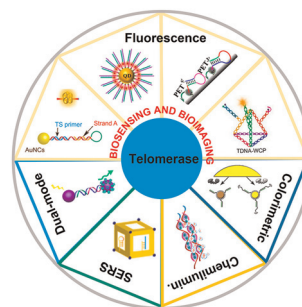
Seyedyousef Arman, Richard D. Tilley and J. Justin Gooding\*



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### Recent advances in optical biosensing and imaging of telomerase activity and relevant signal amplification strategies

Ruining Yang, Junbo Hu, Longsheng Zhang, Xingfen Liu,\* Yanqin Huang, Lei Zhang and Quli Fan



# RSC Advances

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# The construction of dual-emissive ratiometric fluorescent probes based on fluorescent nanoparticles for the detection of metal ions and small molecules

## PAPERS

## Metabolite monitoring concept for the biometric identification of individuals from the skin surface

The figure displays a Total Ion Chromatogram (TIC) for a 3 µL sweat sample derivatized with KTG. The x-axis represents 'Counts vs. Acquisition Time (min)' from 2.5 to 9.5, and the y-axis represents intensity from 0 to 6 (scaled by  $\times 10^6$ ). The chromatogram shows several peaks, with two major peaks labeled at retention times 7.307 and 8.024 minutes.

Overlaid on the chromatogram is a reaction scheme for the detection of L-Alanine:

- Top Pathway:** L-Alanine reacts with Pyruvate to form P<sub>i</sub> (inorganic phosphate). This reaction is catalyzed by the enzyme **ALT** (Aspartate Aminotransferase), which is inhibited by **KTG** (Ketoglutarate). Glutamate is also shown as a product of this reaction.
- Bottom Pathway:** Pyruvate reacts with H<sub>2</sub>O<sub>2</sub> to form P<sub>Ox</sub> (peroxide) and H<sub>2</sub>O. This reaction is catalyzed by the enzyme **HRP** (Horseradish Peroxidase), which is inhibited by **ABTS** and **ABTS<sub>ox</sub>** (oxidized ABTS).
- Intermediate:** The reaction of HRP with H<sub>2</sub>O<sub>2</sub> produces a peroxide intermediate (P<sub>Ox</sub>), which then reacts with ACP (Aminocaproic acid) to form the final product.

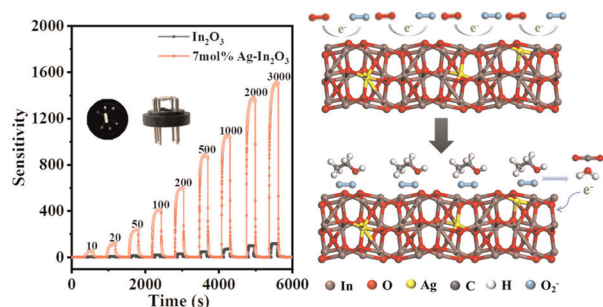
# An intelligent readable and capture-antibody-independent lateral flow immunoassay based on Cu<sub>2-x</sub>Se nanocrystals for point-of-care detection of *Escherichia coli* O157:H7

**A** CTAB  
SeO<sub>2</sub>  
AA → CuSO<sub>4</sub>·5H<sub>2</sub>O  
AA

**B** Reaction for 20 min  
T line  
Sample pad NC Absorbent pad  
Se NPs Cu<sub>2</sub>Se NPs  
E. coli E. coli antibody  
Catalyze Naked-eye Smartphone  
TMB+ H<sub>2</sub>O<sub>2</sub> oxTMB  
Bacterial concentration  
Absorbance (410 nm)  
C<sub>E. coli</sub> (CFU mL<sup>-1</sup>)

