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## ORIGINAL RESEARCH ARTICLES

### Professional needs of young Emergency Medicine specialists in Africa: Results of a South Africa, Ethiopia, Tanzania, and Ghana survey



#### *Les besoins professionnels des jeunes spécialistes en médecine d'urgence en Afrique : résultats d'une enquête menée en Afrique du Sud, en Éthiopie, en Tanzanie et au Ghana*

Crystal Bae<sup>a,b,\*</sup>, Heike Geduld<sup>b</sup>, Lee A. Wallis<sup>b</sup>, De Villiers Smit<sup>c</sup>, Teri Reynolds<sup>b,d,e</sup>

<sup>a</sup> University of Maryland School of Medicine, Baltimore 21201, MD, USA

<sup>b</sup> Division of Emergency Medicine, University of Cape Town, Karl Bremer Hospital, Bellville 7535, South Africa

<sup>c</sup> The Alfred Hospital, Prahran 3191, VIC, Australia

<sup>d</sup> University of California, San Francisco, Department of Emergency Medicine, San Francisco 94143, CA, USA

<sup>e</sup> Muhimbili National Hospital, Upanga West, Dar es Salaam, Tanzania

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**Introduction:** Emergency Medicine (EM) residency programmes are new to Africa and exist in only a handful of countries. There has been no follow up on faculty development needs nor training of these graduates since they completed their programmes. The African Federation for Emergency Medicine (AFEM) aims to explore the needs of recent EM graduates with respect to the need for resources, mentorship, and teaching in order to develop a focused African faculty development intervention.

**Methods:** As part of the AFEM annual survey, all those who have graduated since 2012 from a Sub-Saharan African EM residency programme were approached. These included Muhimbili University of Health and Allied Sciences (MUHAS) in Tanzania, Addis Ababa University (AAU) in Ethiopia, Komfo Anokye Teaching Hospital (KATH) in Ghana, the University of Cape Town (UCT) in South Africa, the University of Pretoria (UP) in South Africa, the University of Witwatersrand (Wits) in South Africa, and the University of KwaZulu-Natal (UKZN) in South Africa.

**Results:** The 47 respondents rated themselves as most confident medical experts in knowledge, procedural skills, and communication. Overall graduates felt least equipped as scholars and managers, and requested more educational materials. They reported that the best way for AFEM to support them is through emergency care advocacy and support for their advocacy activities and that their most critical development need is for leadership development, including providing training materials.

**Conclusion:** Recent graduates report that the best ways for AFEM to help new EM graduates is to continue advocacy programmes and the development of leadership and mentorship programmes. However, there is also a demand from these graduates for educational materials, especially online.

**Introduction:** Les programmes d'internat en médecine d'urgence (MU) sont nouveaux en Afrique et n'existent que dans quelques pays. Aucun suivi n'a été constaté sur les besoins en formation des enseignants ni sur la formation de ces diplômés depuis le moment où ils ont achevé leur cursus. La Fédération africaine de médecine d'urgence (AFEM) s'est donné pour objectif d'étudier les besoins des diplômés récents en MU en termes de besoins en ressources, en mentorat et en enseignement dans le but d'élaborer une intervention en matière de formation ciblée des enseignants en Afrique.

**Méthodes:** Dans le cadre de l'enquête annuelle de l'AFEM, tous les étudiants issu d'un programme d'internat de MU en Afrique subsaharienne qui ont obtenu un diplôme depuis 2012 ont été contactés. Les établissements incluaient l'Université Muhimbili de la santé et des sciences connexes (MUHAS) en Tanzanie, l'Université d'Addis-Abeba (AAU) en Éthiopie, l'Hôpital universitaire Komfo Anokye (KATH) au Ghana, l'Université du Cap (UCT) en Afrique du Sud, l'Université de Pretoria (UP) en Afrique du Sud, l'Université de Witwatersrand (Wits) en Afrique du Sud et l'Université du KwaZulu-Natal (UKZN) en Afrique du Sud.

