

Template MC Question

Title	Maintenance of high Cdc28-Clb activity
Introduction/ Description	After progression through Start the Cdc28-Clb activity is high. In order to proceed through all the phases of the cell cycle Cdc28-Clb activity has to stay high until late M phase.
Question	How is the activity of Cdc28-Clb triggered and maintained?

Choice sheet - As the material will serve as a study aid, please put the correct answer randomly as one of the 4 choices.

Choice 1	Cdc28-Cln1,2 phosphorylate Swi5, the transcription factor of Sic1 and activate Ndd1, the transcription factor of CLBs. By doing so, they trigger Cdc28-Clb activity. In addition, they inactivate Cdh1 in order to maintain high Cdc28-Clb activity.
Choice 2	Cdc28-Cln1,2 activity triggers Cdc28-Clb activity by phosphorylating Sic1. Cdc28-Clb activity promotes its own maintenance by inactivating Cdc20 and Swi5.
Choice 3	Cdc28-Cln1,2 activity triggers Cdc28-Clb activity by promoting the rapid degradation of Sic1. Cdc28-Clb promote their own maintenance by inactivating Cdh1 and Swi5 and promoting their own transcription by activating Ndd1.
Choice 4	Cdc28-Cln1,2 activity triggers Cdc28-Clb activity by inactivating Sic1 and activating Ndd1. Once the Cdc28-Clb are active they are responsible for their own maintenance via the inactivation of Swi5.

Feedback sheet – Please **label** the feedback to the choices as “CORRECT” or “INCORRECT”. Provide detailed feedback to explain why the choice was correct or incorrect.

Feedback Choice 1	Incorrect. Cdc28-Cln trigger Cdc28-Clb activity directly by inactivating Sic1. Cdc28-Clb are responsible for the inactivation of the activation of Ndd1 and thus ensure their own maintenance.
Feedback Choice 2	Incorrect. It's true that Cdc28-Cln1,2 trigger Cdc28-Clb activity by inactivating Sic1 and that Cdc28-Clb ensure their own maintenance. It is also true that this maintenance involves the inactivation of Swi5. However, the inactivation of Cdh1 and not Cdc20 is necessary to prevent the APC/c complex to degrade Clbs. In addition, the activation of Ndd1 by Cdc28-Cln ensures CLB transcription.
Feedback Choice 3	Correct. Cdc28-Cln activity is responsible for triggering the Cdc28-Clb activity by inactivating the Cdc28-Clb inhibitor Sic1. Cdc28-Clb is responsible for its own maintenance. It does it through inactivation of Swi5, the transcription factor of SIC1, the inhibition of Cdh1 and by activating its own transcription factor Ndd1.
Feedback Choice 4	Incorrect. It's true that Cdc28-Cln1,2 trigger Cdc28-Clb activity by inactivating Sic1 and that Cdc28-Clb activity ensures its own activity. But Cdc28-Clb and not Cdc28-Cln activate Ndd1. It is also true that Cdc28-Clb inactivate Swi5 but the inactivation of Cdh1 is also necessary to ensure their maintenance.