## Gaussian clustering and quantification of the sperm chromatin dispersion test using convolutional neural networks

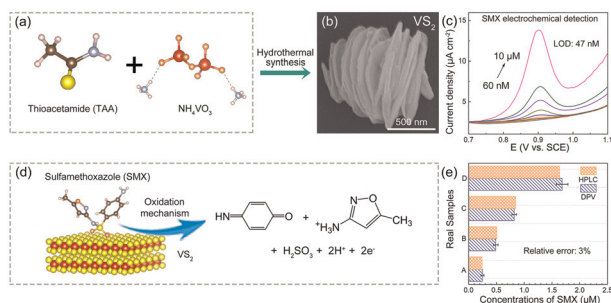
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### Facile synthesis of Ag lattice doped mesoporous $\text{In}_2\text{O}_3$ nanocubes for high performance ethanol sensing

Xinyu Liu, Cuiping Jia,\* Xin liu, Jiabing Luo, Yan Zhou, Wenle Li, Shutao Wang and Jun Zhang\*

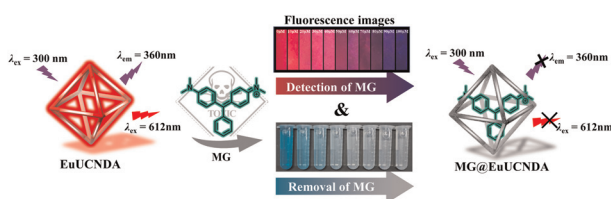
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### A promising electrochemical sensor based on PVP-induced shape control of a hydrothermally synthesized layered structured vanadium disulfide for the sensitive detection of a sulfamethoxazole antibiotic

Mingjiao Shi, Peizheng Shi, Xinxin Yang, Ningbin Zhao, Mengfan Wu, Jing Li, Chen Ye, He Li, Nan Jiang, Xiufen Li, Guosong Lai, Wan-Feng Xie, Li Fu, Gang Wang, Yangguang Zhu,\* Hsu-Sheng Tsai\* and Cheng-Te Lin\*

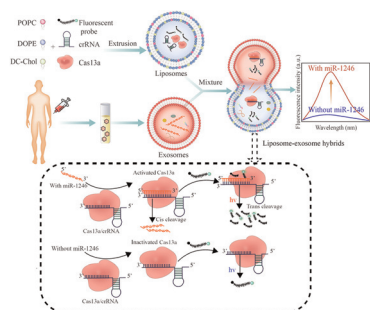
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### A recyclable $\text{Eu}^{3+}$ -functionalized dual-emissive metal-organic framework for portable, rapid detection and efficient removal of malachite green

Hou-Qun Yuan, Wei Li, Yi-Fan Xia, Si-Yi Liu, Yu-Fei Zhong, Zhen-Chong Dou, Xia Wei, Ran Wang, Peiyao Chen, Yan-Xia Li and Guang-Ming Bao\*

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### Liposome-exosome hybrids for *in situ* detection of exosomal miR-1246 in breast cancer

Xuting Zhou, Wenting Tang, Yan Zhang, Aidong Deng, Yuehua Guo\* and Li Qian\*



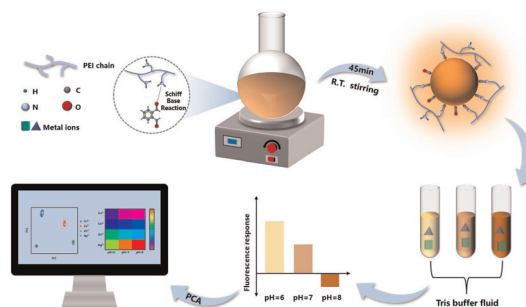


## PAPERS

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# Room temperature cost-effective synthesis of carbon quantum dots for fluorescence pattern recognition of metal ions

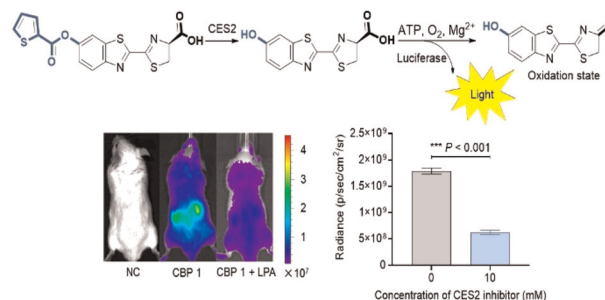
Yifan Lu, Wenbang Yu,\* Guoyue Shi and Min Zhang\*