**Résultats:** Les 47 personnes interrogées se sont évaluées comme étant totalement confiantes en tant qu'experts médicaux dans les domaines des connaissances, des compétences procédurales et de la communication. Dans l'ensemble, les diplômés s'estimaient moins bien équipés que les universitaires et les gestionnaires, et ont demandé plus de matériel éducatif. Ils ont signalé que, pour l'AFEM, les meilleures façons de les soutenir étaient par le plaidoyer en matière de soins d'urgence et le soutien à leurs activités de plaidoyer, et que leur besoin en développement le plus essentiel est un développement du leadership, notamment en fournissant du matériel de formation.

**Conclusion:** Les diplômés récents signalent que, pour l'AFEM, la meilleure façon d'aider les nouveaux diplômés en MU est la poursuite des programmes de plaidoyer ainsi que du développement des programmes de leadership et de mentorat. Cependant, il existe également une demande de la part de ces diplômés en matière de matériel éducatif, en particulier en ligne.

### African relevance

- There are only seven universities in Sub-Saharan Africa that have successfully graduated emergency medicine specialists, four of which are in South Africa.

\* Correspondence to Crystal Bae. [baecrystal@gmail.com](mailto:baecrystal@gmail.com)

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- These new graduates by default are considered the experts and leaders in their field, and are often called upon for consultation by their government, universities, and other stakeholders.
- Supporting these young leaders is essential in the development of emergency care systems in Sub-Saharan Africa.

## Introduction

In recent years, an increasing number of countries in sub-Saharan Africa have recognised the need for improved emergency care systems and, as part of this, several have developed emergency medicine (EM) specialist training programmes.<sup>1-5</sup>

The first EM specialist training programme in Sub-Saharan Africa was established jointly at the University of Cape Town (UCT) and Stellenbosch University (SU) in 2004.<sup>1,2</sup> The first specialists graduated in late 2007. In common with other South African programmes, it consists of a four-year Masters of Medicine degree, a dissertation, and two sets of examinations.<sup>1</sup> Tanzania and Ethiopia have since introduced 3-year Masters of Medicine programmes in Emergency Medicine at Muhimbili University of Health and Allied Sciences (MUHAS) and Addis Ababa University (AAU),<sup>3,4</sup> respectively, and produced their first specialists in 2013. Ghana established a formal specialist training programme in 2015, but has had an advanced training programme in emergency care since 2009 at the Komfo Anokye Teaching Hospital (KATH) in Kumasi.<sup>4</sup>

Previous studies show that most graduates are retained in the public sector and go straight into a post of Emergency Centre head, where patient load and acuity, combined with administrative duties, can lead to significant strain.<sup>1,2</sup> In Ghana and Tanzania, in addition to taking over leadership of their own training programmes, graduates of advanced training and specialist programmes have been deployed into smaller hospitals to help address service delivery and to establish new training programmes.<sup>4-6</sup> The first 27 graduates from UCT and SU's programme described a "lack of career options after graduation" (74%) and a "lack of preparation for academic careers" (70%) as major weaknesses of their training.<sup>2</sup>

The newly-graduated specialists are also often required to serve as mentors to new trainees in the programme, including supervising their clinical practice and guiding their academic development. Failure by the programme to provide such mentorship has been associated with trainees leaving the speciality.<sup>1</sup> At MUHAS, all schools, including medicine, dentistry, nursing, pharmacy, and public health and social sciences include "teaching skills" as a core "competency domain" in their curriculum, where there is emphasis on the importance of teaching students and the community.<sup>7</sup> However, on analysis of these core competencies, recent graduates reported that they "wanted better relationships with faculty" as a key area of improvement.<sup>7</sup> Existing faculty at MUHAS reported that they "wanted to be able to use instructional strategies to increase active learning, use more technology in their teaching, develop and communicate expected student outcomes, teach and assess professionalism, and work interprofessionally".<sup>7</sup>

These young specialists have a key role in the continuance and development of emergency care in the region. They are often placed as role-models and leaders, and have a tremendous amount of expectation placed upon their shoulders.

There is an "urgent need to determine key strategies that help emergency medicine maturation", but this is dependent on the newly graduated specialists,<sup>3</sup> who will become the teachers and advocates of the field.<sup>8</sup>

Despite robust post-graduate training programmes with support from local and international academic partners, there are currently limited systems in place to support these new graduates as they develop into their roles as specialists in Emergency Centres in the region. To support the development of these training programmes, to facilitate the integration of emergency care into healthcare systems, and to maximise the impact of emergency care on patient outcomes in the region, it is essential to support them in their new roles. While time and experience are likely to develop strong local leaders, in the interim, external support and development training are required. Understanding their needs and desires is a critical step towards achieving these aims.

