

# ANGLAIS

# Semestre 1



UNIVERSITÉ DE NANTES

U.F.R. des Sciences et des  
Techniques

S.E.V.E. Bureau des Examens

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Semestre  1  2  
Session  1  2

Nom de l'U.E. : Anglais

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Date de : 06-01-2014

Durée : 1h30

Documents  
autorisés : Aucun

Calculatrice  oui  Type :

**PAS DE SORTIE AUTORISEE** avant 1H00 d'épreuve

Répondez **UNIQUEMENT SUR LE SUJET** dans les espaces prévus à cet effet

N'inscrivez **RIEN DANS LES ZONES GRISEES** (prévues pour la correction)

Votre étiquette d'anonymat est à appliquer **SUR LA COPIE VIERGE**  
Reportez votre **NUMERO D'ANONYMAT** sur chaque feuillet

Numéro d'Anonymat : .....

## This Gene Gave Mosquitoes The Taste For Human Blood

November 13, 2014 | by Janet Fang <http://www.iflscience.com>

To nourish their eggs, bloodsucking female mosquitoes have become major vectors of human disease. And what's more, some of them actually prefer to bite people. A "domestic" form of the yellow fever mosquito breeds indoors in water jugs and has evolved to specialize in hunting humans -- spreading dengue, yellow fever, and chikungunya. But along the coast of Kenya, this domestic form (*Aedes aegypti aegypti*) coexists with its ancestral, "forest" form (*Aedes aegypti formosus*), which lays its eggs outdoors and prefers to bite other animals.

Now, researchers have identified the genetic tweak that explains why the deadly subspecies prefers to feed on humans: Their taste for our blood is sustained by the abundance and sensitivity of one odor-detecting gene in their antennae that make them more sensitive to our scent. The work, published in *Nature* this week, helps explain how a human-biting specialist evolved from its animal-loving ancestor.

"It was a really good evolutionary move," says Leslie Vosshall from Rockefeller University in a university statement. "We provide the ideal lifestyle for mosquitoes. We always have water around for them to breed in, we are hairless, and we live in large groups."

Vosshall and colleagues collected larvae of both forms from treeholes and from clay pots and metal cans using turkey basters and sieves in Rabai, Kenya. They grew colonies in the lab and documented the striking divergence in their preference for human versus non-human animal odor in a three-part experiment. And the differences were stark.

The team put both types in a large cage and offered them a guinea pig or a (lucky) researcher's arm. They also got to choose between streams of air that had passed over guinea pigs or humans. And to rule out other mosquito attractants like exhaled carbon dioxide, the team allowed the mosquitoes to choose between the scent of nylon sleeves that had been worn by humans or guinea pigs. Although domestic mosquitoes would sometimes go for the guinea pig, it happened very rarely.

When the team interbred the two subspecies, and then interbred those offspring to create second-generation hybrids, they found 14 genes that were different between the human- and rodent-preferring skeeters. In particular, the preference for human odor is tightly linked to the odor receptor gene Or4, which showed higher levels of expression in the domestic mosquitoes' antennae (the equivalent of our noses).

Then, human volunteers and guinea pigs donned pantyhose for 24 hours, after which these were placed in a machine to separate out scent into hundreds of chemicals. That's how they discovered that Or4 is highly attuned to sulcatone, a prevalent compound in human odor.

"They've acquired a love for human body odor," Vosshall says. McBride adds: "The more we know about the genes and compounds that help mosquitoes target us, the better chance we have of manipulating their response to our odor."

**PART ONE: VOCABULARY (10 points)**

<i>In the text, find equivalents for the following words (the word structure may be slightly different)</i>		SCORE
	in reality	
	slight modification, specific feature	
	Fatal	
	gustatory sensation	
	striking, very noticeable	
	to eliminate, to exclude something as a possibility	
	descendants	
	an animal like mice, rats, guinea pigs	
	to wear	
	common, widespread	
<b>TOTAL ( / 10 POINTS)</b>		

35 **PART TWO: COMPREHENSION (10 points)**

<i>Say whether the following statements are TRUE OR FALSE, and justify by quoting from the text. Indicate the reference <u>AND</u> copy the relevant passage; add comments in your own words if necessary</i>			SCORE
All mosquitoes may endanger people's health.			
T	F		
Aedes aegypti formosus are attracted to people's scents.			
T	F		
Our lack of fur as mammals partly explains the mosquitoes' preferences..			
T	F		
There are important differences in taste between mosquito species.			
T	F		
The team used CO2 for their mosquito taste experiment.			
T	F		
A mosquito from a certain species will always prefer to bite a person rather than an animal.			
T	F		
2 <sup>nd</sup> -generation hybrids are created directly by breeding one domestic form mosquito with a forest form mosquito.			
T	F		
The odor-receptor Or4 is prevalent in domestic form mosquito.			
T	F		
Human smell is due to sulcatone to some extent.			
T	F		
Experiments have now forced mosquitoes to change their odor preferences.			
T	F		
<b>TOTAL ( / 10 POINTS)</b>			

**PART THREE: CULTURAL LANDMARKS (10 points)**

<b><i>Answer the following questions about the civilisation documents you have studied</i></b>	<b>SCORE</b>
Were Euclid's <i>Elements</i> entirely new findings?	
What happened around 1996 when Apple was in major financial trouble?	
What did Lavoisier do with other people's discoveries?	
What did the use of antiseptics paradoxically do with deep infected wounds during World War I?	
Why is William Smith called "Strata Smith"?	
<b>TOTAL ( / 10 POINTS)</b>	





**PART FIVE: GRAMMAR (10 points)**

<i>Choose the correct answer</i>					SCORE	
I strongly recommend you _____ of alternative options.				A	B	
A. to think	B. thinking	C. of thinking	D. to thinking	C	D	
They now live _____ away after moving to Bristol.				A	B	
A. far	B. farer	C. further	D. farest	C	D	
Sally _____ when they took her plate away.				A	B	
A. doesn't finish	B. didn't finish	C. hasn't finished	D. hadn't finished	C	D	
That is now _____ European matter.				A	B	
A. their	B. a	C. an	D. such an	C	D	
If she hadn't prevented this trouble, there _____ more casualties at the time.				A	B	
A. would have been	B. would be	C. would been	D. would had been	C	D	
Leave me alone, _____ ?				A	B	
A. shall you	B. let you	C. will you	D. don't you	C	D	
Peter Snow _____ by a famous musician, which launched his carrer.				A	B	
A. has been discovering	B. discovered	C. was discovering	D. was discovered	C	D	
They _____ Unix company workers for at least 15 years now.				A	B	
A. are	B. have been	C. were	D. had been	C	D	
Tina _____ to open the windows, now it really smells!				A	B	
A. couldn't forgotten tried	B. shouldn't have forgotten	C. couldn't forget	D. shouldn't forgetting	C	D	
_____ doesn't seem to be valid.				A	B	
A. The theory of Dora	B. Dora's theory	C. The theory of Dora's	D. The Dora's theory	C	D	
<b>TOTAL ( /10 POINTS)</b>						