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# Identification of the first selective bioluminescent probe for real-time monitoring of carboxylesterase 2 *in vitro* and *in vivo*

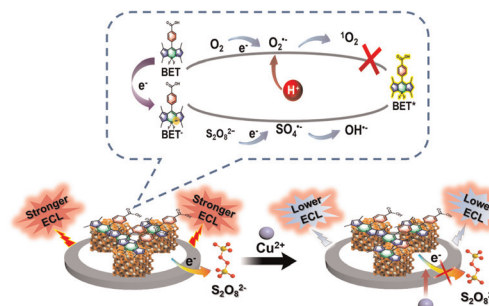
Yuhao Chen, Tiantian Zhao, Zhuang Miao, Tianguang Huang, Meiyuan Chen, Yi Zhao, Ao Hai, Qingrong Qi, Ping Feng,\* Minyong Li\* and Bowen Ke\*



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# Palladium nanospheres-embedded metal–organic frameworks to enhance the ECL efficiency of 2,6-dimethyl-8-(3-carboxyphenyl)4,4'-difluoroboradiazene in aqueous solution for ultrasensitive Cu<sup>2+</sup> detection

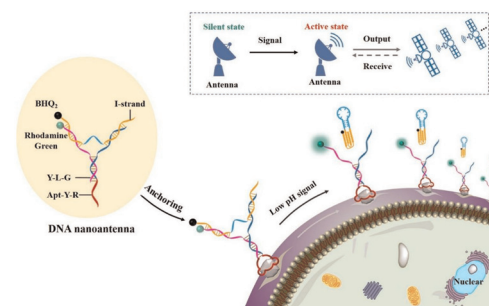
Shu-Shu Song, Jiale Zhan, Hao-Tian Zhu, Jing-Yi Bao, Ai-Jun Wang, Pei-Xin Yuan\* and Jiu-Ju Feng\*



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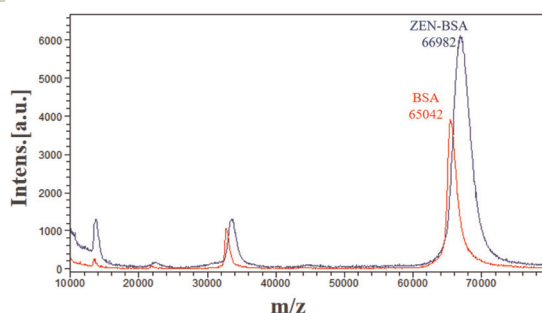
# A hairpin-contained i-motif guided DNA nanoantenna for sensitive and specific sensing of tumor extracellular pH gradients

Wenjie Ma, Yuchen Wu, Jinyan Li, Mei Yang, He Zhang, Chang Liu and Xiaoxiao He\*



## PAPERS

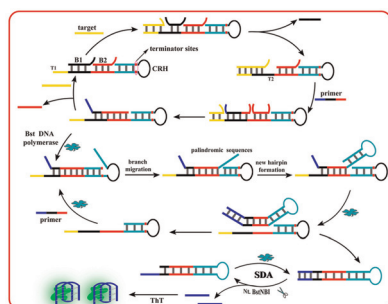
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### A sensitive monoclonal antibody-based ELISA integrated with immunoaffinity column extraction for the detection of zearalenone in food and feed samples

Ting Wang, Ting Zhou, Kang Wu,\* Junlin Cao, Yuze Feng, Jianguo Li\* and Anping Deng\*