The "idea of the 'competent physician' is a dynamic one" and the learning and development of an emergency medicine physician is lifelong.<sup>9</sup> It is recognised that not only is there a need for increased medical school and graduate medical education, but also for support for practicing health professionals.<sup>10</sup>

The African Federation for Emergency Medicine (AFEM) is an international association aimed at networking and supporting national societies, organisations, and individuals dedicated to the development of emergency care across Africa, including nursing, EMS and mid-level providers. A clearly voiced need to support a well-defined and easily accessible cadre of newly graduated EM specialists led AFEM to undertake an assessment of the self-reported competencies and development needs of recent graduates of African EM training programmes.

## Methods

This study was a prospective questionnaire-based survey with closed-ended and open-ended questions allowing free text responses. It was a web-based survey, accessible via Survey Monkey®.

Potential participants were identified through the heads of each of the existing sub-Saharan EM training programmes. These graduates were sent an email explaining the details and purpose of the study, and those completing the consent process were offered a link to complete the survey via the web. Ethics approval was obtained from the Human Research Ethics Committee, UCT.

A total of 71 eligible subjects were identified and offered the survey, including 27 from UCT & SU, 6 from the University of Pretoria (UP), 5 from the University of the Witwatersrand (Wits), 4 from the University of KwaZulu-Natal (UKZN), 15 from MUHAS, 10 from AAU, and 4 from KATH.

Survey questions included demographics, background information about the health facility, self-competency ratings, resource use, and specific questions on development needs as an EM specialist. Questions regarding self-competency ratings, resource use, and development needs were evaluated using a 5-point Likert scale to determine levels of confidence or importance. Questions regarding areas feeling least equipped and ways for AFEM to best support participants used free responses.

Data were collected from Survey Monkey®. For quantitative data using the Likert scale, we reported median scores, specifically for self-competency ratings and development needs. For qualitative data from free-text responses, we undertook content analysis to group themes by frequency using an inductive approach, specifically for assessing areas feeling least equipped and development needs by areas feeling least equipped. The CanMEDS Physician Competency Framework was used to categorise the domains of the responses (the CanMEDS Physician Competency Framework was developed by the Royal College of Physicians and Surgeons of Canada to capture the essential abilities of a physician to successfully and effectively provide patient needs via multiple “competency domains”<sup>11</sup>; this framework, accepted worldwide, outlines the necessary medical competencies throughout medical training from medical school, residency, and beyond, in order to improve physician training<sup>11</sup>). These competency domains of the skills of a physician include medical expert, communicator, collaborator, manager, health advocate, scholar, and professional.<sup>11</sup>

## Results

Subjects were eligible to participate if they graduated from an EM specialty training programme within the last three years (January 2012 and later) and were currently practicing at a health facility in Africa. The total number of graduates offered in the survey was 71. Of these, 47 (66%) graduates responded and were included in the study. Of the participants, 29 (61.7%) were male, and the median age was 34 years.

The largest number of respondents ( $n = 21$  or 44.7%) was from South African training programmes, and 20 still work in South Africa (Table 1, Fig. 1). In addition, the majority of respondents, overall, work in public hospitals in their respective countries of practice. The “other” category included those not currently practicing, those working in multiple facilities, and those who skipped this question (Table 1). 1 respondent was excluded for working outside of the African context in Ireland.

For reported self-competency, the median scores for medical expert (knowledge and procedural skills) and communicator were 3 (very confident), while collaborator, manager, and scholar/researcher had medians of 2 (confident) (Fig. 2).

Participants listed scholar most frequently as an area of feeling least equipped, followed by manager and then lack of equipment such as ultrasound (Fig. 3). Next frequent were lack of human resources and development of system components, such as prehospital care.

Advocacy for EM as a specialty was found the most common priority area in which graduates expressed a desire for support. This included on a national level for the specialty as well as advocacy for pursuing academic roles in EM, such as having time for research. Although the majority of participants work in academic posts, responses reflected that academic work, such as research, was not as valued as service work. Advocating for better working conditions was also indicated.

Resources for self-learning and for teaching others were key issues, particularly for materials accessible online. Suggested topics include teaching skills, skills-based education, research, clinical governance, and management skills.