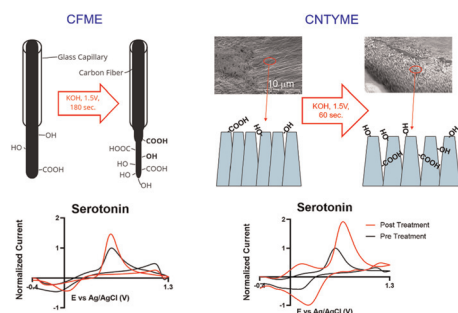
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### Target-initiated triplex signal amplification cascades for non-label and sensitive fluorescence sensing of microRNA

Lei Liao, Tingting Gong, Bingying Jiang,\* Ruo Yuan and Yun Xiang\*

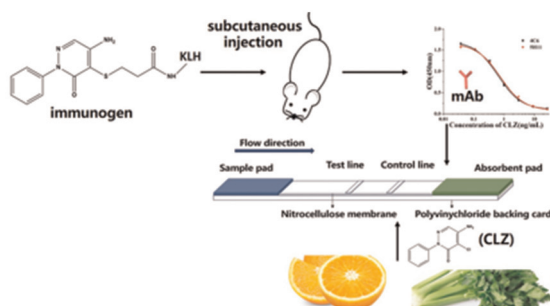
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### Electrochemical treatment in KOH improves carbon nanomaterial performance to multiple neurochemicals

Samuel M. Hanser, Zijun Shao, He Zhao and B. Jill Venton\*

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### Development of an ic-ELISA and immunochromatographic assay strip for the rapid detection of chloridazon in oranges and celery

Qing Zhang, Aihong Wu, Jinyan Li, Liqiang Liu, Hua Kuang, Chuanlai Xu and Lingling Guo\*

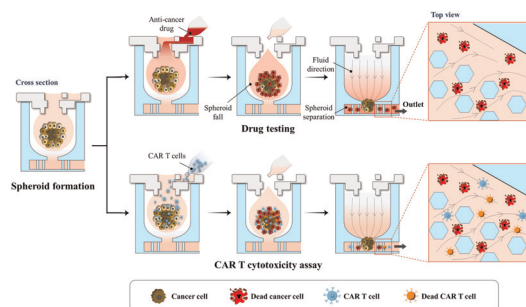


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### A 3D hanging spheroid-filter plate for high-throughput drug testing and CAR T cell cytotoxicity assay

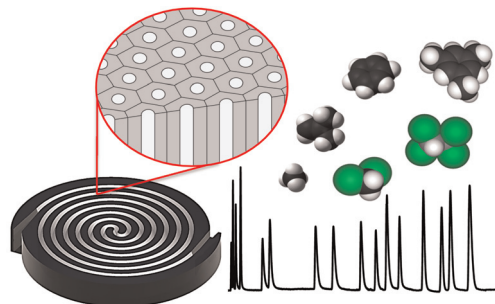
Zhenzhong Chen, Seokgyu Han, Sein Kim, Chanyang Lee, Arleen Sanny, Andy Hee-Meng Tan and Sungsu Park\*



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### A stamped aluminium gas chromatographic column disk employing directly grown anodic aluminium oxide stationary phase for the separation of aromatic and chlorinated compounds

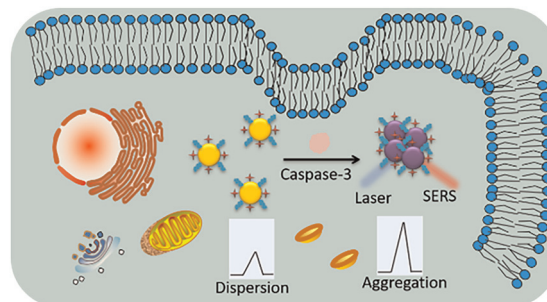
Chih-Chieh Fan, Chih-Chia Wang\* and Chia-Jung Lu\*



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### Highly sensitive and selective SERS detection of caspase-3 during cell apoptosis based on the target-induced hotspot effect

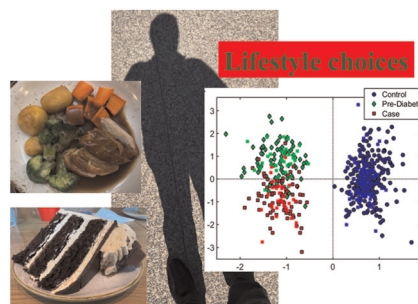
Yueyuan Zhuang, Han Dong, Tianqing Liu, Yongmei Zhao, Yan Xu, Xiaojuan Zhao\* and Dan Sun\*



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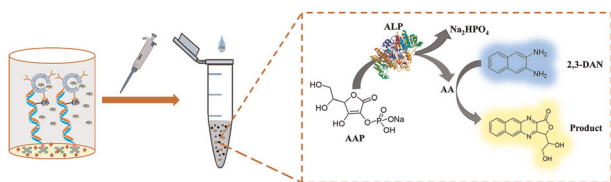
### Serum-based ATR-FTIR spectroscopy combined with multivariate analysis for the diagnosis of pre-diabetes and diabetes

Weiye Pang, Yu Xing, Camilo L. M. Morais, Qiufeng Lao, Shengle Li, Zipeng Qiao, You Li, Maneesh N. Singh, Valério G. Barauna, Francis L. Martin\* and Zhiyong Zhang\*



## PAPERS

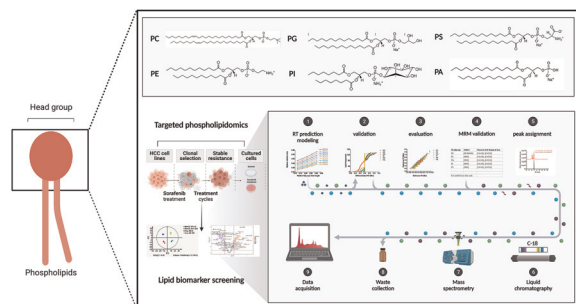
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### A ratiometric fluorescence assay for the detection of DNA methylation based on an alkaline phosphatase triggered *in situ* fluorogenic reaction

Hongding Zhang,\* Yinhui Su, Jiamiao Zhao, Huixi Song and Xiaohong Zhou

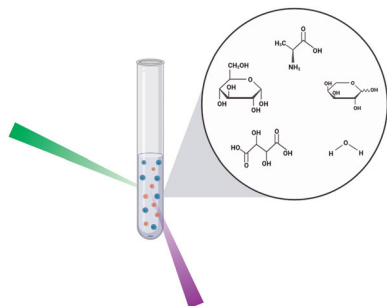
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### Retention time prediction and MRM validation reinforce the biomarker identification of LC-MS based phospholipidomics

Jiangang Zhang, Yu Zhou, Juan Lei, Xudong Liu, Nan Zhang, Lei Wu and Yongsheng Li\*

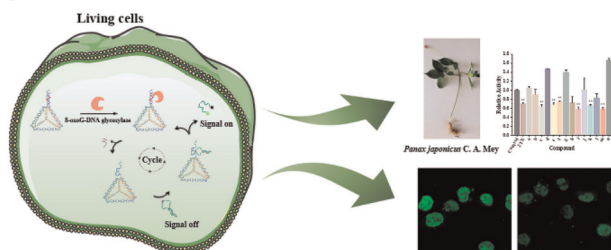
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### Hyper-Raman spectroscopy of biomolecules

Christopher B. Marble,\* Kassie S. Marble, Ethan B. Keene, Georgi I. Petrov and Vladislav V. Yakovlev

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### Repair-driven DNA tetrahedral nanomachine combined with DNAzyme for 8-oxo guanine DNA glycosylase activity assay, drug screening and intracellular imaging

Yun Qiu, Bin Liu, Wenchao Zhou, Xueqing Tao, Yang Liu, Linxi Mao, Huizhen Wang, Hanwen Yuan, Yupei Yang, Bin Li, Wei Wang\* and Yixing Qiu\*