The need for mentorship programmes including leadership development and research collaboration was described

**Table 1** Study population characteristics.

|                     |                      | Frequency<br>( $n = 47$ )<br>(%) |
|---------------------|----------------------|----------------------------------|
| Country of practice | South Africa         | 20 (42.6)                        |
|                     | Tanzania             | 13 (27.7)                        |
|                     | Ethiopia             | 9 (19.1)                         |
|                     | Ghana                | 4 (8.5)                          |
|                     | Kenya                | 1 (2.1)                          |
| Current hospital    | South Africa-private | 2 (4.3)                          |
|                     | South Africa-public  | 6 (12.8)                         |
|                     | Tanzania-private     | 2 (4.3)                          |
|                     | Tanzania-public      | 10 (21.3)                        |
|                     | Ethiopia-private     | 0 (0)                            |
|                     | Ethiopia-public      | 7 (14.9)                         |
|                     | Ghana-private        | 0 (0)                            |
|                     | Ghana-public         | 4 (8.5)                          |
|                     | Kenya-private        | 1 (2.1)                          |
|                     | Kenya-public         | 0 (0)                            |
|                     | Other                | 15 (31.9)                        |
| Total               | 47 (100)             |                                  |

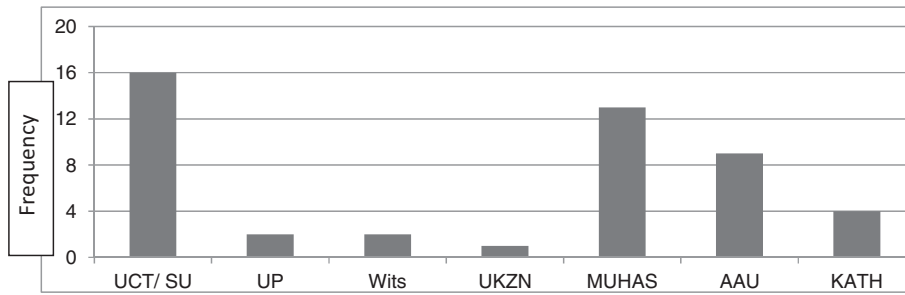
repeatedly. Leadership training was described as extremely important (Fig. 4). Exchange programmes for new graduates within Africa and beyond were suggested. The desire for regional certification exams to allow for these exchanges was expressed.

Psychological and social support, more didactic teaching, and reference books were indicated as important.

The top two roles for which graduates report feeling least equipped were scholar and manager. The top development needs associated with scholar included resources for self-learning, more simulated training, more didactic training, more electronic references, more references (book), research opportunities, and research workshops. For the category of manager, the development needs indicated included resources for teaching others and leadership training (Fig. 5). The development needs recorded by participants correlated with scholar and manager, the primary areas marked as feeling least equipped.

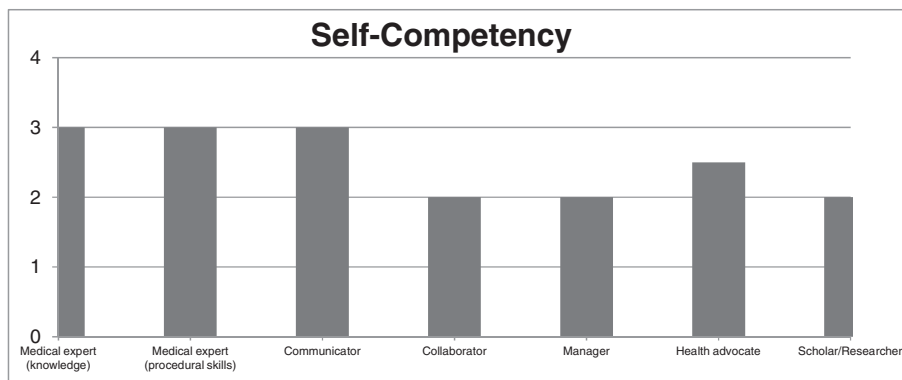
## Discussion

The graduates surveyed in this study felt most confident in their skills as clinicians, both in knowledge and procedural skills: competency as a medical expert was rated the highest. This is in keeping with an earlier study where graduates felt confident on medical content (but found other domains such as management training lacking),<sup>1,2</sup> and is congruent with anecdotal evidence from regular interactions with graduates. This is not an unexpected finding given that the speciality training programmes focus the overwhelming majority of their time on clinical knowledge and skills transfer, with academic, leadership, and management training being virtually absent in certain programmes, such as in the Fellowship of the College of Emergency Medicine of South Africa curriculum.<sup>12</sup> In addition, while some of the cities that were assessed in this study differ by context, participants from all of the sites reported similar problems, suggesting that local context was not a factor in differences in results.

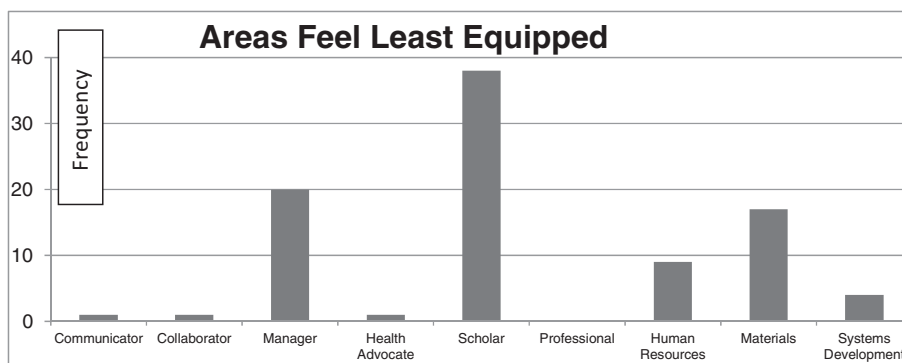


**Figure 1** Frequency of training institutions of participants.

4 = Extremely Confident  
 3 = Very Confident  
 2 = Confident  
 1 = Somewhat Confident  
 0 = Not Confident



**Figure 2** Self-reported competency ratings.



**Figure 3** Indicated areas that participants feel least equipped.

The role for which graduates feel least equipped was overwhelmingly scholar; in particular, research skills were rated areas of low competency and in need of much support. Many EM training programmes do not have well developed research components due to limited research training and supervisory capacity at these institutions.

Many respondents described feeling frustrated that levels of materials and equipment did not match their skill levels, restricting their ability to do their job effectively. In addition,

lack of training in system organisation and planning (such as that needed to develop a prehospital care system) was seen as a deficit in their training and skills.

Although there are established training programmes for developing clinical skills, lack of an organised infrastructure and unreliable stocks of supplies, equipment, and medicines limit the delivery of care these specialised doctors can provide. In addition, these doctors are actively seeking and asking for more training as researchers and leaders; both of these skillsets

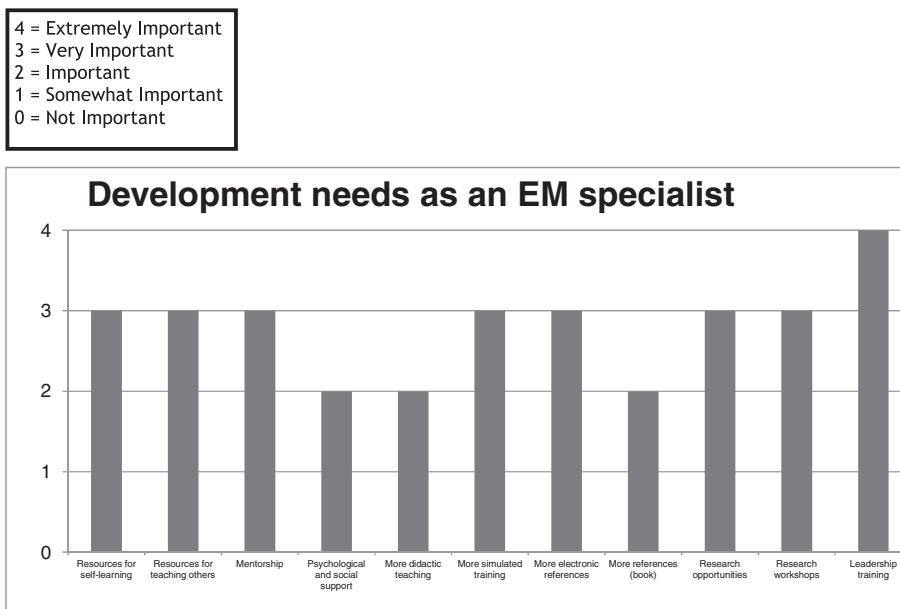


Figure 4 Reported development needs as an EM specialist.