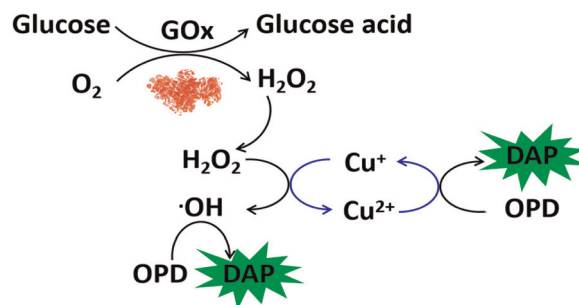


## PAPERS

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### Fenton-like reaction triggered chemical redox-cycling signal amplification for ultrasensitive fluorometric detection of $\text{H}_2\text{O}_2$ and glucose

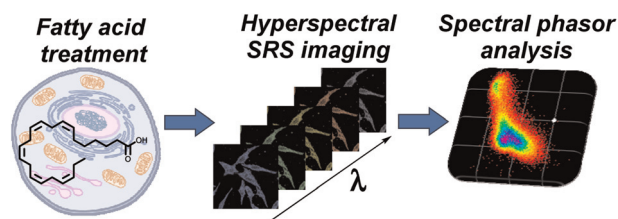
Lu Sun, Lin-Ge Chen and Hai-Bo Wang\*



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### Spectral fingerprinting of cellular lipid droplets using stimulated Raman scattering microscopy and chemometric analysis

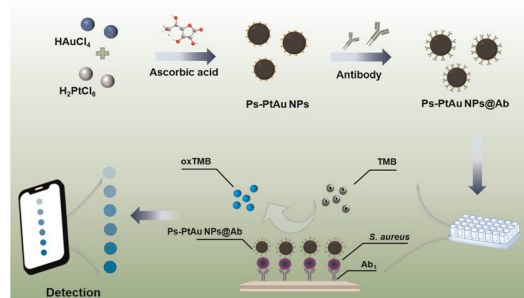
Aur lie Rensonnet, William J. Tipping, Cedric Malherbe, Karen Faulds, Gauthier Eppe and Duncan Graham\*



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### A pomegranate seed-structured nanozyme-based colorimetric immunoassay for highly sensitive and specific biosensing of *Staphylococcus aureus*

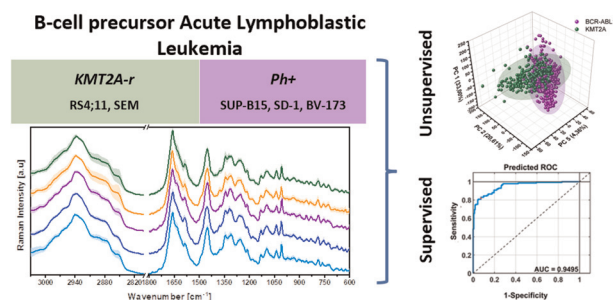
Jinghui Li, Yipeng Tang, Yunpeng Bai, Zhejun Zhang, Shaopeng Zhang, Tongyun Chen,\* Feng Zhao\* and Zhigang Guo\*



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### Raman classification of selected subtypes of acute lymphoblastic leukemia (ALL)

Adriana Adamczyk, Anna M. Nowakowska, Justyna Jakubowska, Marta Zabczynska, Maja Bartoszek, Sviatlana Kashyrskaya, Agnieszka Fatla, Kacper Stawoski, Kacper Siakala, Agata Pastorczak, Kinga Ostrowska, Wojciech Mlynarski, Katarzyna Majzner\* and Malgorzata Baranska



## CORRECTIONS

582

**Correction: CannibiSenS: an on-demand rapid screen for THC in human saliva**

Nathan Kodjo Mintah Churcher, Vikram Narayanan Dhamu and Shalini Prasad\*

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**Correction: A poly(thymine)-templated fluorescent copper nanoparticle hydrogel-based visual and portable strategy for an organophosphorus pesticide assay**

Jihua Chen, Ting Han, Xiuyun Feng, Baojuan Wang and Guangfeng Wang\*