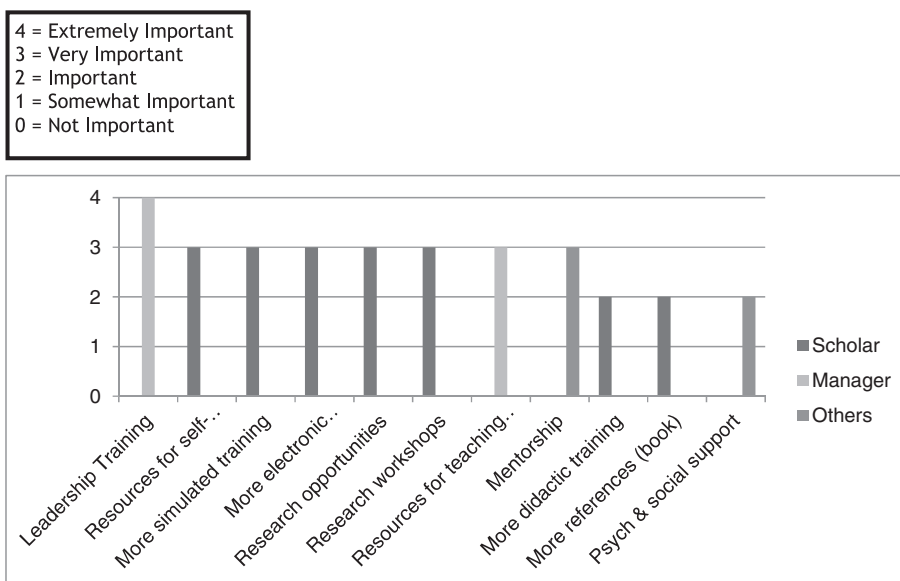


Figure 5 Development needs by top areas feeling least equipped.

are essential for the success of emergency medicine as a specialty and to provide patients with first-rate emergency care. These graduates want the skillset to stay current on new research and conduct their own research, to advocate to their government, and to provide mentorship to younger generations.

There is a need for AFEM to support these new graduates in terms of Emergency Care advocacy and in producing tools to develop leadership and management skills. Specifically, these results suggest that regional specialist training programmes should integrate specific training modules on leadership skills, research, training, mentorship, and resources. In response to these findings, the AFEM Scientific Committee has undertaken development of a formal integrated Young Faculty Development programme with the following compo-

nents: bedside teaching, presentation skills, research skills, management, and leadership skills.

These new graduates will take on the role as leaders in their country. AFEM may also have a role in facilitating exchange programmes, to allow new faculty exposure to established systems and practice in other African countries and to share experiences, collaborate, and build networks. The findings of the study were reported to direct possible future directions of AFEM programmes, but were not used to change AFEM policies.

The new EM faculty and recent graduates have an important role to play in the development of Emergency Care across Africa. It is vital that they are supported to develop themselves not just as medical experts but as scholars, communicators, health advocates, communicators, and professionals.



## Conclusion

Recent graduates report that the best ways for AFEM to help new EM graduates is to continue advocacy programmes and the development of leadership and mentorship programmes. However, there is also a demand from these graduates for educational materials, especially online.

## Limitations

The overall response rate was 66% (47 out of 71 participants) despite multiple reminders; the response rate by programme varied between 25 and 100%. However, the participants represented all training programmes and we believe that the sample was adequately representative.

Responses clustered in a narrow 2-point band (Figs. 2 and 4) limited the utility of the responses for ranking priority faculty development activities. To mitigate this, we created a composite index incorporating the ranked importance of needs, with the degree of reported under-preparedness (more or less equipped) for the related role. This created a greater spread of values, potentially allowing for more effective identification of priority areas for support.

## Conflict of interest

The authors declare no conflict of interest.

## Author contributions

D.S., L.W., H.G., and T.R. conceived the original idea. C.B., H.G., and L.W. designed the experiments. C.B. and H.G. carried out analysis of data. C.B., D.S., L.W., H.G., and T.R. prepared the manuscript.

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